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**To cite this article:** Klazine Van Der Horst, Max Giger & Michael Siegrist (2011) Attitudes toward shared decision-making and risk communication practices in residents and their teachers, *Medical Teacher*, 33:7, e358-e363, DOI: [10.3109/0142159X.2011.577465](https://doi.org/10.3109/0142159X.2011.577465)

**To link to this article:** <https://doi.org/10.3109/0142159X.2011.577465>



Published online: 22 Jun 2011.



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## WEB PAPER

# Attitudes toward shared decision-making and risk communication practices in residents and their teachers

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## Abstract

**Background:** Health professionals' attitudes toward shared decision-making (SDM) are an important facilitator of SDM, but information on these attitudes is limited.

**Aims:** The purpose of this study is to examine attitudes, education and practices around SDM and risk communication in residents and their teachers.

**Method:** A questionnaire was mailed to residents in Swiss hospitals in postgraduate medical training programs assessing risk communication education and SDM. In an Internet survey, teachers of the medical training programs answered questions on SDM and risk communication practices. Data were analyzed with ANOVAs and paired samples *t*-tests.

**Results:** Significant differences in residents' and teachers' opinions regarding SDM were found between specialties and number of residents in a residency (1–3, 4–10,  $\geq 11$  residents). Teachers showed a high use of verbal risk communication. Neither residents nor teachers expressed a strong feeling that they lacked the time for decision-making. Residents were significantly more negative about the ability of patients to participate in decision-making compared to their teachers.

**Conclusions:** As residents are more negative about SDM compared to teachers and teachers do not always use the preferred and best methods for risk communication, more education for teachers and residents is needed to improve communication practices in the future.

## Introduction

Shared decision-making (SDM) by health care providers and patients is of importance, as it has been accepted as an ethically appropriate form of practice and treatment outcomes are likely to improve when patients are more involved in decision-making (Stewart 1995; Stewart et al. 1999). To engage in SDM, doctors and patients need specific competencies that mainly relate to communication skills (Towle & Godolphin 1999). With the development of new frameworks for defining the competencies needed for medical education such as CanMEDS (The Royal College of Physicians and Surgeons of Canada 2005), there has been a broadening of the focus of medical training. Not only technical skills and professional knowledge, but also other qualities such as communication skills are important elements in the profile of a competent medical specialist. SDM is one of the core abilities for the physician as communicator, and the teaching of communication skills should therefore be an important aspect in medical training. However, communication training is mostly limited in time and not very well integrated in the curriculum (Deveugele et al. 2005; Egnew & Wilson 2010). This might be one of the main reasons that SDM has not yet been widely adopted by health care professionals (Légaré et al. 2008).

Research has shown that one important skill related to SDM, the ability to elicit information from patients, was found

## Practice points

- Teachers most often use verbal risk communication practices, and they might benefit from additional training on risk communication in numerical and graphical forms.
- More attention during medical education and training is needed to improve risk communication practices in the future.
- Comparing teachers and residents views provides important insights into postgraduate medical training programs.

to be dependent on healthcare practitioners' medical education and training (Edwards et al. 2009). Even when physicians state that they feel comfortable with SDM, the reported use of SDM is considerably less than expected given their comfort with the concept (Shepherd et al. 2007, 2008). Several studies report very low patient involvement in areas like checking if patients have understood information, explaining the available treatment options, and giving information on the pros and cons of all treatment options (Elwyn et al. 2005; Loh et al. 2006). From a professional perspective, time scarcity is the most important barrier for SDM (Légaré et al. 2008). Although no clear evidence exists that more time is required for SDM

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compared to usual care, time constraints remain the most often cited barrier for implementing SDM in clinical practice (Edwards & Elwyn 2004; Gravel et al. 2006; Légaré et al. 2008).

According to the review of Légaré et al. (2008), the second most often cited barrier for implementing SDM is doctors' opinions that, for some patients, SDM is less applicable. This suggests that health professionals might be screening patients to determine who will prefer or are able to use SDM. This is also suggested by the review of Willems et al. (2005), as they found that patients from lower social classes receive a more directive and less participatory consulting style, characterized by less information giving and partnership building from their doctor. Cultural background might have the same effect on doctor-patient consulting as socio-economic status (Schouten & Meeuwesen 2006). Because of the importance of SDM from an ethical perspective—but also because of its positive influence on treatment, adherence, and patient satisfaction—it is important to examine why information is not given.

Explaining risks to patients in an effective way is an essential part of SDM. One important aspect of risk communication is that both risks and benefits of treatments are discussed. Three basic formats for communicating risks can be distinguished: numerical format, verbal terms, and graphical representations (Henneman et al. 2008). Using absolute numbers, avoiding verbal terms like "low risk/high risk," and using visual aids like charts will improve risk communication and patient understanding (Paling 2003). Not much is known on doctors' practices and attitudes, and little research has been conducted on risk presentation by doctors or on their need for additional training. Qualitative research showed that counselors tend to prefer a numeric format and that they feel no need to be trained in risk communication (Shepherd et al. 2007; Henneman et al. 2008). During their training period, most residents more or less copy the method for risk communication from their teachers (Henneman et al. 2008), and they develop more doctor-centered, paternalistic attitudes toward the doctor-patient relationship compared to students earlier in training (Haidet et al. 2002). Health professionals' attitudes are an important facilitator of SDM (Légaré et al. 2008), but information on these attitudes is limited. The purpose of this study is therefore to assess attitudes, education and practices around SDM and risk communication in residents and teachers.

## Methods

The Swiss Medical Association evaluates the quality of the Swiss residents' training programs with a yearly paper-pencil survey (Siegrist & Giger 2006; van der Horst et al. 2010). In Switzerland, the duration of the specialist postgraduate training programmes is 5 or 6 years. Every year, residents answer questions related to the training program and working conditions. In the 2009 survey, questions related to SDM and risk communication were included with the annual survey for residents. Residents' teachers received the annual survey in spring 2010 (Internet questionnaire). No ethical approval was required for this study, and it was carried out in accordance with the Declaration of Helsinki. The anonymity of the participants was guaranteed.

## Participants sample

Of the 9223 residents enrolled in postgraduate medical training programmes to obtain specialist titles, 67% returned the questionnaire ( $n=6165$ ). Residents working less than 2 months at a specific residency were excluded, as they are not yet fully familiar with the education and training program during residency. This resulted in a sample size of 5889 residents.

All residents' teachers ( $n=1416$ ) were invited to participate in the study, and 83% answered the Internet questionnaire, resulting in a sample of 1181 teachers; 1116 (79%) answered all 13 questions on risk communication and SDM.

## Measurements

**Residents.** The questionnaire for residents consisted of five items on risk communication education and three items on negative attitudes toward SDM on a six-point scale ranging from 1 "does not apply at all" to 6 "fully applies." The following five items assessed risk communication education: (1) "I learn to explain side effects or possible complications of treatments to patients in a professional way," (2) "I learn how I can explain the advantages and risks of a treatment to patients with help from aids (e.g. graphs, charts)," (3) "I learn to consider the values (life goals, expectations) of patients when I communicate the advantages and risks of treatment options," (4) "I learn to communicate numerical data on side effects or complications in a way that patients understand what they mean for them individually," (5) "I learn how to explain the advantages of a treatment beyond/above the placebo effect to patients in a professional way." The Cronbach's  $\alpha$  for the risk communication education scale was  $\alpha=0.91$ .

The following three items assessed negative attitudes toward SDM: (1) "Most patients are over-challenged when they should understand the risks of treatment," (2) "The aim of informed patients who competently participate in decision-making cannot be achieved, since this is too difficult for most patients," (3) "In the daily routine, too little time is scheduled to explain the advantages and risks of available treatment options to patients." The first two negative attitude items were combined (Cronbach's  $\alpha=0.79$ ; intraclass correlation = 0.65). The attitude item "lack of time for SDM" was used as a single item in the analyses.

**Teachers.** The questionnaire for teachers consisted of 13 items: three items on negative attitudes toward SDM, three items on attitudes toward risk communication, and seven items on risk communication practices. All items were assessed on a six-point scale ranging from 1 "does not apply at all" to 6 "fully applies." The items assessing negative attitudes toward SDM were identical to the items used in the residents' questionnaire. The same two items were combined to form a scale (Cronbach's  $\alpha=0.81$ , intraclass correlation = 0.69). The attitude item "lack of time for SDM" was used as a single item in the analyses. The following three items assessed attitudes toward risk communication: (1) "If I have the impression that a patient would not understand risk information, then I will leave this information out of the conversation," (2) "For my profession, I need to know more about the best way to

**Table 1.** Residents' opinions: differences in mean scores for risk communication education, negative attitudes toward SDM, and lack of time for SDM (one-way ANOVA).

	Risk communication education				Negative attitudes toward SDM				Lack of time for SDM			
	N	Mean	SD	F	N	Mean	SD	F	N	Mean	SD	F
<i>Specialty</i>				15.3*				8.4*				27.0*
Internal medicine	1373	4.11 <sup>a</sup>	1.03		1372	3.28 <sup>b</sup>	1.16		1367	3.63 <sup>c</sup>	1.46	
Anesthesiology	300	3.91 <sup>a</sup>	1.16		297	3.37 <sup>b</sup>	1.13		296	3.02 <sup>a,b</sup>	1.42	
Surgery	720	4.04 <sup>a</sup>	1.07		719	3.18 <sup>a,b</sup>	1.11		719	3.28 <sup>b</sup>	1.35	
Gynecology	366	4.36 <sup>b</sup>	0.99		366	2.98 <sup>a</sup>	1.14		366	3.08 <sup>a,b</sup>	1.42	
Pediatrics	304	3.96 <sup>a</sup>	0.99		303	3.05 <sup>a</sup>	1.08		303	3.36 <sup>b</sup>	1.38	
Psychiatry	675	4.36 <sup>b</sup>	1.11		672	3.00 <sup>a</sup>	1.16		670	2.89 <sup>a</sup>	1.42	
Orthopedic surgery	227	4.42 <sup>b</sup>	0.98		227	3.17 <sup>a,b</sup>	1.18		226	3.03 <sup>a,b</sup>	1.30	
<i>Size of residency</i>				65.3*				15.7*				117.3*
1–3 residents	223	4.58 <sup>c</sup>	1.15		223	2.96 <sup>a</sup>	1.23		221	2.60 <sup>a</sup>	1.39	
4–10 residents	1142	4.31 <sup>b</sup>	1.10		1140	3.08 <sup>b</sup>	1.16		1139	2.99 <sup>b</sup>	1.42	
≥11 residents	2600	4.08 <sup>a</sup>	1.08		2593	3.21 <sup>c</sup>	1.15		2587	3.44 <sup>c</sup>	1.44	

Notes: Identical superscripts (within columns, per variable) indicate a non-significant difference between a pair of means, whereas different superscripts indicate a significant difference using the Games–Howell *post hoc* test ( $\alpha = 0.05$ ). Scores ranged from 1 “does not apply at all” to 6 “fully applies.” SD, standard deviation. \* =  $p < 0.001$ .

communicate risks to patients,” (3) “I know how to communicate risks to patients in an understandable manner.” The following seven items assessed risk communication practices: (1) “I discuss false positive and false negative test results with patients,” “I present the risks of a treatment (2)/medical test (3) in *numbers* to my patients,” “I present the risks of a treatment (4)/medical test (5) in *graphs* to my patients,” “I present the risks of a treatment (6)/medical test (7) in a *verbal form* to my patients.” The item on discussing false positive and false negative results was used as a single item in the analyses. One scale was constructed on presenting in numbers (Cronbach's  $\alpha = 0.74$ , intraclass correlation = 0.59), one on presenting with graphs (Cronbach's  $\alpha = 0.87$ , intraclass correlation = 0.77), and one scale was constructed on presenting in verbal form (Cronbach's  $\alpha = 0.89$ , intraclass correlation = 0.81).

### Data analyses

First, the resident data were analysed with one-way analysis of variances (ANOVAs). Differences in mean scores for risk communication education, negative attitudes toward SDM, and lack of time for SDM were examined by the seven largest specialties and residency size. Specialty and residency size interactions were analyzed by two-way ANOVAs. Significant *F*-tests were followed by the examination of contrasts using Games–Howell *post hoc* tests for unequal variances and sample sizes.

Second, the teacher data were analysed with a one-way ANOVA. Differences in mean scores for all scales and items were examined by the seven largest specialties. Significant *F*-tests were followed by the examination of contrasts using Games–Howell *post hoc* tests for unequal variances and sample sizes.

To examine mean differences between the attitudes of residents and teachers toward SDM, the junior doctor data were aggregated to the teacher level, resulting in one combined mean for the residents of the same residency

with the same teachers and the teacher's mean score. There were 1023 resident–teacher pairs in the dataset. The three attitude items were examined separately. Differences between teacher and resident scores were examined with paired samples *t*-tests.

## Results

No significant interaction between residency size and specialty was found. A one-way ANOVA was used to examine significant differences in residents' opinions regarding education in risk communication, negative attitudes toward SDM, and lack of time for SDM between specialties (Table 1). In general, gynecology and psychiatry residents were more positive about education of risk communication during residency, had more positive attitudes toward SDM, and also perceived less time shortage for SDM compared to the residents of other specialties. Internal medicine and anesthesiology residents were found to have more negative attitudes toward education of risk communication, SDM, and available time for SDM. The differences between residency sizes were more pronounced. Residents from a small residency were clearly more positive about the education during residency and SDM.

Teachers' negative attitudes toward SDM and risk communication practices differed between specialties, while no differences were found for attitudes toward risk communication (Table 2). Anesthesiology teachers had the most negative attitudes toward SDM ( $M = 3.13$ ,  $SD = 1.23$ ) and perceived the most lack of time for it ( $M = 3.33$ ,  $SD = 1.51$ ). Psychiatry teachers had the most positive attitudes toward SDM ( $M = 2.31$ ,  $SD = 1.01$ ), and teachers in pediatrics perceived the least lack of time for SDM ( $M = 2.43$ ,  $SD = 1.28$ ). Teachers showed a relatively low need for risk communication education and high confidence in knowing how to communicate risks to patients. Looking at the risk communication practices, all specialties showed a very high use of verbal

**Table 2.** Teachers' opinions: differences in mean scores for attitudes toward SDM and risk communication attitudes and practices by seven important specialties.

	Internal medicine	Anesthesiology	Surgery	Gynecology	Pediatrics	Psychiatry	Orthopedic surgery	F
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
	N = 148	N = 45	N = 92	N = 63	N = 30	N = 89	N = 55	
<i>Attitudes toward SDM</i>								
Negative attitudes toward SDM	2.82 <sup>b</sup> (1.08)	3.13 <sup>b</sup> (1.23)	2.95 <sup>b</sup> (1.03)	2.72 <sup>a,b</sup> (0.94)	2.60 <sup>a,b</sup> (1.26)	2.31 <sup>a</sup> (1.01)	2.97 <sup>b</sup> (1.15)	4.45**
Lack of time for SDM	3.32 <sup>b</sup> (1.34)	3.33 <sup>b</sup> (1.51)	2.63 <sup>a</sup> (1.13)	2.65 <sup>a</sup> (1.25)	2.43 <sup>a</sup> (1.28)	2.98 <sup>a,b</sup> (1.31)	2.62 <sup>a</sup> (1.35)	5.56**
<i>Attitudes toward risk communication</i>								
If I have the impression that patient would not understand risk information, then I will leave this information out of the conversation	2.22 <sup>a</sup> (1.23)	2.68 <sup>a</sup> (1.57)	2.39 <sup>a</sup> (1.48)	2.14 <sup>a</sup> (1.29)	1.93 <sup>a</sup> (1.12)	2.03 <sup>a</sup> (1.16)	1.89 <sup>a</sup> (1.06)	2.35*
For my profession, I need to know more about the best way to communicate risks to patients	2.45 (1.14)	2.39 (1.17)	2.26 (1.28)	2.10 (1.01)	2.34 (1.32)	2.55 (1.25)	2.24 (1.15)	1.25
I know how to communicate risks to patients in an understandable manner	4.70 (1.14)	4.57 (1.17)	4.65 (1.37)	4.57 (1.51)	4.31 (1.76)	5.00 (0.98)	4.74 (1.12)	1.55
<i>Risk communication practices</i>								
I discuss false positive and false negative test results with patients.	3.89 <sup>a</sup> (1.22)	3.53 <sup>a</sup> (1.56)	4.07 <sup>a,b</sup> (1.40)	4.57 <sup>b</sup> (1.19)	4.30 <sup>a,b</sup> (1.15)	4.24 <sup>a,b</sup> (1.34)	4.52 <sup>b</sup> (1.26)	4.58**
Risk communication-numbers	3.50 <sup>a</sup> (1.13)	3.81 <sup>a,b,c</sup> (1.20)	3.92 <sup>b,c</sup> (0.89)	4.13 <sup>c</sup> (1.08)	3.75 <sup>a,b,c</sup> (1.01)	3.56 <sup>a,b</sup> (1.13)	4.12 <sup>c</sup> (0.85)	4.81**
Risk communication-graphs	2.37 <sup>a,b</sup> (1.06)	1.99 <sup>a</sup> (1.14)	2.73 <sup>b,c</sup> (1.20)	3.26 <sup>c</sup> (1.38)	3.28 <sup>c</sup> (1.42)	2.70 <sup>b,c</sup> (1.21)	2.54 <sup>a,b,c</sup> (1.31)	7.84**
Risk communication-verbal	5.16 (0.74)	5.19 (0.82)	5.13 (0.98)	5.32 (0.78)	5.10 (0.86)	5.17 (0.78)	5.24 (0.67)	0.47

Notes: The number of teachers in the analysis might slightly differ between variables because of missing values. Identical superscripts (within rows) indicate a non-significant difference between a pair of means, whereas different superscripts indicate a significant difference using the Games-Howell *post hoc* test ( $\alpha = 0.05$ ). Scores ranged from 1 "does not apply at all" to 6 "fully applies."

SD, standard deviation.

\* =  $p < 0.05$ , \*\* =  $p < 0.001$ .

risk communication. The largest differences were found for the use of graphs in risk communication ( $F[2,514] = 7.85$ ,  $p < 0.001$ ), with gynecology teachers showing the highest use of graphs ( $M = 3.26$ ,  $SD = 1.38$ ) and a high use of the other risk communication practices. Anesthesiology ( $M = 1.99$ ,  $SD = 1.14$ ) and internal medicine ( $M = 2.37$ ,  $SD = 1.06$ ) teachers reported the lowest use of graphs in risk communication. Within subject comparisons of the mean use of numbers, graphs and verbal risk communication showed to be significant, except for the mean difference between the use of numbers and graphs in pediatrics ( $p = 0.075$ ) (results not presented).

The attitudes regarding lack of time for SDM were comparable between teachers ( $M = 2.83$ ,  $SD = 1.33$ ) and their own residents ( $M = 2.92$ ,  $SD = 1.02$ )  $t(1017) = 1.79$ ,  $p = 0.073$ . Residents ( $M = 3.28$ ,  $SD = 0.90$ ) were significantly more negative about the ability of patients to participate in decision-making compared to their teachers ( $M = 2.82$ ,  $SD = 1.18$ )  $t(1020) = 10.19$ ,  $p < 0.001$ . They also agreed more on the statement that the aim of informed patients who participate in decision-making cannot be achieved, because it is too difficult for patients ( $M = 2.83$ ,  $SD = 0.86$ ), compared to their teachers ( $M = 2.63$ ,  $SD = 1.19$ )  $t(1019) = 4.63$ ,  $p < 0.001$ .

## Discussion

This study showed that attitudes toward SDM differ according to specialty for both residents and teachers. Anesthesiology residents and teachers were the least positive about SDM and risk communication. However, the doctor who is responsible for the patient is involved in risk communication and SDM related to treatment options, while anesthesiologists discuss the techniques of the anesthesia with the patient. Anesthesiologists, mainly communicate risks of the different methods of anesthesia that have in most cases relatively low risks. Risk communication and SDM might therefore be of less importance for anesthesiologists resulting in more neutral or negative attitudes. More positive attitudes toward risk communication and a relatively high use of graphs for risk communication were found for gynecologists. An explanation for this might be that in the Swiss teaching program for residents in gynecology and obstetrics, education in SDM making is compulsory.

Neither residents nor teachers expressed a strong feeling that they lacked the time for decision-making, which is surprising, as time shortages are often mentioned as a barrier for involving patients in decision-making (Edwards & Elwyn 2004).



This study also examined common risk communication practices and revealed that verbal communication is still a very common practice in all specialties, while the use of graphs is the least common practice. Graphs and other information materials might not always be at hand. Verbal communication might, however, result in ambiguous messages, because patients interpret verbal terms very differently (Abramsky & Fletcher 2002; Gigerenzer & Edwards 2003; Timmermans et al. 2004). In a Dutch study among genetic counsellors, the majority reported to prefer a numeric format to present risks, especially percentages (Henneman et al. 2008). Graphical formats are increasingly being used to convey risk information and have been shown to assist in the perception, understanding, and interpretation of quantitative information over textual or written formats (Lipkus & Hollands 1999; Visschers et al. 2009).

In the end, communicating risks to patients is more complicated than just using graphs. Attention should be given not only to the format of information provided, but also to the situation in which the message is presented and to patients' understanding of the message. Overall, it seems that a combination of practices (graphs, numerical and verbal formats) together with communication that is structured and tailored to the patient appear to increase patient understanding (Trevena et al. 2006). Teachers' emphasis on verbal risk communication strategies may hamper progress in resident training programs related to risk communication, as residents might copy these practices even if they learned how to communicate risks in medical school (Henneman et al. 2008). Verbal risk communication is always a combination of probability information and risk evaluation. If informed decision-making is taken seriously, then the risk and the evaluation of the risk of any procedure should be communicated separately.

We also asked teachers to respond to the following statement: "If I have the impression that a patient would not understand risk information, then I will leave this information out of the conversation." We included this statement, as literature shows that professionals might screen patients to determine who are capable of SDM. In our sample of teachers, most did not agree with this statement, as is shown by mean scores varying between 1.9 and 2.7 (range 1–6) for various specialties. This might be a result of social desirability, but on the other hand,  $n = 164$  (14%) of the teachers still agreed with this statement. Unfortunately, the level to which doctors adapted their conversation style was not assessed. It was also not determined whether they use other practices of risk communication if they have the impression that a patient would not understand the risk information.

As mentioned, this study did not examine all aspects of risk communication and SDM, such as checking patients' understanding of the communicated information. In addition, the self-reported design of this study has several limitations. Attitudes and practice questions might have been answered in a socially desirable way. However, the relatively low scores on the use of graphs for risk communication and the high reported use of verbal terms might indicate that at least teachers answered the questions honestly. An observational study in which SDM and risk communication practices of

teachers and residents are observed and compared might give better insights in the actual use of SDM and risk communication practices. The study might also be limited in its acceptable response rate for residents of 67% and in the lack of information on non-responders. Since 2003, the response rate of the residents' evaluation survey varies between 65% and 68% and is therefore less likely to be a result of the SDM questions that were included in the questionnaire. The teachers non-response might be due to the to the SDM topic and might therefore influence the results of the study. Other limitations of the study include the use of non-validated questionnaires and its cross-sectional design.

The results on negative attitudes and risk communication practices indicate that risk communication may be receiving too little attention during graduate training and as an important topic for continuous professional development. However, residents stated that they were satisfied with the education in risk communication, and teachers did not express a need for training in risk communication and expressed a high level of confidence. The data suggest that teachers have established a way of communicating risks and SDM with which they feel confident. However, as residents are more negative about SDM and the methods used are not often the preferred and best methods for risk communication, more attention during medical education, mainly in postgraduate training, is needed to improve risk communication practices in the future. Furthermore, teachers might also benefit from additional training on how to interpret and communicate risks and to assure the patient's comprehension.

**Declaration of interest:** The authors report no. declarations of interest.

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