

Teaching Vaccine Safety Communication to Medical Students and Health Professionals

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Abstract: Not only the general public, but also those studying to become health professionals, are struggling to keep up with a growing body of evidence and increasingly complex information about the many different types of vaccines available to date. At the same time, a number of increasingly complex subjects of study are competing for their attention during undergraduate and graduate education. In many medical school curricula in German-speaking countries, the subject of vaccines has been entirely omitted, or is regarded a minor subtopic. During the studies, most medical school curricula in German-speaking countries do not offer obligatory courses and/ or hands-on training vaccinology in vaccination. In Germany, private pediatricians administer the majority of immunizations. Even during postgraduate training programs in pediatrics, which are largely hospital-based, vaccinations are rarely a topic, and vaccinology remains a “hobby” and a “field without lobby” lacking specific certification requirements. Studies of acceptance of vaccines among health professionals and medical students have shown that many may still have their own doubts and uncertainties about vaccines revealing a number of unanswered questions during their studies and postgraduate training.

Keywords: Communication, education, health, professionals, safety, students, teaching, vaccine.

INTRODUCTION

Technological and scientific advancements have led to the rapid development of novel vaccines, in different stages of clinical development. In addition, a number of newly licensed vaccines have become available, with varying degrees of acceptance among physicians and their patients [1-3]. The public discussion surrounding the recent introduction of human papilloma virus (HPV) and pandemic influenza vaccines has highlighted the important role of health professionals in vaccine safety communication [4-11].

Evidently, physicians nowadays, in particular pediatricians, will need to be well-prepared during their university education and postgraduate training to address the questions and doubts about vaccines (including unspoken fears and anxieties) among patients and parents. It is hoped that those who are competent in the subject matter and confident with respect to conveying a preventative health message, will be effective communicators and role models once they become practicing physicians.

PROBLEM

Very little is known about the impact of targeted interventions to improving vaccine safety communication skills, and even less about the potential impact of integrated medical teaching programs on the overall acceptance of immunizations. Recent interventions have focused

on short-term teaching programs for a limited number of trainees and days, such as “summer schools” and intensive training courses for scientists [12-16].

Another important aspect rarely addressed during medical education is the influence of a changing media landscape and the increasing importance of the internet and social media on doctor-patient communication. A number of communication challenges and opportunities present themselves through the media, and public health messages may need to be adapted to the rapid changes in information technology and consumer behavior [17-23].

A survey of parental vaccine safety perceptions in Vienna in 2008-9 revealed that the internet has been surpassing other types of media and become the second most important information source for patients of children in the “vaccination age group” [24]. Recent behavioral research has shown that parents are not always confident in discussing inconsistencies and conflicting media information (often encountered in the World Wide Web) with their physician [23, 25, 26].

Therefore it is important for physicians to communicate openly and proactively addressing potential fears and concerns in an open and non-judgmental fashion [27]. In all controversial topics in medicine it is important to convey to the vaccine recipient or parent of child in the vaccination age, that it is accepted to have doubts and by this offer an open-minded atmosphere encouraging them to ask questions and expression of concerns, if applicable.

The Reformed Medical Curriculum at Charité University, which was started following student initiatives in the late 1980's and ran from 1999 to 2011, provided a rather successful experience. In small group settings, this student-centered and integrative curriculum used simulation patients

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for the training of communication skills. In one case, which always was very well ranked by the students, they had to discuss about the official vaccination recommendation with vaccination skeptic parents and try to convince them that it is necessary for their baby's health to stick to these rules. This has taught us that communication training should start early-on since by this it becomes part of the life-long learning process throughout any medical career [28].

Once established, good communication practices should usually prevail and can be developed and adopted further to be of help in major communication challenges such as behavior modification in drug addicts or obese patients, as well as commonly avoided controversial topics such as the risks and benefits of medical procedures, including immunizations [29, 30].

In this context, a team-approach to patient-centered care has been most successful [31, 32]. In addition, e-Learning methodologies, multi-source evaluation and objective structured clinical examination (OSCE) stations are both well-established in the reformed curriculum and house staff training at Charité and will be explored further in the context of teaching communication skills [33-35]. OSCE stations have become one of the key elements in teaching and testing practical and communication skills as well as timely medical decision-making and have also been proven useful in continued medical education of house staff and faculty [36-41].

In addition, the methods used to teach communication skills, once developed, should be ongoing regular evaluation by course participants as well as regular audits by independent quality management groups [42].

ASSESSMENT OF THE PROBLEM

As mentioned above, the teaching of accurate communication skills with respect to vaccines and immunization should start early during the medical curriculum. In a modern reformed curriculum, core competencies would be built in as a learning spiral. This allows the student to advance continuously because the topic vaccination will appear several times in different contexts e.g. microbiology virology, immunology, infectious diseases in internal medicine, geriatrics, gynecology and pediatrics. Special attention should be given to help students understand the coherence of all these different topics needed to be able to communicate on vaccine safety and other aspects. By this, students are deepening their knowledge stepwise from factual knowledge to understanding and finally to its practical application. Later this "know-how" approach will lead to the effective teaching of colleagues and peers [43]. Such diverse and integrated programs have already been implemented at the University of Antwerp with practical training on communication, safety, and how to administer vaccines.

Recent pilot projects at the Medical University in Vienna, Austria (www.vi-vi.org), as well as at Charité University Medicine in Berlin, Germany (www.charite.de), have shown that students are indeed interested in learning more about the safety of vaccines and perceptions in the general public, as well as the health impact of vaccine preventable diseases, and can be actively engaged in research training and

semester thesis programs and eventually integrated into research groups in the context of their medical thesis requirements [24, 44-47]. A new 2-week course entitled "*Vaccine Junkies*"? - *What are the public media telling us about vaccine safety, and what do we find in the scientific literature?* was first designed and approved for the early semesters (SSM-1) at the Medical University of Vienna for the winter term of 2009/10, but unfortunately was not offered since winter term 2013/14.

Student working groups are now actively involved in the improvement of the curricula with respect to vaccine safety communication, and two doctoral thesis projects at Charité have been dedicated to studies of vaccine safety perceptions among health professionals in different parts of Europe, as well as in the development of a specific 3-week *Modular Training Program in Vaccine Safety & Communication*, which was first implemented during the winter semester 2010/11. At Charité, advanced doctoral students in pediatric infectious diseases and vaccines have been granted observership status in actual consultations at the newly introduced Vaccine Safety University Clinic at the Department of Pediatrics.

Making use of the experience and expertise in creating innovative medical teaching programs at Charité and gathering the immediate feedback and ideas of medical students themselves, several components have been identified as key elements to building the necessary know-how and skills among doctors-to-be:

- Building/ strengthening factual knowledge about different designs and types of vaccines, adjuvants, preservatives and vaccine delivery methods.
- Communicating the concept and principles of herd immunity.
- Teaching the immunological aspects of different vaccine designs including needle-free vaccines.
- Learning about anti-vaccine movements and vaccine scares.
- Integrating knowledge about the aims and targets of immunization schedules and programs as well as the (possible and actual) public health impact in different epidemiological and geographic settings.
- Triggering an interest in the global and public health impact of vaccines, including the potential of globally eradicating infectious agents/diseases.
- Learning about common vaccine perceptions and differences in acceptance rates in several subgroups of the local population.
- Understanding the rhetorical and linguistic differences between mass media reports on vaccines and the medical literature.
- Following federal and state guidelines with respect to vaccines and vaccine safety [48].
- Critical reading and evidence-based analysis of vaccine safety articles and internet sites.
- Proper handling and storage of vaccines.

- Accurate vaccination techniques (practical training with immediate feedback).
- Correct documentation of immunizations according to WHO standards [2].
- Evaluation of adverse events following immunization using standardized case definitions and internationally approved reporting pathways.
- Generating awareness of vaccine safety organizations such as the Global Advisory Committee on Vaccine Safety, the Brighton Collaboration and other initiatives.
- Making immunization status checks an integral part of daily medical practice, especially in hospitals and polyclinics where nosocomial infections are always a risk.
- Encourage workplace safety by ensuring that all healthcare workers are properly immunized (according to Directive 2000/54/EC [49]).
- Educating colleagues and allied health professionals with respect to vaccine communication [50].

In terms of the teaching style students have opted for intensive training on three weekends with a mixture of brief teaching sessions with immediate practical application in small group settings, combined with e-Learning features, OSCE stations, pre-and post-course assessments and evaluations. Doctoral students in vaccine safety will be immediately involved, not only in the design of the classes, but also in the tutoring of course participants and the scientific analysis of pre- and post-assessments and other parameters of successful participation. As a second step, the course modules can be adopted to other key audiences, such as house staff at Charité, doctors-in-training elsewhere, practising physicians in different disciplines using vaccines, as well as allied health professionals including nurses and midwives.

SUMMARY AND FUTURE PERSPECTIVES

The first step to improve the know-how among medical students and trainees in vaccinology and vaccine safety has been the introduction of focused student working groups consisting of doctoral students pursuing research interest in pediatric infectious diseases and vaccines. These students are forming a core group of motivators among peers, and informants about the need to be informed about vaccine safety.

The logical next step is the development of an intensified training program with a broader access in both the regular and reformed medical curricula, as well as the future combined medical curriculum at Charité. Experienced medical faculty and established international partnerships with Universities elsewhere in Europe *via* the European Pediatric Association (supporting the vaccine safety survey among health professionals) as well as established collaborations *via* the EU-funded CHARME consortium (Challenges of Harmonizing Medical Education in Europe, <http://www.charite.de/charme>) will facilitate the rapid exchange of educational experience and the mutual development of innovative teaching initiatives in vaccine

safety communication. The results and analysis of pre-test and post-test assessments will be shared with the scientific community, and newly-generated teaching materials and modules can be translated into different languages and shared with partner institutions.

Ultimately, making vaccine safety communication training a topic for life-long learning and a requirement in continued medical education will foster an environment in which patients feel well-informed to take responsible and reasonably-sound decisions with respect to immunizations.

Benefiting from 20 years of experience in reforming the medical curriculum at Charité, the course will become an integral part of the medical curriculum rather than an “optional add-on” to medical training, as has been the case in the past.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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REFERENCES

- [1] Kassianos G. Vaccination for tomorrow: the need to improve immunisation rates. *J Fam Health Care* 2010; 20(1): 13-6.
- [2] Vandermeulen C, Roelants M, Theeten H, *et al.* Vaccination coverage in 14-year-old adolescents: documentation, timeliness, and sociodemographic determinants. *Pediatrics* 2008; 121(3): e428-34.
- [3] Dube E, De Wals P, Gilca V, *et al.* New vaccines offering a larger spectrum of protection against acute otitis media: will parents be willing to have their children immunized?. *Int J Pediatr Otorhinol* 2009; 73(7): 987-91.
- [4] Seale H, Heywood AE, McLaws ML, *et al.* Why do I need it? I am not at risk! Public perceptions towards the pandemic (H1N1) 2009 vaccine. *BMC Infect Dis* 2010; 10: 99.
- [5] Zijtregtop EA, Wilschut J, Koelma N, *et al.* Which factors are important in adults' uptake of a (pre)pandemic influenza vaccine? *Vaccine* 2009; 28(1): 207-27.
- [6] Ofri D. The emotional epidemiology of H1N1 influenza vaccination. *N Engl J Med* 2009; 361(27): 2594-5.
- [7] Morabia A, Costanza MC. Influenza vaccine coverage: resistance and alternatives. *Prev Med* 2010; 50(5-6): 221-2.
- [8] Mathur MB, Mathur VS, Reichling DB. Participation in the decision to become vaccinated against human papillomavirus by California high school girls and the predictors of vaccine status. *J Pediatr Health Care* 2010; 24(1): 14-24.
- [9] Gottvall M, Larsson M, Høglund AT, Tyden T. High HPV vaccine acceptance despite low awareness among Swedish upper secondary school students. *Eur J Contracept Reprod Health Care* 2009; 14(6): 399-405.
- [10] Maltezou HC, Dedoukou X, Patrinos S, *et al.* Determinants of intention to get vaccinated against novel (pandemic) influenza A H1N1 among health-care workers in a nationwide survey. *J Infect* 2010; 61(3): 252-8.
- [11] Eastwood K, Durrheim DN, Jones A, Butler M. Acceptance of pandemic (H1N1) 2009 influenza vaccination by the Australian public. *Med J Aust* 2010; 192(1): 33-6.
- [12] Vorsters A, Tack S, Hendrickx G, *et al.* A summer school on vaccinology: Responding to identified gaps in pre-service immunisation training of future health care workers. *Vaccine* 2010; 28(9): 2053-9.
- [13] Schmitt HJ, Booy R, Aston R, *et al.* How to optimise the coverage rate of infant and adult immunisations in Europe. *BMC Med* 2007; 5: 11.

- [14] Fuller J. New drugs, new vaccines, new diseases. An interview with Dr. Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases (NIAID). *Glob Issues* 1996; 1(17): 10-3.
- [15] Chantler T, Pace D, Wright A, *et al.* Uptake and acceptability of influenza vaccination in day nursery children. *Comm Pract* 2007; 80(12): 32-6.
- [16] Altindis E. Vaccines for all: Institut Pasteur vaccinology course. *Expert Rev Vaccines* 2010; 9(9): 1023-6.
- [17] Santana S, Lausen B, Bujnowska-Fedak M, *et al.* Online communication between doctors and patients in Europe: status and perspectives. *J Med Internet Res* 2010; 12(2): e20.
- [18] Eysenbach G. Towards ethical guidelines for dealing with unsolicited patient emails and giving teledvice in the absence of a pre-existing patient-physician relationship systematic review and expert survey. *J Med Internet Res* 2000; 2(1): E1.
- [19] Wainstein BK, Sterling-Levis K, Baker SA, Taitz J, Brydon M. Use of the Internet by parents of paediatric patients. *J Paediatr Child Health* 2006; 42(9): 528-32.
- [20] Wald HS, Dube CE, Anthony DC. Untangling the Web--the impact of Internet use on health care and the physician-patient relationship. *Patient Educ Couns* 2007; 68(3): 218-24.
- [21] Broom A. Virtually he@lthy: the impact of internet use on disease experience and the doctor-patient relationship. *Qual Health Res* 2005; 15(3): 325-45.
- [22] Bylund CL, Gueguen JA, Sabee CM, *et al.* Provider-patient dialogue about Internet health information: an exploration of strategies to improve the provider-patient relationship. *Patient Educ Couns* 2007; 66(3): 346-52.
- [23] Imes RS, Bylund CL, Sabee CM, Routsong TR, Sanford AA. Patients' reasons for refraining from discussing internet health information with their healthcare providers. *Health Commun* 2008; 23(6): 538-47.
- [24] Oubari H. Perceptions of vaccine safety among parents and guardians of children in Vienna, Austria: Assessing Trust in Vaccines in Relation to the Media and other Sources of Vaccine Safety Information. Vienna: Medical University of Vienna; 2010.
- [25] Kivits J. Informed patients and the internet: a mediated context for consultations with health professionals. *J Health Psychol* 2006; 11(2): 269-82.
- [26] Kortum P, Edwards C, Richards-Kortum R. The impact of inaccurate Internet health information in a secondary school learning environment. *J Med Int Res.* 2008; 10(2): e17.
- [27] Berkhof M, van Rijssen HJ, Schellart AJ, Anema JR, van der Beek AJ. Effective training strategies for teaching communication skills to physicians: An overview of systematic reviews. *Patient Educ Couns.* 2011 Aug;84(2):152-62.
- [28] Rotthoff T, Baehring T, David DM, *et al.* The value of training in communication skills for continuing medical education. *Patient Educ Couns.* 2011 Aug;84(2):170-5.
- [29] Seth T. Communication to Pediatric Cancer Patients and their Families: A cultural perspective. *Indian J Palliat Care* 16(1): 26-9.
- [30] Lienard A, Merckaert I, Libert Y, *et al.* Is it possible to improve residents breaking bad news skills? A randomised study assessing the efficacy of a communication skills training program. *Br J Cancer* 103(2): 171-7.
- [31] Polack EP, Avtgis TA, Rossi DC, Shaffer L. A team approach in communication instruction: a qualitative description. *J Surg Educ* 67(3): 125-8.
- [32] Levinson W, Lesser CS, Epstein RM. Developing physician communication skills for patient-centered care. *Health Aff (Millwood)* 2010; 29(7): 1310-8.
- [33] Shepherd A, Lough M. What is a good general practitioner (GP)? The development and evaluation of a multi-source feedback instrument for GP appraisal. *Educ Prim Care* 21(3): 149-64.
- [34] Daetwyler CJ, Cohen DG, Gracely E, Novack DH. eLearning to enhance physician patient communication: a pilot test of "doc.com" and "WebEncounter" in teaching bad news delivery. *Med Teach* 32(9): e374-83.
- [35] Miller A, Archer J. Impact of workplace based assessment on doctors' education and performance: a systematic review. *BMJ* 2010;341: c5064.
- [36] Carson JA, Peets A, Grant V, McLaughlin K. The effect of gender interactions on students' physical examination ratings in objective structured clinical examination stations. *Acad Med* 2010; Nov; 85(11):1772-6.
- [37] Fox BA. Assessing medical decision making using human patient simulation. *Fam Med* 2010; 42(9): 661-3.
- [38] Alevi D, Baiocco PJ, Chokhavatia S, *et al.* Teaching the competencies: using observed structured clinical examinations for faculty development. *Am J Gastroenterol* 2010; 105(5): 973-7.
- [39] Lozano P, McPhillips HA, Hartzler B, *et al.* Randomized trial of teaching brief motivational interviewing to pediatric trainees to promote healthy behaviors in families. *Arch Pediatr Adolesc Med* 2010; 164(6): 561-6.
- [40] McLaughlin K, Ainslie M, Coderre S, Wright B, Violato C. The effect of differential rater function over time (DRIFT) on objective structured clinical examination ratings. *Med Educ* 2009; 43(10): 989-92.
- [41] Ruesseler M, Weinlich M, Muller MP, *et al.* Simulation training improves ability to manage medical emergencies. *Emerg Med J* 2010; 27(10): 734-8.
- [42] Mooney CJ, Lurie SJ, Lyness JM, Lambert DR, Guzick DS. Development of an audit method to assess the prevalence of the ACGME's general competencies in an undergraduate medical education curriculum. *Teach Learn Med* 22(4): 257-61.
- [43] Davis MH, Harden RM. Planning and implementing an undergraduate medical curriculum: the lessons learned. *Med Teach* 2003; 25(6): 596-608.
- [44] Fitzinger S. Perceptions of vaccine safety among parents and guardians of children in Vienna, Austria: Differences in the attitudes towards specific vaccines in the Austrian immunization schedule. Vienna: Medical University of Vienna; 2010.
- [45] Helfert S. Perceptions of vaccine safety among parents and guardians of children and adolescents in Vienna, Austria: -Impact of the parent-physician relationship on the acceptance of recommended vaccines. Vienna: Medical University of Vienna; 2010.
- [46] Yun JA. Perceptions of vaccine safety among parents and guardians of children in Vienna, Austria: Impact of the parents' socio-cultural background on the acceptance of recommended vaccines. Vienna: Medical University of Vienna; 2010.
- [47] Brix M. Perceptions of vaccine safety among parents and guardians of children and adolescents in Vienna, Austria: Comparison with survey results from Kazakhstan and Uzbekistan. Vienna: Medical University of Vienna; 2010.
- [48] Schoenewald C, Hughes C, Bohnert L. Vaccine information statements. Are federal guidelines being followed? *Adv Nurse Pract* 2003; 11(2): 63-6.
- [49] Work EAfSaHa. Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC) osha.europa.eu2000 [cited 2014 April 17].
- [50] Gillon HJ, Armstrong BG, Fiese MA. Before you give that vaccination. *Nursing.* 2006; 36(11): 54-7.