ORIGINAL ARTICLE

The Foundation in Evidence of Medical and Dental Telephone Consultations

Martina Albrecht, Florian Isenbeck, Jürgen Kasper, Ingrid Mühlhauser, Anke Steckelberg

SUMMARY

Background: Patients can only make well-informed decisions if the information they are given by health professionals is based on scientific evidence. In this study, we assessed the foundation in evidence of free, publicly available telephone consultations in Germany.

Methods: From March 2013 to January 2014, four hidden clients seeking information asked standardized questions about three medical topics (screening for colorectal cancer, for glaucoma, and for trisomy 21) and three dental ones (the sealing of dental fissures, professional dental cleaning, and mercury detoxification). Depending on the topic, the questions addressed such issues as the risk of disease and the purpose, content, validity, benefits, and risks of potential diagnostic and therapeutic measures. All identifiable telephone consultation services that provided counselling on the above topics were included in the study (23 government-sponsored institutions, 31 institutions independently run by physicians, 521 institutions under religious auspices, 25 dental counselling services).

Results: Of the 599 telephone consultation services that were identified, 567 were contacted; 404 did not offer any relevant counselling. A total of 293 conversations were held with the remaining 163 consultation services. Six of these conversations fully met predefined criteria for evidence-based counselling. The percentage of appropriate answers to the key questions on each topic was 5% for colorectal cancer screening (7/140), 23.8% for glaucoma screening (25/105), 33.9% for trisomy 21 screening (121/357), 27.5% for the sealing of dental fissures (28/102), 16.2% for professional dental cleaning (19/117), and 12.9% for mercury detoxification (12/93). The percentage of appropriate answers also varied depending on the type of institution: 26.8% for government-sponsored institutions (67/250), 4.5% for institutions independently run by physicians (4/88), and 31.1% for institutions under religious auspices (82/264).

Conclusion: The medical and dental counselling now offered over the telephone by the types of institutions included in this study does not satisfy the criteria for evidence-based health information.

► Cite this as:

Albrecht M, Isenbeck F, Kasper J, Mühlhauser I, Steckelberg A:
The foundation in evidence of medical and dental telephone consultations.
Dtsch Arztebl Int 2016; 113: 389–95. DOI: 10.3238/arztebl.2016.0389

Patients in Germany want to receive detailed information and be involved in medical decision processes (1, 2). According to the German law on patients' rights they are entitled to evidence-based health information (3).

National and international working groups have defined criteria for evidence-based health information with the aim of enabling informed decision making (4–7). The same standards apply to telephone consultations (5). Information enabling the patient to evaluate the potential benefit and adverse effects of a diagnostic or therapeutic intervention is particularly relevant in this context.

The number of persons contacting the Independent Patient Counselling Service Germany (*Unabhängige Patientenberatung Deutschland*, UPD) is increasing year on year and reached around 80 500 consultations in 2015 (8). The proportion of telephone inquiries was around 80% (8). Telephone calls also represent the majority of inquiries to the Cancer Information Service (*Krebsinformationsdienst*, KID) of the German Cancer Research Center (82% of 32 774 contacts in 2010) (9). Clarimedis, the information service of the large statutory health insurance provider AOK, receives around half a million telephone calls each year (10).

There are many other sources of free counselling on health-related topics in Germany that can be contacted by telephone.

Previous analyses of these services by means of user surveys and the use of “hidden clients” have served primarily to ascertain demand and have focused mainly on the availability of the counsellors, the target groups reached, and the subjective satisfaction of those seeking advice (11–14).

While doctor–patient communication and information materials for patients have been researched in depth, there are only isolated publications investigating to what extent the content and communication of health-related information provided to patients and consumers is founded on evidence (15–17). Studies from the Max Planck Institute for Human Development in Berlin report considerable deficiencies in the advice given personally to patients. In a 1998 study on the quality of information given by Aids consultation services to clients at low risk of infection, half of the 20 advisors who were questioned falsely stated that a

Faculty of Mathematics, Informatics, and Natural Sciences, Health Sciences and Education, University of Hamburg: Albrecht, Isenbeck, Prof. Kasper, Prof. Mühlhauser, Dr. Steckelberg

Faculty of Health Sciences, Department of Health and Care Sciences, University of Tromsø, Norway: Prof. Kasper

positive test result definitely indicated HIV infection even in the case of low risk (15). A recent study by the same investigators shows that the quality of information has not improved (17). Moreover, physicians' understanding of health statistics is poor (18, 19).

The consumer protection center of the city of Hamburg sent sham patients to a number of medical specialists and reported that deficient information was given in a high proportion of consultations (20–22).

In contrast to these investigations of the personal advice given by physicians, we were unable to identify any studies on the foundation in evidence of telephone consultations.

We therefore set out to evaluate the quality of telephone consultations on selected health topics by means of inquiries by hidden clients. We investigated whether the information they were given fulfilled the criteria for evidence-based health information.

Methods

Study design

The study took the form of a telephone survey in which male and female hidden clients asked standardized questions.

Sample and setting

Our goal was to include as wide a spectrum as possible of the groups offering telephone consultation on medical and dental topics in Germany. To this end, we strove to identify, by means of internet searches, all telephone counselling services available to the general public free of charge (*eBox 1*).

The following were excluded from the outset:

- Advice hotlines of medical or dental companies and organizations with commercial interests
- Websites where written questions can be submitted to experts
- Services offered by statutory health insurance providers, because these are generally open only to those insured by the respective provider
- Second opinion hotlines on the subject of dental prostheses, because the standardized inquiries in our study all related to preventive measures

The contact details (telephone number, times available) of all eligible consultation services were documented.

The sample for medical topics embraced consultation services ($n = 574$) offered by the UPD, the KID, the medical associations (MA), the associations of statutory health insurance physicians (ASHIP), and denominational groups (Donum Vitae and the *Diakonie* [the social welfare organization of Germany's Protestant churches]) (*eFigure*). For dental topics we included consultation services ($n = 25$) of the federal state dental associations (DA), the associations of statutory health insurance dentists (ASHIP), and the Dental Consumers' and Patients' Advisory Service of the Working Group on Dental Health (*Zahnärztliche Verbraucher- und Patientenberatung der Arbeitsgemeinschaft Zahngesundheits*).

Following initial contact and determination of the principal topics covered by each telephone service, denominational facilities that confined themselves to counselling on pregnancy options or offered only face-to-face consultation were excluded ($n = 404$) (*eFigure*).

Topics

Topics were selected for which evidence was available and which were of wide interest or had been the subject of recent media coverage. We aimed to include a wide range of consultation facilities. The chosen topics included both interventions covered by the statutory health insurance providers and services for which the clients would have to pay out of their own pocket.

The medical topics were bowel cancer screening with colonoscopy, glaucoma screening with measurement of internal ocular pressure, and screening for trisomy 21 with amniocentesis. The dental topics were fissure sealing, professional cleaning, and mercury detoxification.

The content of the inquiries varied depending on the topic. For the medical consultations the following aspects were included: risk of illness, test quality, benefit and harm, underlying evidence, and further sources of information. For dental topics, the areas addressed were: aim of intervention, elements and course of intervention, benefits and adverse effects, and further sources of information.

Development of standardized inquiries and survey instruments

Regarding the content of the inquiries, three or four so-called central queries were formulated. The correct answers were determined using the methods of evidence-based medicine (for details see *eBox 2*). Next, standards for counselling were drawn up according to the criteria for evidence-based health information (4). Each standard response contained the required information (23) presented in such a way as to be readily understandable to the lay person (4, 5). For risk of illness and other numerical data, we defined ranges within which the answers should lie (*Table*). All responses outside these ranges were defined as under- or over-estimates.

Pilot phase and training

In a pilot phase, two of us (M.A. and F.I.) tested the standardized inquiries and documentation forms by making telephone calls to experts (qualified dental assistants $n = 5$, dentists $n = 2$, midwives $n = 2$, ophthalmologist $n = 1$, primary care physician $n = 1$, gastroenterologist $n = 1$) under realistic conditions. The aim was to ensure that the inquiries were expressed in a natural-sounding way and in lay language. In an iterative process, they were revised until information saturation was achieved. Supplementary questions were asked to make the conversation appear authentic, but these were not included in later analysis.

The hidden clients were students of health sciences (age 24–35 years) who were learning to become teachers at vocational schools. A female bachelor's

TABLE 1

Rate of adequate answers and correct content per central query

Central query (abbreviated)	Adequate answer according to consultation standard (abbreviated)	Question asked (n)	Adequate* ¹ answer (n)	Correct content (n)
Bowel cancer screening (colonoscopy)				
How common is bowel cancer at my age? (woman, 56 years old)	Ten-year risk: <1%	35	3	14
If the examination doesn't show anything, do I definitely not have bowel cancer? How accurate is the examination?	At least one quality criterion is stated: sensitivity: 90–99%; specificity: 95 to <100%; PPV: 8–14%; NPV: 95 to <100%	35	3	3
Is it clear that people benefit from having this done? Does it reduce the number of people who die of bowel cancer?	The benefit cannot be quantified, because no randomized controlled trials have yet been published. This uncertainty is mentioned.	35	1	1
Are there also risks involved with colonoscopy? How often do things like that happen?	Death and at least one further major risk factor (perforation, bleeding) are mentioned and the probability of at least one complication occurring is specified. Bleeding (0.2–0.3%); perforation (0.01–0.1%)	35	0	3 ²
Glaucoma screening (tonometry)				
Is glaucoma common at my age? How common? (woman, 42 years old)	Age-specific prevalence (42 years): <1%	35	9	9
Does the examination show that for sure? How accurate is it?	At least one quality criterion is stated: sensitivity: 40–60%; specificity: 89–97%; PPV: 1–15%; NPV: 99–99.9%; false-positive rate: 3–11%	35	3	3
Is it clear that the measurement (internal ocular pressure) helps people at all?	Reference is made to the lack of certainty on this issue (no conclusive studies have yet been published).	35	13	13
Trisomy 21 screening (amniocentesis)				
At my age (34 years), how high is the risk that my baby will have Down syndrome?	The risk of 0.1–0.4% is stated.	119	38	38
Are the results of amniocentesis reliable?	The test accuracy of 99–99.95% is stated.	119	10	54 ³
Could amniocentesis lead to me losing my baby?	The intervention-related rate of loss (0.3–1.5%) is stated.	119	73	73
Fissure sealing				
Why is fissure sealing done?	Prevention of tooth decay on the chewing surfaces	34	27	27
And there would never be a cavity in that tooth?	Risk reduction of 40–60% is stated. (Without sealing, the risk of tooth decay on the chewing surfaces of molars within 9 years is 77%.)	34	0	0
How is the sealing done?	Reference is made to the elementary importance of dryness of the area concerned and to the equivalence of absolute and relative dryness.	34	1	1
Professional dental cleaning				
What does professional cleaning consist of?	Training/practice in oral hygiene and/or use of oral hygiene aids are specified as a component of professional dental cleaning.	39	15	15
Is the cleaning a good thing? Would it help me?	Reference is made to the lack of certainty on this issue, or it is pointed out that benefit is achieved only if the patient receives training and takes care of his/her oral hygiene at home.	39	3	3
Are there any reasons not to have the cleaning done? In the long term?	Reference is made to the lack of studies or to suspected adverse effects.	39	1	1
Mercury detoxification				
What is mercury detoxification? What does it aim to achieve?	Increased elimination of mercury from the body or reduction of the mercury concentration in the body	31	11	11
Will the detoxification help me? How well does it work?	Studies have been published only for chelate formers (dimercaptosuccinic acid and dimercaptopropanesulfonic acid), whose efficacy has not been confirmed.]	31	1	1
Are there any adverse effects?	Adverse effects are described in numerical terms (depending on the substance used).	31	0	0

PPV, positive predictive value; NPV, negative predictive value

*¹ Content correct according to current state of knowledge and expressed in a way intelligible to the lay person

² Correct statement of adverse effects (death, bleeding, or perforation)

³ Communication of almost 100% accuracy

BOX 1

Example of a central query: prevalence of bowel cancer

Question: Is that important at my age (I'm 56 years old)?

How common is bowel cancer at my age?

(General population, no risk factors. If prompted, specify:

"there's never been anyone in my family with [...] or similar)

- Numerical data (possibly stating age group: _):
 - X of Y get bowel cancer (_ of 100/1000/10 000/ _)
(note any time period mentioned _)
 - percentage: _%
 - absolute value: _
 - annual incidence: _
- Verbal description (free text): _

Supplementary question: What do you mean by... (e.g., rare, common)?

student, two female master's students, and a male with a master's degree were trained individually for all inquiries. Their training comprised an introduction to the standardized inquiries, pseudonymization, and documentation of the consultations. The telephone conversations were then practiced in the form of role-play under realistic conditions.

Data acquisition

For the medical topics, we set out to put the three inquiries to at least two counsellors at each local branch of each consultation service. The only exceptions were the KID (bowel cancer screening only) and the denominational organizations (trisomy 21 only).

For the dental topics, our aim was to pose all three inquiries to all (at least two) of the counsellors at every branch of each consultation service. Each part of the survey was ended at the conclusion of the predefined period (dental topics: March to June 2013; medical topics: July 2013 to January 2014).

The hidden client's telephone number was always withheld. The conversation began with the reason for calling. In cases where the caller's age or sex did not match the topic, the explanation was that the inquiry was being made on behalf of someone else, e.g., a female relative. After asking whether the counsellor could give information as a doctor, the hidden client followed up with the central queries (see *Box 1* for an example) and supplementary questions, some of which were predefined. The central queries are reproduced in *eBox 3*. Finally, the hidden client requested information material about the content of the consultation and asked about further sources of information or the addresses of relevant institutions.

During and immediately after the conversation, the hidden client noted on the documentation form the information given. Audio recording was prohibited because it would have contravened the German law on

data protection. To avoid duplication, the pseudonymization codes contained information on the organization and on the individual counsellor consulted. Because the consultation services are partly staffed by non-medical personnel who are neither qualified nor authorized to dispense medical advice, e.g., lawyers, it was decided in advance that conversations with such counsellors could be terminated prematurely and not be included in later analysis.

Outcome parameters

The primary outcome parameter was evidence-based counselling. A consultation was considered to be founded on evidence if the information regarding all central queries (three or four per topic) was correct and understandable for lay persons (consultation standards). The secondary outcome parameters were adequate answers to the individual central queries and information on further sources.

Answers to the central queries were coded as adequate if they were both correct (i.e., reflected the current state of knowledge) and intelligible to lay persons. Answers about test quality were coded as correct when one criterion of test quality (sensitivity, specificity, positive predictive value, negative predictive value) was communicated with a correct numerical value. By intelligible to lay persons, we mean expression of numerical data as percentages or X out of Y (e.g., 1 out of every 100 people). An example of coding is given in *eBox 4*.

A consultation was classified as being founded on evidence if all central queries were answered adequately according to the consultation standard.

Analysis

Two of us (M.A. and A.S.) analyzed the documented contents of the consultations separately in a blinded fashion. Codes were assigned according to the defined consultation standards and coding discrepancies were resolved by discussion.

To ensure anonymity of the consultation services, those providing information on medical topics were grouped into publicly funded organizations (UPD, KID), services offered autonomously by physicians (MA, ASHIP), and denominational organizations (Donum Vitae, *Diakonie*). The organizations supplying counselling on dental topics were not divided into subgroups.

For the primary outcome parameter, the results are presented as frequency of evidence-based consultations. For the secondary outcome parameters, the results are expressed as proportions of adequate answers in relation to the individual topics and the provider groups. The statistical software PASW version 22 was used for all calculations.

Ethics and data protection

The study protocol was presented to the data protection authority responsible for all universities and colleges in Hamburg and to the ethics committee of the Hamburg

Medical Association. The data protection officer approved the study. Audio recordings of the consultations were prohibited by the German law on data protection. To protect the anonymity of the individual counsellors, the results of individual consultation services cannot be presented. In order to avoid distortion of the results, the consultation services were not informed of our study in advance.

The ethics committee stated that its approval was not required because the study contained no scientific research on humans.

Results

The survey of medical telephone consultations took place between July 2013 and January 2014. Contact was established with 542 of the 574 identified local branches of the consultation services, and of these 542, 138 were included. Altogether, 189 of 211 documented consultations were analyzed. The remaining 22 conversations were ended prematurely after the counsellors stated they were unable to give medical information.

In the dental survey, from March to June 2013, all 25 identified branches of the consultation services were contacted. Altogether, 104 consultations were included in the analysis. Five consultations were excluded because the counsellors could not provide information on dental topics (*eFigure*). The qualifications of all counsellors are summarized in *eTable 1*.

Primary outcome parameter

Six of the 189 completed consultations on medical topics and none of the 104 consultations on dental concerns fulfilled the defined standard for foundation in evidence. Five of the six evidence-based consultations were with counsellors from publicly funded organizations on the topics of glaucoma screening ($n = 4$) and trisomy 21 screening ($n = 1$). The sixth evidence-based consultation was with a denominational organization on the subject of trisomy 21 screening.

Secondary outcome parameters

The rate of adequate answers to the central queries was 5% (7 of 140) for bowel cancer screening, 23.8% (25 of 105) for glaucoma screening, 33.9% (121 of 357) for trisomy 21 screening, 27.5% (28 of 102) for fissure sealing, 16.2% (19 of 117) for professional dental cleaning, and 12.9% (12 of 93) for mercury detoxification.

The rate of adequate answers to the central queries on medical topics was 26.8% (67 of 250) for publicly funded organizations, 31.1% (82 of 264) for denominational organizations, and 4.5% (4 of 88) for services offered autonomously by physicians.

The *Table* gives an overview of the adequately and correctly answered central queries on all six topics. The incidence of under- or overestimation and the frequency of false or missing responses are shown in *eTable 2*.

The answers to the question "Where does this information come from?" revealed a broad spectrum of sources. These included, among others, personal experience or opinion, the internet, patient information

leaflets, specialist media, training courses, and scientific studies/investigations. The numbers of counsellors who provided inaccurate information despite claiming scientific findings were 15 of 31 (professional dental cleaning), 2 of 5 (mercury detoxification), 10 of 23 (bowel cancer screening), 2 of 14 (glaucoma screening) and 5 of 46 (amniocentesis).

Information sources

In 278 of the 293 telephone consultations analyzed, when prompted the counsellor provided details of persons, institutions, or other sources where further information on the topic in question could be obtained (*eTable 3*).

Discussion

The telephone consultations on medical and dental topics provided by the organizations we included in this study do not currently meet the criteria for evidence-based health information. With regard to both content and presentation, the findings of recent research are largely ignored.

Strengths and limitations

For the test inquiries we selected topics for which evaluated evidence-based health information (24, 25) and other sources of syntheses of evidence (26–30) were freely accessible. All counsellors therefore had access to these data or could call the client back to complete the consultation.

The inclusion of a large and representative number of local branches of the telephone consultation services we covered means that our results have high validity for these organizations.

Although a telephone consultation differs from other ways of furnishing information, it is subject to the same criteria for evidence-based risk communication (5).

Health insurance providers could not be included among the organizations covered, because their consultation services are open only to their members. For some of the organizations we were unable to complete the planned number of consultations. Moreover, no valid comparison of individual organizations is possible. On the one hand, the content and scope of the inquiries were not directly comparable; on the other, the impact of the respective organizations' internal arrangements could not be quantified.

The conversations could not be recorded without contravening the German law on data protection. However, the pilot phase showed that our documentation procedure entailed no relevant loss of information. Nevertheless, from the point of view of ethics it needs to be discussed how future investigations of this nature can protect workers' rights but also prevent patients from receiving substandard counselling.

The significance of the results

This study complements and supports the findings of previous research into the quality of personal consultations on Aids and mammography, which has revealed grave

KEY MESSAGES

- The criteria for evidence-based health information apply also in the context of consultation.
- Telephone consultations on medical and dental topics currently fail to meet the criteria for evidence-based health information.
- The information conveyed fails to provide an adequate basis for informed decisions.
- The providers of telephone consultation services must give their counsellors access to the health information and data syntheses they need to do their job.
- There is a lack of proper training courses for counsellors; such courses should be oriented on the recognized standards of evidence-based medicine and observe the defined criteria for health information.

deficiencies (15, 17, 31) despite the existence of defined obligations and clear concepts. For instance, the professional bodies representing dentists in Germany have defined principles to be observed in dental consultations (32). These target both the expertise of the counsellors, who should be in a position to provide a “consultation commensurate with the latest findings in dental science,” (first principle) and the intelligibility of the information for the patient (eighth principle).

However, differing findings regarding the UPD were presented in a recently published evaluation report. In each of the four phases of the survey one or two scenarios were employed for the test topic medicine and health. The rates of correct answers in the four phases were 90%, 76%, 59%, and 78% (12). To what extent the queries were geared towards evidence-based information—and thus yielded results comparable with our findings—is unclear.

Implications for practice

The results point to room for improvement in the provision of medical and dental telephone consultations. The counsellors seem not to be taking specific advantage of the evidence-based information and data syntheses that are available and do not always possess the expertise required. The methods of evidence-based medicine, including the compilation and use of health data, must be systematically integrated into the counsellors' training plans.

In Germany, the German Evidence-Based Medicine Network (*Deutsches Netzwerk Evidenzbasierte Medizin*) has recently published a revised and extended version of its “Good Practice Guidelines for Health Information” (5). This document explicitly demands transparency of the procedures for compilation and communication of health information. Providers of telephone consultation services for patients should fulfill these criteria.

Acknowledgments

The authors thank Birgit Müller, Raphaela Wiedemann, Anna Geiling, and Anto Cetina (M. Ed.) for their help with acquisition of data in the context of telephone consultations.

Conflict of interest statement

Mrs Albrecht, Dr. Steckelberg, Prof. Mühlhauser, and Prof. Kasper have, in the course of their work on evidence-based medicine and evidence-based health information, carried out a number of research projects in cooperation with statutory health insurance providers, communal organizations, and public sponsors. The funds provided went to the university. In connection with these studies honoraria were paid and/or travel costs were reimbursed. In connection with private activity for his institute for communication, Prof. Kasper has received honoraria from public funds for designing training in evidence-based counselling to patients and for scientific services. Mr. Isenbeck declares that no conflict of interest exists.

Translated from the original German by David Roseveare

Manuscript submitted on 15 July 2015, revised version accepted on 9 February 2016

REFERENCES

1. Hamann J, Neuner B, Kasper J, et al.: Participation preferences of patients with acute and chronic conditions. *Health Expect* 2007; 10: 358–63.
2. Braun B, Marstedt G: Partizipative Entscheidungsfindung beim Arzt: Anspruch und Wirklichkeit. In: Böcken J, Braun B, Meierjürgen R (eds.): *Gesundheitsmonitor 2014. Bürgerorientierung im Gesundheitswesen*. Gütersloh: Verlag Bertelsmann Stiftung 2014; 107–31.
3. Gesetz zur Verbesserung der Rechte von Patientinnen und Patienten, vom 20. Februar 2013. In: *Bundesgesetzblatt (BGBl.)* 2013; 277.
4. Bunge M, Mühlhauser I, Steckelberg A: What constitutes evidence-based patient information? Overview of discussed criteria. *Pat Educ Couns* 2010; 78: 316–28.
5. Deutsches Netzwerk Evidenzbasierte Medizin e. V., Arbeitsgruppe Gute Praxis Gesundheitsinformation: *Gute Praxis Gesundheitsinformation. Z Evid Fortbild Qual Gesundheitswes* 2016; 110: 85–92.
6. Trevena LJ, Davey HM, Barratt A, Butow P, Caldwell P: A systematic review on communicating with patients about evidence. *J Eval Clin Pract* 2006; 12: 13–23.
7. International Patient Decision Aids Standards (IPDAS) Collaboration. <http://ipdas.ohri.ca/> (last accessed on 28 January 2016).
8. Unabhängige Patientenberatung Deutschland: *Monitor Patientenberatung 2015*. www.patientenbeauftragter.de/images/pdf/Monitor_Patientenberatung_2015bf.pdf (last accessed on 28 January 2016).
9. Krebsinformationsdienst: Nutzerstatistik 01.01.2010–31.12.2010. www.krebsinformationsdienst.de/aufbewahrung/statistik-2010.pdf (last accessed on 28 January 2016).
10. AOK-Clarimedis: Nutzerzahlen. www.aok.de/niedersachsen/gesundheitsinformation/aok-clarimedis-frage-der-woche-210871.php (last accessed on 26 January 2016).
11. Niekusch U, Wagner C, Klett M: Unabhängige zahnärztliche Patientenberatung – Erfahrungen aus der Beratungsstelle für den Rhein-Neckar-Kreis. *Gesundheitswesen* 2006; 68: 18–25.
12. IGES Institut GmbH (ed.): Deckenbach B, Rellecke J, Stöppler C: Externe Evaluation der neutralen und unabhängigen Verbraucher- und Patientenberatung nach § 65b SGB V. www.gkv-spitzenverband.de/media/dokumente/krankenversicherung_1/praevention_selbsthilfe_beratung/beratung/Evaluation_der_NUVP_Abschlussbericht_IGES_10-2015.pdf (last accessed on 28 January 2016).
13. Dierks ML, Haverkamp A, Hofmann W, Kurtz V, Seidel G: Evaluation der Modellprojekte zur unabhängigen Patienten- und Verbraucherberatung nach §65b SGB V. Hannover: Medizinische Hochschule Hannover 2006.

14. Kurtz V: Qualität telefonischer Patientenberatung zu präventiven Gesundheitsthemen. Ergebnisse einer Hidden Client-Untersuchung (Masterarbeit). München: GRIN-Verlag 2006.
15. Gigerenzer G, Hoffrage U, Ebert A: AIDS counselling for low-risk clients. *AIDS Care* 1998; 10: 197–211.
16. Bryant AG, Levi EE: Abortion misinformation from crisis pregnancy centers in North Carolina. *Contraception* 2012; 86: 752–6.
17. Prinz R, Feufel MA, Gigerenzer G, Wegwarth O: What counselors tell low-risk clients about HIV test performance. *Curr HIV Res* 2015; 13: 369–80.
18. Wegwarth O, Gigerenzer G: Mangelnde Statistikkompetenz bei Ärzten. In: Gigerenzer G, Muir Gray JA (eds.): *Bessere Ärzte, bessere Patienten, bessere Medizin: Aufbruch in ein transparentes Gesundheitswesen* (Strüngmann Forum Reports). Berlin: Medizinisch Wissenschaftliche Verlagsgesellschaft 2013; 137–51.
19. Wegwarth O, Schwartz LM, Woloshin S, Gaissmaier W, Gigerenzer G: Do physicians understand cancer screening statistics? A national survey of primary care physicians. *Ann Int Med* 2012; 156: 340–9.
20. Verbraucherzentrale Hamburg: „Sie haben eine sehr schöne Brust. Da kann man alles machen.“ www.vzh.de/gesundheits/96503/2010-11-15_Schoenheitsprojekt.pdf (last accessed on 28 January 2016).
21. Verbraucherzentrale Hamburg: Beratung bei Hamburger Orthopäden: Note 3,9. www.vzh.de/gesundheits/335196/Orthop%C3%A4dentest_vzh_2014.pdf (last accessed on 28 January 2016).
22. Verbraucherzentrale Hamburg: „Wenn Sie diese Zahnlücke nicht behandeln lassen, fallen Ihnen bald alle Zähne aus!“ www.vzh.de/gesundheits/293166/2013-01-17_Zahn%C3%A4rztetest.pdf (last accessed on 28 January 2016).
23. General Medical Council: Consent: patients and doctors making decisions together. www.gmc-uk.org/static/documents/content/Consent_-_English_1015.pdf (last accessed on 28 January 2016).
24. Steckelberg A, Hülfehaus C, Haastert B, Mühlhauser I: Effect of evidence-based risk information on „informed choice“ in colorectal cancer screening: a randomised controlled trial. *BMJ* 2011; 342: d3193.
25. Steckelberg A, Mühlhauser I: Darmkrebs Früherkennung. www.gesundheit.uni-hamburg.de/upload/Barmer_Darmkrebsbrochure.pdf (last accessed on 8 April 2016).
26. IGeL-Monitor: Professionelle Zahnreinigung. www.igel-monitor.de/IGeL_A_Z.php?action=abstract&id=74 (last accessed on 28 January 2016).
27. IGeL-Monitor: Messung des Augeninnendrucks zur Glaukom-Früherkennung. www.igel-monitor.de/pdf_bewertungen/Messung%20des%20Augeninnendrucks_Evidenzsynthese.pdf (last accessed on 28 January 2016).
28. Deutsche Gesellschaft für Zahn-, Mund- und Kieferheilkunde: S3-Leitlinie Fissuren- und Grübchenversiegelung. 2010. www.awmf.org/uploads/tx_szleitlinien/083-002l_S3_Fissuren-Gruebchenversiegelung-2010-abgelaufen.pdf (last accessed on 28 January 2016).
29. Bundesinstitut für Qualität im Gesundheitswesen: Professionelle Zahnhygiene. Quick Assessment. www.goeg.at/cxdata/media/download/berichte/Professionelle_Dentalhygiene.pdf (last accessed on 28 January 2016).
30. Alfrevic Z, Mujezinovic F, Sundberg K: Amniocentesis and chorionic villus sampling for prenatal diagnosis. *Cochrane Database Syst Rev* 2003; 3: CD003252.
31. Wegwarth O, Gigerenzer G: „There is nothing to worry about“: Gynecologists' counseling on mammography. *Pat Educ Couns* 2011; 84: 251–56.
32. Bundeszahnärztekammer/Kassenzahnärztliche Bundesvereinigung: Patienten im Mittelpunkt: Die Patientenberatung der Zahnärzteschaft in Deutschland. www.bzaek.de/fileadmin/PDFs/pati/patientenberatung_zahnaerzte.pdf (last accessed on 28 January 2016).

Corresponding author

Martina Albrecht
MIN-Fakultät, Gesundheitswissenschaften
Universität Hamburg
Martin-Luther-King-Platz 6
20146 Hamburg, Germany
martina.albrecht@uni-hamburg.de

Supplementary material
For eReferences please refer to:
www.aerzteblatt-international.de/ref2216
eTables, eBoxes:
www.aerzteblatt-international.de/16m0389

Erratum

In the article “Health and Disease at Age 100: Findings From the Second Heidelberg Centenarian Study” by Daniela S Jopp et al. (*Dtsch Arztebl Int* 2016; 113: 203–10, issue 12), the paragraph on pain severity on page 208 requires additional information. The sentence should be completed as follows (bold type): “Of those reporting pain **and of whom information on pain severity was available (n=58)**, most said that their pain was “bearable” (57%); four (7%) had mild pain.” MWR

Supplementary material to:

The Foundation in Evidence of Medical and Dental Telephone Consultations

by Martina Albrecht, Florian Isenbeck, Jürgen Kasper, Ingrid Mühlhauser, and Anke Steckelberg

Dtsch Arztebl Int 2016; 113: 389–95. DOI: 10.3238/arztebl.2016.0389

eREFERENCES

- e1. Scottish Intercollegiate Guidelines Network (SIGN) (2015): Critical appraisal: Notes and checklists. www.sign.ac.uk/methodology/checklists.html (last accessed on 28 January 2016).
- e2. Higgins JPT, Altman DG, Sterne JAC: Assessing risk of bias in included studies. In: Higgins JPT, Green S (eds.): *Cochrane handbook for systematic reviews of interventions*. Version 5.1.0 (updated March 2011). The Cochrane Collaboration 2011; www.cochrane-handbook.org (last accessed on 28 January 2016).
- e3. Robert Koch-Institut, Gesellschaft der epidemiologischen Krebsregister in Deutschland e. V.: Beiträge zur Gesundheitsberichterstattung des Bundes: Krebs in Deutschland 2007/2008. 2012. www.rki.de/DE/Content/Gesundheitsmonitoring/Gesundheitsberichterstattung/GBEDownloadsB/KID2012.pdf?__blob=publicationFile (last accessed on 7 July 2015).
- e4. Pickhardt PJ, Hassan C, Halligan S, Marmo R: Colorectal cancer: CT colonography and colonoscopy for detection: systematic review and meta-analysis. *Radiology* 2011; 259: 393–405.
- e5. Ludwig Boltzmann Institut: Screening for colorectal cancer, part 1: screening tests and program design. HTA 41a 2012. http://eprints.hta.lbg.ac.at/981/1/HTA-Projektbericht_Nr.41a_Update_2012.pdf (last accessed on 7 July 2015).
- e6. Bretthauer M: Colorectal cancer screening. *J Intern Med* 2011; 270: 87–98.
- e7. Crispin A, Birkner B, Munte A: Process quality and incidence of acute complications in a series of more than 230,000 outpatient colonoscopies. *Endoscopy* 2009; 41: 1018–25.
- e8. Warren JL, Klabunde CN, Mariotto AB, et al.: Adverse events after outpatient colonoscopy in the medicare population. *Ann Intern Med* 2009; 150: 849–57.
- e9. Burr JM, Mowatt G, Hernandez R: The clinical effectiveness and cost-effectiveness of screening for open angle glaucoma: a systematic review and economic evaluation. 2007. www.hta.ac.uk/fullmono/mon1141.pdf (last accessed on 22 February 2013).
- e10. Ervin AM, Boland MV, Myrowitz EH, et al.: Screening for glaucoma: comparative effectiveness review 59. 2012. www.effectivehealthcare.ahrq.gov/ehc/products/182/1026/CER59_Glaucoma-Screening_Final-Report_20120524.pdf (last accessed on 22 April 2015).
- e11. Fleming C, Whitlock E, Beil T, et al.: Primary care screening for ocular hypertension and primary open-angle glaucoma: evidence syntheses 34. 2005. www.ncbi.nlm.nih.gov/books/NBK42905/ (last accessed on 22 April 2015).
- e12. Hatt SR, Wormald R, Burr J: Screening for prevention of optic nerve damage due to chronic open angle glaucoma. *Cochrane Database Syst Rev* 2006; 4: CD006129.
- e13. Moyer V: Screening for glaucoma, U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med* 2013; 159: 484–9.
- e14. Bray I, Wright DE, Davies C, Hook EB: Joint estimation of down syndrome risk and ascertain-ment rates: a meta-analysis of nine published data-sets. *Prenat Diagn* 1998; 18: 9–20.
- e15. Morris JK, Mutton DE, Alberman E: Revised estimates of the maternal age specific live birth prevalence of Down's syndrome. *J Med Screen* 2002; 9: 2–6.
- e16. Snijders RJM, Holzgreve W, Chuckle H, Nicolaides KH: Maternal age-specific risks for trisomies at 9–14 weeks gestation. *Prenat Diagn* 1994; 14: 543–52.
- e17. Loft A, Tabor A: Discordance between prenatal cytogenetic diagnosis and outcome of pregnancy. *Prenat Diagnosis* 1984; 4: 51–9.
- e18. Tabor A, Philip J, Madsen M: Randomised controlled trial of genetic amniocentesis in 4606 low-risk women. *Lancet* 1986; 1: 1287–93.
- e19. Ahovuo-Saloranta A, Forss H, Walsh T, Hiiri A, et al.: Sealants for preventing dental decay in the permanent teeth. *Cochrane Database Syst Rev* 2013; 3: CD001830.
- e20. Bravo M, Montero J, Bravo JJ, Baca P, Llodra JC: Sealant and fluoride varnish in caries: a randomized trial. *J Dent Res* 2005; 84: 1138–43.
- e21. Albani F, Ballesio I, Campanella V, Marzo V, Marzo G: Pit and fissure sealants: results at five and ten years. *Eur J Paediatr Dent* 2005; 6: 61–5.
- e22. Eidelman E, Fuks AB, Chosack A: The retention of fissure sealants: rubber dam or cotton rolls in a private practice. *ASDC J Dent Child* 1983; 50: 259–61.
- e23. Ganss C, Klimek J, Gleim A: One year clinical evaluation of the retention and quality of two fluoride releasing sealants. *Clin Oral Investig* 1999; 4: 188–93.
- e24. Griffin SO, Oong E, Kohn W, et al.: The effectiveness of sealants in managing caries lesions. *J Dent Res* 2008; 87: 169–74.
- e25. Lygidakis NA, Oulis KI, Christodoulidis A: Evaluation of fissure sealants retention following four different isolation and surface preparation techniques: four years clinical trial. *J Clin Pediatr Dent* 1994; 19: 23–5.
- e26. McConnachie I: The preventive resin restoration: A conservative alternative. *J Can Dent Assoc* 1992; 58: 197–200.
- e27. Straffon LH, Dennison JB, More FG: Three-year evaluation of sealant: effect of isolation on efficacy. *J Am Dent Assoc* 1985; 110: 714–7.
- e28. Wood AJ, Saravia ME, Farrington FH: Cotton roll isolation versus Vac-Ejector isolation. *ASDC J Dent Child* 1989; 56: 438–41.
- e29. Wright GZ, Friedman CS, Plotzke O, Feasby WH: A comparison between autopolymerizing and visible-light-activated sealants. *Clin Prev Dent* 1988; 10: 14–7.
- e30. Worthington HV, Clarkson JE, Bryan G, Beirne PV: Routine scale and polish for periodontal health in adults. *Cochrane Database Syst Rev* 2013; 11: CD004625.
- e31. Needleman I, Suvan J, Moles DR, Pimlott J: A systematic review of professional mechanical plaque removal for prevention of periodontal diseases. *J Clin Periodontol* 2005; 32 (Suppl 6): 229–82.
- e32. Bernhoft RA: Mercury toxicity and treatment: a review of the literature. *J Environ Public Health* 2012; Article ID 460508; doi: 10.1155/2012/460508.
- e33. Adams JB, Baral M, Geis E, et al.: Safety and efficacy of oral DMSA therapy for children with autism spectrum disorders: Part A—medical results. *BMC Clin Pharmacol* 2009; 9: 16.
- e34. Cao Y, Chen A, Jones RL, et al.: Efficacy of succimer chelation of mercury at background exposures in toddlers: a randomized trial. *J Pediatr* 2011; 158: 480–5.e1.
- e35. Grandjean P, Guldager B, Larsen IB, Jørgensen PJ, Holmstrup P: Placebo response in environmental disease. Chelation therapy of patients with symptoms attributed to amalgam fillings. *J Occup Environ Med* 1997; 39: 707–14.

- e36. Sandborgh Englund G, Dahlqvist R, Lindelöf B, et al.: DMSA administration to patients with alleged mercury poisoning from dental amalgams: a placebo-controlled study. *J Dent Res* 1994; 73: 620–8.
- e37. Schuur A, Exterkate R, ten Cate JM: Biological mercury measurements before and after administration of a chelator (DMPS) and subjective symptoms allegedly due to amalgam. *Eur J Oral Sci.* 2000; 108: 511–22.
- e38. Kaminski MF, Bretthauer M, Zauber AG, et al.: The NordICC Study: rationale and design of a randomized trial on colonoscopy screening for colorectal cancer. *Endoscopy* 2012; 44: 695–702.
- e39. Day LW, Kwon A, Inadomi JM: Adverse events in older patients undergoing colonoscopy: a systematic review and meta-analysis. *Gastrointest Endosc* 2011; 74: 885–96.
- e40. Pox CP, Altenhofen L, Brenner H, Theilmeier A, von Stillfried D, Schmiegeler W: Efficacy of a nationwide screening colonoscopy program for colorectal cancer. *Gastroenterology* 2012; 142: 1460–7.
- e41. Schmiegeler W, Pox C, Reinacher-Schick A, et al. S3-Leitlinie kolorektales Karzinom 2004/2008. *Zeitschrift für Gastroenterologie* 2008; 46: 1–73.
- e42. Sillars-Hardebol AH, Carvalho B, van Engeland M, Fijneman RJ, Meijer GA: The adenoma hunt in colorectal cancer screening: defining the target. *J Pathol* 2012; 226: 1–6.
- e43. Whitlock EP, Lin J, Liles E, et al.: Screening for colorectal cancer: an updated systematic review, evidence syntheses 65.1. 3, key questions & results. 2008. www.ncbi.nlm.nih.gov/books/NBK35186/ (last accessed on 7 July 2015).
- e44. Antony K, Genser D, Fröschl B: Erkenntnisgüte und Kosteneffektivität von Screeningverfahren zur Erfassung von primären Offenwinkel-Glaukomen. DIMDI-HTA 50 2007. http://portal.dimdi.de/de/hta/hta_berichte/hta144_bericht_de.pdf (last accessed on 8 July 2015).
- e45. Bahrami H. Causal inference in primary open angle glaucoma: specific discussion on intra-ocular pressure. *Ophthalmic Epidemiol* 2006; 13: 283–9.
- e46. Berufsverband der Augenärzte Deutschlands e. V., Deutsche Ophthalmologische Gesellschaft e.V.: Leitlinie Nr. 15 c: Detektion des primären Offenwinkelglaukoms (POWG): Glaukom-Screening von Risikogruppen, Glaukomverdacht, Glaukomdiagnose. 2006. www.augeninfo.de/leit/leit15c.pdf (last accessed on 28 April 2015).
- e47. Burr JM, Botello-Pinzon P, Takwoingi Y: Surveillance for ocular hypertension: an evidence synthesis and economic evaluation. 2012. www.ncbi.nlm.nih.gov/books/NBK100061/pdf/TOC.pdf (last accessed on 22 February 2013).
- e48. Claessen H, Genz J, Bertram B: Evidence for a considerable decrease in total and cause-specific incidences of blindness in Germany. *Eur Journal Epidemiol* 2012; 27: 519–24.
- e49. Foster PJ, Buhrmann R, Quigley HA, et al.: The definition and classification of glaucoma in prevalence surveys. *Br J Ophthalmol* 2002; 86: 238–42.
- e50. National Institute for Health and Clinical Excellence: Glaucoma: diagnosis and management of chronic open angle glaucoma and ocular hypertension. 2009. www.nice.org.uk/nicemedia/live/12145/43887/43887.pdf (last accessed on 22 April 2015).
- e51. Quigley HA: Glaucoma. *Lancet* 2011; 377: 1367–77.
- e52. Vass C, Hirn C, Sycha T, et al.: Medical interventions for primary open angle glaucoma and ocular hypertension. *Cochrane Database Syst Rev* 2007; 4: CD003167.
- e53. Wolfram C, Pfeiffer N: Glaukomerkrankungen in Rheinland-Pfalz 2010: Epidemiologie und Inanspruchnahme der Versorgung. *Ophthalmologie* 2012; 109: 271–6.
- e54. European Surveillance of Congenital Anomalies: EUROCAT-Prävalenz, -Daten, -Tabellen: Trisomie-21, Lebendgeburtenrate. 2010. www.eurocat-network.eu/accessprevalencedata/prevalenceables (last accessed on 8 April 2016).
- e55. Loane M, Morris JK, Addor MC, et al.: Twenty-year trends in the prevalence of Down syndrome and other trisomies in Europe: impact of maternal age and prenatal screening. *Eur J Hum Genet* 2013; 21: 27–33.
- e56. Los FJ, van Den Berg C, Wildschut HI, et al: The diagnostic performance of cytogenetic investigation in amniotic fluid cells and chorionic villi. *Prenat Diagn* 2001; 21: 1150–8.
- e57. Morris JK, Alberman E: Trends in Down's syndrome live births and antenatal diagnoses in England and Wales from 1989 to 2008: analysis of data from the National Down Syndrome Cytogenetic Register. *BMJ* 2009; 339: b3794.
- e58. Tabor A, Alfirevic Z: Update on procedure-related risks for prenatal diagnosis techniques. *Fetal Diagn Ther* 2010; 27: 1–7.
- e59. Waters JJ, Waters KS: Trends in cytogenetic prenatal diagnosis in the UK: results from UKNEQAS external audit 1987–1998. *Prenat Diagn* 1999; 19: 1023–6.
- e60. Brothwell DJ, Jutai DK, Hawkins RJ: An update of mechanical oral hygiene practices: evidence-based recommendations for disease prevention. *J Can Dent Assoc* 1998; 64: 295–306.

eBOX 1

Research strategies for identification of the organizations offering telephone consultation

The potential providers of free and publicly available consultations on dental and medical topics were known to the authors before commencement of the project: publicly funded organizations (the Independent Patient Counselling Service Germany [*Unabhängige Patientenberatung Deutschland*, UPD] and the Cancer Information Service of the German Cancer Research Center [*Krebsinformationsdienst*, KID]), medical/dental associations and associations of statutory health insurance physicians/dentists, denominational organizations, health insurance providers.

The individual branches of the various services and their contact details (telephone number, hours) were identified by means of an internet search. With regard to the consultation providers, the research strategies were as follows:

1. Publicly funded providers

- The home page of the UPD (www.patientenberatung.de) was accessed to identify the UPD branches nationwide (listed on www.patientenberatung.de/beratung-vor-ort/).
- The contact details for the KID were retrieved from the home page (www.krebsinformationsdienst.de).

2. Dental associations and associations of statutory health insurance dentists

- The home page of the German Dental Association (*Bundeszahnärztekammer*, BZAEK; www.bzaek.de) was accessed. On the pull-down menu “Patientenberatungsstellen” (www.bzaek.de/nc/fuer-patienten/patientenberatungsstellen.html) the individual federal states were selected and the branches of the consultation service offered by each state's dental association were identified.
- Next, the home page of the Association of Statutory Health Insurance Dentists (*Kassenzahnärztlichen Bundesvereinigung*, KZBV) was accessed (www.kzbv.de). Via a link on the pull-down menu “Patienten,” the list of branches of the consultation service was found (www.kzbv.de/beratungsstellen-fuer-patienten.759.de.html).
- The branches of the BZAEK und KZBV were compared and merged into one combined list.

3. Medical associations and associations of statutory health insurance physicians

- The home pages of the German Medical Association (*Bundesärztekammer*, BÄK; www.bundesaerztekammer.de) and the Association of Statutory Health Insurance Physicians (*Kassenärztlichen Bundesvereinigung*, KVB; www.kbv.de) were accessed. However, no reference to or list of nationwide patient consultation services could be identified.
- Next, therefore, the home pages of the medical associations and associations of statutory health insurance physicians of all federal states were accessed and searched.
- Finally, a Google search for the term “Patientenberatung” was conducted. Inspection of the first 300 items listed revealed no further hits.

4. Denominational organizations

- The branches of the consultation service offered by the organization “donum vitae: zur Förderung des Schutzes des menschlichen Lebens” (Donum Vitae) were identified via the home page www.donumvitae.org/beratung_fuer_schwangere_frauen.
- Via the home page of the social welfare organisation of Germany's Protestant churches (*Diakonie Deutschland*; www.diakonie.de/index.html), all branches offering telephone consultation on the topic of pregnancy were identified (list at: www.diakonie.de/service-navigator.html?action=map&consulting=1&l=0).

5. Health insurance providers

- The statutory health insurance providers were identified via the home page of the National Association of Statutory Health Insurance Funds (GKV-Spitzenverband).
- The link www.gkv-spitzenverband.de/service/versicherten_service/krankenkassenliste/krankenkassen.jsp leads to an up-to-date listing of all statutory health insurance providers. Direct links to the websites of the individual health insurance funds are provided.
- As part of the preparation for the survey, one of the authors (FI) contacted by telephone many of the then roughly 140 health insurance funds listed (if possible via an advice hotline). He was asked for either his health insurance number or his name and date of birth. He was then given no further information because he was not insured by the respective provider. As witnessed by various home pages, the health insurance funds advertise the fact that their consultation services are available exclusively to members.
- For this reason, it would have been necessary to either invent fictive insured persons in cooperation with the health insurance providers or to select the hidden clients according to their membership thereof. Therefore, statutory health insurance funds were excluded from the survey.

6. Free internet search for other services:

- Google searches for the terms “Patientenberatung” (“patient counselling”) and “Zahn” (“tooth”) were conducted, identifying the consultation service of the Dental Consumers' and Patients' Advisory Service of the Working Group on Dental Health (*Zahnärztliche Verbraucher- und Patientenberatung der Arbeitsgemeinschaft Zahngesundheit*; www.agz-rmk.de).

eBOX 2

Methods used to establish the underlying evidence regarding the inquiries

The methods of evidence-based medicine were used to define the correct answers to the central queries for each of the six selected topics.

First, a search strategy for each individual central query was developed. This facilitated the subsequent surveys of the medical databases Cochrane Library und PubMed. Both MeSH terms and free text were used in these searches, which were restricted to the relevant types of studies. The searches were limited to publications in German or English with no restriction on year of publication.

Furthermore, searches were carried out in databases of guidelines and health technology assessment documents (Association of the Scientific Medical Societies in Germany, National Institute for Health and Care Excellence, Agency for Healthcare Research and Quality, German Agency for Health Technology Assessment, Ludwig Boltzmann Institute–Health Technology Assessment) and in the resources of institutions that publish epidemiological data for Germany (federal government health reports, Robert Koch Institute, Association of Population-based Cancer Registries in Germany).

Each of the searches above was conducted independently by two of three authors (A.S., M.A., F.I.).

For questions regarding test quality we searched for validation studies; for benefit and harm, randomized controlled studies (RCTs) and meta-analyses (of RCTs). If the identified RCTs did not document harm, cohort studies were sought. Prevalence data were obtained or calculated from epidemiological studies or other sources of epidemiological information.

The identified studies were critically evaluated on the basis of established checklists (e1, e2) by two persons independently. Only studies with high-quality methodology were used for synthesis.

All of the sources used are listed in the eReferences. The principal sources for the central queries on each topic were as follows:

- Bowel cancer screening (colonoscopy): prevalence (e3), test quality (e4), benefit (e5, e6; no RCTs yet available), adverse effects (e7, e8)
- Glaucoma screening (tonometry): prevalence (e9), test quality (e9), benefit (e10–e13)
- Trisomy 21 screening (amniocentesis): prevalence (e14–e16), test accuracy (e17), adverse effects (30, e18)
- Fissure sealing: goal (28, e19), benefit (e19, e20), elements/procedure (e21–e29)
- Professional dental cleaning: elements (29), benefit (29, e30, e31), adverse effects (29, e30, e31)
- Mercury detoxification: goal (e32), benefit with DMPS/DMSA (e33–e37), benefit with EDTA and natural substances such as ramsons and coriander (no RCTs yet available), adverse effects (e33, e34, e36).

eBOX 3

Standardized inquiries

● Bowel cancer screening (with colonoscopy) (25, e3–e8, e38–e43)

- Introduction:
Hello, my name is ... My doctor has recommended me to have a colonoscopy to check for bowel cancer. I'm not sure I really want a colonoscopy and have a few questions...
- Question 1 on disease risk:
Is it really important at my age? I'm 56. How common is bowel cancer at that age?
Supplementary question: What do you mean by... (e.g., rare, common ...)?
- Question 2 on test quality (colonoscopy):
If the examination doesn't show anything, do I definitely not have bowel cancer? (How accurate is the examination?)
Supplementary question: What do you mean by... (e.g., quite safe, almost always reliable ...)?
- Question 3 on benefit: Is it clear that people benefit from having this done?
Supplementary question: Is that your opinion, or where are you getting the information from?
- Question 4 on adverse effects: That can't be very pleasant. Can anything go wrong?
Supplementary question: How often do things like that happen?
- Question 5 on information material, further sources:
That was a lot all at once. Can you recommend me anything to read, so I can think about it in peace and quiet?

● Glaucoma screening (with measurement of internal ocular pressure) (e9–e13, e44–e53)

- Introduction:
Hello, my name is ... A few days ago I made an appointment with the ophthalmologist. I haven't got any problems with my eyes, but I'm getting to the age where some people need reading glasses. The lady on the telephone said it's important to check your eye pressure. It's to do with glaucoma, which she said a lot of people don't notice. She told me the examination's not covered by health insurance. I'm not sure if I really need it ...
- Question 1 on disease risk:
Is glaucoma common at my age? I'm 42.
Supplementary question: What do you mean by... (e.g., rare, common ...)?
- Question 2 on test quality :
And does the examination show that for sure? How accurate is it?
Supplementary question: Can it happen that there's a false alarm or anything like that?
Supplementary question: How often does that happen (in my age group)?
- Question 3 on benefit: Is it clear that people benefit from having this done?
Supplementary question: Is that your personal opinion, or where are you getting the information from?
- Question 4 on information material, further sources:
That was a lot all at once. Can you recommend me anything to read, so I can think about it in peace and quiet?

● Screening for trisomy 21 (with amniocentesis) (30, e15–e18, e54–e59)

- Introduction:
I'm 14 weeks' pregnant at age 34. It's my first pregnancy, and I'm very anxious because a friend of mine who was 36 was told that she had a risk pregnancy. She decided to have an amniocentesis.
I'm not sure if I want to do anything like that and I have a few concrete questions ...
- Question 1 on disease risk:
I've heard that women of my age are at higher risk of having a baby with Down syndrome. How high is the risk for me?
Supplementary question: What do you mean by... (e.g., rare, low ...)?
- Question 2 on adverse effects:
Assuming I have an amniocentesis. I would be worried about something happening to the baby. Could I lose it?
Supplementary question: What do you mean by... (e.g., rare, low ...)?
- Question 3 on test accuracy:
Are the results of amniocentesis reliable?
- Question 4 on information material, further sources:
That was a lot all at once. Can you recommend me anything to read, so I can think about it in peace and quiet?

● **Fissure sealing** (28, e19–e29)

– Introduction:

Hello, my name is ... I took my 7-year-old daughter to the dentist and he suggested sealing two molars. I'm calling now because I'd like to hear your opinion (as a dentist).

(If asked, state that both molars are in the lower jaw.)

– Question 1 on the goal:

Why is fissure sealing done?

Supplementary question: Does that protect the whole tooth?

– Question 2 on benefit:

(Sealing protects the tooth) And there would never be a cavity in that tooth?

Supplementary question: Can you explain that more clearly?, What does ... mean? (depending on the answer to question 2, e.g., "there's no guarantee," "it's lower," "there's less decay," "no more decay on the chewing surface")

– Question 3 on the procedure:

I didn't have any sealing done, and up to now the dentist has just looked at my daughter's teeth. So how is the sealing done? What happens? (Then I can explain it better to my daughter).

Supplementary question, if drying is mentioned but the procedure is not described: How is the tooth dried/kept dry?

Supplementary question, if cotton batting is mentioned: And one person does that alone? It sounds as though more than two hands are needed.

Supplementary question, if both procedures are mentioned: What's better? Which way is better?

– Question 4 on information material, further sources:

Thank you for the information. (That was a lot to take in/I'm not sure I asked all the right questions/got all the details). Is there anything I can read? A brochure or something?

● **Professional dental cleaning** (29, e30, e31, e60)

– Introduction:

Hello, my name is ... I had a routine appointment with the dentist last week and he suggested professional cleaning. I said no, but now I'd like to hear your opinion (as a dentist).

– Question 1 on the procedure:

What does professional cleaning consist of?

– Question 2 on benefit:

Is the cleaning a good thing? Would it help me ... I mean, apart from the fact that my teeth would be whiter afterwards?

Supplementary question: Where do you get that information? What are your sources? Is that your opinion, or how do you know?

– Question 3 on adverse effects:

Are there any reasons not to have the cleaning done? In the long term?

Supplementary question, if only short-term complications are mentioned: (I have to ask again.) Could there be any long-term damage to my teeth or gums?

Supplementary question, if the counsellor says there are no studies or no findings: Have the long-term consequences (damage/adverse effects) not been studied, or did the studies not find any negative long-term consequences?

– Question 4 on information material, further sources:

Thank you for the information. That was a lot to take in. Is there anything I can read? A brochure or something?

● **Mercury detoxification** (e33–e37)

– Introduction:

Hello, my name is ... I had a routine appointment with the dentist last week. He told me my old amalgam filling is broken and has to be replaced with a plastic filling. He also advised to have mercury detoxification. As a dentist yourself, can you give me some information about that?

– Question 1 on the goal:

What is mercury detoxification? What does it aim to achieve?

– Question 2 on benefit:

Will the detoxification help me? How well does it work?

– Question 3 on adverse effects:

And are there any negative effects? Or is it well tolerated?

Supplementary question: Where do you get that information (effect/adverse effect)? What are your sources? Is that your opinion, or how do you know?

– Question 4 on information material, further sources:

Thank you for the information. That was a lot to take in. Is there anything I can read? A brochure or something?

eBOX 4

Examples of coding

● **Example 1: Adequate answer**

- Question: How common is bowel cancer at my age? (woman, 56 years old)
- Answer: Around 8 out of every 1 000 women are diagnosed with bowel cancer.
- Coding: correct content + wording readily intelligible = **adequate answer**

● **Example 2: Adequate answer on further questioning**

- Question: How common is bowel cancer at my age? (woman, 56 years old)
- Answer: It's a very rare disease.
- Supplementary question: What do you mean by very rare?
- Answer: Around 0.8% of women in your age group are diagnosed with bowel cancer.
- Coding: correct content + wording readily intelligible (on further questioning) = **adequate answer**

● **Example 3: Correct answer without readily understandable wording**

- Question: How common is bowel cancer at my age? (woman, 56 years old)
- Answer: About 28 000 women get it each year.
- Coding: correct content + wording not readily intelligible = **correct answer**

● **Example 4: Incorrect answer**

- Question: How common is bowel cancer at my age? (woman, 56 years old)
- Answer: It's quite a common disease.
- Supplementary question: What do you mean by quite common?
- Answer: Well, that a lot of people get it.
- Coding: incorrect content + wording not readily intelligible (even on further questioning) = **incorrect answer**

Comment:

Because the existing sources of health information generally communicate the 10-year risk, the counsellors' answers were assessed according to the consultation standard, even if no mention was made of a time period.

eFIGURE 1

Flow chart of consultations

UPD, *Unabhängige Patientenberatung Deutschland* (Independent Patient Counselling Service Germany); KID, *Krebsinformationsdienst* (Cancer Information Service of the German Cancer Research Center)

eTABLE 1

The counsellors' qualifications

Qualification	Dental topics (n = 104)	Medical topics (n = 189)
University education in dentistry, medicine, or health sciences	39	39
University education in non-medical disciplines, e.g., teaching or psychology	0	65
Vocational training, health-related	23	10
Vocational training, other	17	3
Counsellor	0	42
Other	0	2
Not stated	25	28

eTABLE 2

Frequency of under- and overestimation

Central query (abbreviated)	Content correct	Question asked (n)	Correct answers (n)	Incorrect answers			No answer (n)
				Overestimation (n) (values)	Underestimation (n) (values)	Non-numerical answers (n)	
Bowel cancer screening (colonoscopy)							
Prevalence	Ten-year risk: <1% (woman, 56 years old)	35	14	2 (6–15%)	0	10	9
Test quality (colonoscopy)	Sensitivity: 90–99% Specificity: 95–<100%	35	3 ^{*1}	1 (99.9% sensitivity)	0	30	1
				^{*1} (100% specificity)			
Risks (colonoscopy)	Bleeding: 0.2–0.3% Perforation: 0.01–0.1%	35	3 ^{*2}	8 (1.3–15% bleeding; 0.2–10% perforation)	^{*2} (0.1% bleeding)	22	2
Early detection of glaucoma (tonometry)							
Prevalence	Age-specific prevalence: <1% (woman, 42 years old)	35	9	4 (1–3%)	0	11	11
Test quality (tonometry)	Sensitivity: 40–60% Specificity: 89–97%	35	3	1 (80% sensitivity, 99% specificity)	0	27	4
Trisomy 21 screening (amniocentesis)							
Prevalence	Risk of 0.1–0.4% (pregnant woman, 34 years old)	119	38	14 (0.47–5%)	1 (0.09%)	46	20
Test accuracy (amniocentesis)	Test accuracy: 99–99.95%	119	54	0	0	56	9
Loss rate (amniocentesis)	0.3–1.5%	119	73	8 (1.75–3%)	1 (0.1%)	34	3
Fissure sealing							
Reduction of risk of tooth decay	Risk reduction: 40–60%	34	0	1 (85%)	0	27	6
Professional dental cleaning							
The answers to the three central queries (according to the consultation standard) do not involve numerical values.							
Mercury detoxification							
Adverse effects	Adverse effects (depending on substance used)	31	0	0	0	11	20

^{*1} In one consultation the sensitivity was given correctly but the specificity incorrectly (100%).

^{*2} In one consultation the risk of perforation was stated correctly but the risk of bleeding was underestimated (0.1%).

eTABLE 3

Stated sources of further information in 278 telephone consultations

Stated sources	Number of times mentioned* ¹
Medical/dental personnel, institutions, professional associations ²	162
National bodies and publicly financed organizations ²	99
Internet search engines	62
Health insurance providers ²	46
Foundations and groups	14
Online encyclopedias and health portals	10
Information material available from the organization providing the consultation	10
Patient forums	5
Self-help groups	1
Science broadcasts	1
Industry	1
Other	7

*¹ Multiple mentions per consultation possible

*² Including information material (online and/or printed)