

Evidence tables

Table 4: Evidence table "Verbal versus numerical presentation"

	Cert	ainty asse	essment			Summary of findings					
						-	ticipants per oup	Effect estimates			
Outcomes [No. of studies]	Study design	Risk of bias	Inconsis- tency	Indirect- ness	Impreci- sion	Interven- tion	Control	Effects	Quality of evidence	Importance	
				Verbal v	ersus nun	nerical pre	sentation				
Understanding [n=1] Marteau (27)	RCT	serious (-1)	not serious	not serious	not serious	(verbal) N= 112	(numerical) N= 97	Effect for the numerical presentation immediately after the communication, no differences between groups after four months (27).	moderate	critical	
Risk perception [n=5] Berry (study 2) (24) Berry (22) Berry (23) Lee Char (19) Man-Son-Hing (29)	RCT	very serious (-2)	not serious	not serious	not serious		N= 332 (allocation on and control	In 4 out of 5 studies effects for the numerical presentation (22- 24, 29). Massive overestimation with the verbal presentation, less overestimation with numerical presentations. No effect in one study (19).	low	critical	



Knowledge (recall) [n=4] Knapp (18) Knapp (25) Knapp (26) Man-Son-Hing (29)	RCT	serious (-1)	not serious	not serious	not serious	N= 324	N= 400	In three studies effects for the numerical presentation (18, 25, 26), in one study no effect (29).	moderate	critical
Comprehensibility [n=1] Hagerty (30)	Quali- tative stu- dies	no Certainty	assessment			N= 126		Both presentations were perceived as equally comprehensible (30).	evidence from qualitative studies	important but not critical
Acceptance [n=4] Cheung (31) Mazur (20) Wallsten (21) Shaw 1990 (28)	Quali- tative stu- dies	no Certainty	assessment			N= 991		All four studies showed a preference for the numerical presentation (20, 21, 28, 31).	evidence from qualitative studies	limited importance
Attractiveness [n=6] Berry (study 2) (24) Berry (22) Berry (23) Knapp (18) Knapp (scenario 1+2) (25) Hagerty (30)	RCT	very serious (-2)	serious (-1)	not serious	serious (-1)		N= 399 (allocation on and control	In three studies, significant higher satisfaction with the numerical presentation (22- 24), in three studies no differences (18, 25, 30).	very low	limited importance



Credibility [n=1] Gurmankin (17)	Survey	no <i>Certaint</i>	y assessmen	t		N= 115		Statistically significant but questionable relevant effect for the numerical presentation (17).	evidence from a survey	limited importance
Intention to perform a certain measure [n=6] Berry (Studie 2) (24) Berry (22) Berry (23) Knapp (18) Knapp (25) Knapp (26)	RCT	very serious (-2)	not serious	not serious	serious (-1)	N= 375	N= 451	In six studies higher intention to take medication with numerical presentation (18, 22-26).	very low	not defined



Table 5: Evidence table "Absolute versus relative risk formats"

	Cert	ainty asse	essment			Summary of findings					
							ticipants per roup	Eff	ect estimate	S	
Outcomes [No. of studies]	Study design	Risk of bias	Inconsis- tency	Indirect- ness	Impreci- sion	Interven- tion	Control	Effects	Quality of evidence	Importance	
			4	bsolute v	ersus rela	tive risk fo	ormats				
Understanding / risk perception [n=3] Natter (32) Schwartz (34) Sheridan (35)	RCT	serious (-1)	not serious	not serious	not serious	(ARR) N=365	(RRR) N=347	Without providing the basic risk, in one study effect estimates were more precise with presenting ARR. Presenting RRR leads to overestimations. Presenting ARR with basic risks leads to significant more precise effect estimates (34). In the second study in 2 out of 4 groups an advantage for ARR was shown (32). In one study no effect (35).	moderate	critical	
Knowledge [n=1] Sprague (36)	RCT	serious (-1)	not serious	not serious	not serious	N=46	N=54	In one study no effect (36).	moderate	critical	



Comprehensibility / readability [n=1] Carling (33)	RCT,	not serious	not serious	not serious	not serious	N=505	N=508	In one study no effect (the outcome was self assessed by the participants, secondary outcome) (33).	high	important but not critical
Acceptance / attractiveness [n=2] Natter (32) Carling (33)	RCT	serious (-1)	not serious	not serious	not serious	N=615	N=618	With presentation of the basic risk, the absolute format was significantly preferred. Without basic risk, there were no differences between the groups (32). In one study no difference between groups (33).	moderate	limited importance



 Table 6: Evidence table "Naturel frequencies versus percentage"

	Cert	ainty asse	essment			Summary of findings					
						-	ticipants per roup	Effect estimates			
Outcomes [No. of studies]	Study design	Risk of bias	Inconsis- tency	Indirect- ness	Impreci- sion	Interven- tion	Control	Effects	Quality of evidence	Importance	
			Natu	rel freque	ncies (NF)	versus pe	ercentage				
Understanding / risk perception [n=1] Woloshin (9)	RCT	not serious	not serious	not serious	not serious	(NF) N=590	(percent) N=591	Positive effect for percentages, no differences with low probabilities (<1%) (9).	high	critical	
Knowledge [n=2] Ruiz (37) Knapp (2 Experimente) (18)	RCT	serious (-1)	not serious	not serious	not serious	N=135	N=134	In two studies no effects (18, 37).	moderate	critical	
Comprehensibility / readability [n=2] Woloshin (9) Ruiz (37)	RCT,	serious (-1)	not serious	not serious	not serious	N=630	N=631	In two studies no effects (9, 37).	moderate	important but not critical	
Acceptance / attractiveness [n=1] Knapp (18)	RCT	serious (-1)	not serious	not serious	not serious	N=244	N=245	In one study no effect (18).	moderate	limited importance	



Table 7: Evidence table "NNT / NNH versus ARR"

	Cert	ainty asse	essment			Summary of findings					
						No. of participants per Effect estimates group			S		
Outcomes [No. of studies]	Study design	Risk of bias	Inconsis- tency	Indirect- ness	Impreci- sion	Interven- tion	Control	Effects	Quality of evidence	Importance	
· · ·				Ν	NNT / NNH	versus AF	RR				
Understanding / risk perception [n=2] Berry (38) Sheridan (35)	RCT	serious (-1)	not serious	not serious	not serious	(NNT) N=192	(ARR) N=200	Effect for ARR (in %) without providing the basic risk. NNH leads to overestimation. With the presentation of basic risks no differences between groups (38). Effect for ARR in the second study (35).	moderate	critical	
Comprehensibility / readability [n=1] Carling (33)	RCT	not serious	not serious	not serious	not serious	N=484	N=505	NNT and ARR (in %): no effect (33).	high	important but not critical	
Acceptance / attractiveness (satisfaction, preference) [n=2] Berry (38) Carling (33)	RCT	serious (-1)	not serious	not serious	not serious	N=576	N=597	No effect, but higher satisfaction with presentation of basic risks in both groups (33, 38).	moderate	limited importance	



Table 8: Evidence table "Equivalent versus differing reference parameters"

	Cert	ainty asse	essment			Summary of findings				
						-	ticipants per oup	Effect estimates		
Outcomes [No. of studies]	Study design	Risk of bias	Inconsis- tency	Indirect- ness	Impreci- sion	Interven- tion	Control	Effects	Quality of evidence	Importance
Equivalent versus differing reference parameters (x in 100; x in 1000; x in 10000)										
Understanding [n=1] Woloshin (9)	RCT	not serious	not serious	not serious	not serious	N=590	N=591	Effect for the presentation with equivalent reference parameters (x in 1000) in comparison to differing reference parameters within a drug facts box (9).	high	critical
Comprehensibility / readability [n=1] Woloshin (9)	RCT	not serious	not serious	not serious	not serious	N=590	N=591	In one study no effect (9).	high	important but not critical

References

1. Akl EA, Oxman AD, Herrin J, Vist GE, Terrenato I, Sperati F, et al. Using alternative statistical formats for presenting risks and risk reductions. The Cochrane database of systematic reviews. 2011(3):CD006776. Epub 2011/03/18.

2. Berry DC, Knapp P, Raynor DK. Provision of information about drug side-effects to patients. Lancet [Internet]. 2002; (9309):[853-4 pp.]. Available from: http://onlinelibrary.wiley.com/o/cochrane/clcentral/articles/036/CN-00558036/frame.html.

3. European Commission D-GI. A guideline on the readability of the label and package leaflet of medical products for human use. 1998.

4. Bundeministerium für Arzneimittel und Medizinprodukte. Wie sollen die Häufigkeiten für Nebenwirkungen in der Produktinformation angegeben werden? ; Available from: http://www.bfarm.de/SharedDocs/FAQs/DE/Arzneimittel/pal/ja-ampal-faq.html.

5. Ziegler A, Hadlak A, Mehlbeer S, Konig IR. Comprehension of the description of side effects in drug information leaflets: a survey of doctors, pharmacists and lawyers. Deutsches Arzteblatt international. 2013;110(40):669-73. Epub 2013/10/30.

6. Bunge M, Muhlhauser I, Steckelberg A. What constitutes evidence-based patient information? Overview of discussed criteria. Patient Educ Couns. 2010;78(3):316-28. Epub 2009/12/17.

7. Covey J. A Meta-analysis of the effects of presenting treatment benefits in different formats. [References]. Medical Decision Making Vol27(5), Sep-Oct 2007, pp 638-654. 2007.

8. Trevena LJ, Davey HM, Barratt A, Butow P, Caldwell P. A systematic review on communicating with patients about evidence. Journal of evaluation in clinical practice. 2006;12(1):13-23. Epub 2006/01/21.

9. Woloshin S, Schwartz LM. Communicating data about the benefits and harms of treatment: a randomized trial. Annals of internal medicine. 2011;155(2):87-96. Epub 2011/07/20.

10. Bramwell R, West H, Salmon P. Health professionals' and service users' interpretation of screening test results: experimental study. BMJ (Clinical research ed). 2006;333(7562):284. Epub 2006/07/15.

11. Galesic M, Gigerenzer G, Straubinger N. Natural frequencies help older adults and people with low numeracy to evaluate medical screening tests. Medical decision making : an international journal of the Society for Medical Decision Making. 2009;29(3):368-71. Epub 2009/01/09.

12. Garcia-Retamero R, Hoffrage U. Visual representation of statistical information improves diagnostic inferences in doctors and their patients. Social science & medicine (1982). 2013;83:27-33. Epub 2013/03/08.

13. Siegrist M, Keller C. Natural frequencies and Bayesian reasoning: The impact of formal education and problem context. [References]. Journal of Risk Research Vol14(9), Oct 2011, pp 1039-1055. 2011.

14. Reyna VF, Brainerd CJ. Numeracy, ratio bias, and denominator neglect in judgments of risk and probability. Learning and Individual Differences. 2008;18(1):89-107.

15. Zikmund-Fisher BJ. Time to retire the 1-in-X risk format. Medical Decision Making. 2011;31(5):703-4.

16. Pighin S, Savadori L, Barilli E, Cremonesi L, Ferrari M, Bonnefon J-F. The 1-in-X effect on the subjective assessment of medical probabilities. Medical Decision Making. 2011;31(5):721-9.

17. Gurmankin AD, Baron J, Armstrong K. The effect of numerical statements of risk on trust and comfort with hypothetical physician risk communication. Medical decision making : an international journal of the Society for Medical Decision Making. 2004;24(3):265-71. Epub 2004/05/25.

18. Knapp P, Gardner PH, Carrigan N, Raynor DK, Woolf E. Perceived risk of medicine side effects in users of a patient information website: a study of the use of verbal descriptors, percentages and natural frequencies. British journal of health psychology. 2009;14(Pt 3):579-94. Epub 2008/11/11.

19. Lee Char SJ, Evans LR, Malvar GL, White DB. A randomized trial of two methods to disclose prognosis to surrogate decision makers in intensive care units. American journal of respiratory and critical care medicine. 2010;182(7):905-9. Epub 2010/06/12.

20. Mazur DJ, Hickam DH, Mazur MD. How patients' preferences for risk information influence treatment choice in a case of high risk and high therapeutic uncertainty: asymptomatic localized prostate cancer. Medical decision making : an international journal of the Society for Medical Decision Making. 1999;19(4):394-8. Epub 1999/10/16.

21. Wallsten TS, Budescu DV, Zwick R, Kemp SM. Preferences and reasons for communicating probabilistic information in verbal or numerical terms. Bulletin of the Psychonomic Society. 1993;31(2):135-8.

22. Berry D, Raynor T, Knapp P, Bersellini E. Over the counter medicines and the need for immediate action: a further evaluation of European Commission recommended wordings for communicating risk. Patient Educ Couns. 2004;53(2):129-34. Epub 2004/05/14.

23. Berry DC, Raynor DK, Knapp P. Communicating risk of medication side effects: an empirical evaluation of EU recommended terminology. [References]. Psychology, Health & Medicine. 2003;8(3):251-63.

24. D. Berry, T. Raynor, P. Knapp, E. Bersellini. Is 15 per cent very common? Informing people about the risks of medication side effects. International Journal of Pharmacy Practice. 2002;10(3):145-51.

25. Knapp P, Raynor DK, Berry DC. Comparison of two methods of presenting risk information to patients about the side effects of medicines. Quality & safety in health care. 2004;13(3):176-80. Epub 2004/06/04.

26. Knapp P, Raynor DK, Woolf E, Gardner PH, Carrigan N, McMillan B. Communicating the risk of side effects to patients: an evaluation of UK regulatory recommendations. Drug safety : an international journal of medical toxicology and drug experience. 2009;32(10):837-49. Epub 2009/09/03.

27. Marteau TM, Saidi G, Goodburn S, Lawton J, Michie S, Bobrow M. Numbers or words? A randomized controlled trial of presenting screen negative results to pregnant women. Prenatal diagnosis. 2000;20(9):714-8. Epub 2000/10/04.

28. Shaw NJ, Dear PR. How do parents of babies interpret qualitative expressions of probability? Archives of disease in childhood. 1990;65(5):520-3. Epub 1990/05/01.

29. Man-Son-Hing M, O'Connor AM, Drake E, Biggs J, Hum V, Laupacis A. The effect of qualitative vs. quantitative presentation of probability estimates on patient decision-making: a randomized trial. Health expectations : an international journal of public participation in health care and health policy. 2002;5(3):246-55. Epub 2002/08/30.

30. Hagerty RG, Butow PN, Ellis PA, Lobb EA, Pendlebury S, Leighl N, et al. Cancer patient preferences for communication of prognosis in the metastatic setting. Journal of Clinical Oncology. 2004;22(9):1721-30.

31. Cheung YB, Wee HL, Thumboo J, Goh C, Pietrobon R, Toh HC, et al. Risk communication in clinical trials: a cognitive experiment and a survey. BMC medical informatics and decision making. 2010;10:55. Epub 2010/09/28.

32. Natter HM, Berry DC. Effects of presenting the baseline risk when communicating absolute and relative risk reductions. Psychology, Health & Medicine 2005;10(4):326-34.

33. Carling CL, Kristoffersen DT, Montori VM, Herrin J, Schunemann HJ, Treweek S, et al. The effect of alternative summary statistics for communicating risk reduction on decisions about taking statins: a randomized trial. PLoS medicine. 2009;6(8):e1000134. Epub 2009/08/27.

34. Schwartz LM, Woloshin S, Black WC, Welch HG. The role of numeracy in understanding the benefit of screening mammography. Annals of internal medicine. 1997;127(11):966-72. Epub 1997/12/31.

35. Sheridan SL, Pignone MP, Lewis CL. A randomized comparison of patients' understanding of number needed to treat and other common risk reduction formats. Journal of general internal medicine. 2003;18(11):884-92. Epub 2003/12/23.

36. Sprague D, LaVallie DL, Wolf FM, Jacobsen C, Sayson K, Buchwald D. Influence of graphic format on comprehension of risk information among American Indians. [References]. Medical Decision Making Vol31(3), May-Jun 2011, pp 437-443. 2011.

37. Ruiz JG, Andrade AD, Garcia-Retamero R, Anam R, Rodriguez R, Sharit J. Communicating global cardiovascular risk: Are icon arrays better than numerical estimates in improving understanding, recall and perception of risk? Patient Educ Couns. 2013;93(3):394-402.

38. Berry DC, Knapp P, Raynor T. Expressing medicine side effects: assessing the effectiveness of absolute risk, relative risk, and number needed to harm, and the provision of baseline risk information. Patient Educ Couns. 2006;63(1-2):89-96. Epub 2005/10/26.