Communicating vaccine effectiveness: *challenges and opportunities*

Dr. Cornelia Betsch
Conclusion of CIDRAP report: „During some influenza seasons vaccination offers substantially more protection for most of the population than being unvaccinated; however, influenza vaccine protection is markedly lower than for most routinely recommended vaccines and is suboptimal.“ (CIDRAP, 2012)

“We have overpromoted and overhyped this [influenza] vaccine,” said Michael T. Osterholm, director of the Center for Infectious Disease Research and Policy, as well as its Center of Excellence for Influenza Research and Surveillance. “It does not protect as promoted. It’s all a sales job: it’s all public relations.”

Recommendations based on faulty/no effectiveness data

"The minutes of the ACIP meeting suggest that the ACIP moved toward a recommendation for universal vaccination on the basis of professional opinions from supporters of the approach, rather than on compelling data . . . consistent with earlier patterns for developing influenza vaccination policy," the report states.

"When CCIVI researchers looked at the quality of the studies included in the 2010 ACIP statement, they found that the statement overestimated flu vaccine efficacy and effectiveness."

Overconfidence in vaccine effectiveness

"We urge people to get their flu shot," he [Mike Osterholm] added in a university press release. "The present vaccines are the best interventions available for seasonal influenza. However, these vaccines do not offer consistent, high-level protection—especially in individuals at risk of medical complications or those aged older than 65 years. Unfortunately, these are the populations where we need the vaccines to work the best."

In sum … a challenge!

- Lower effectiveness than assumed
- Recommendations neglect low effectiveness information
- Vaccination overpromoted
  - still: vaccination best intervention, some protection is better than none
- Media coverage (e.g. NY Times, USA Today)
Objectives: WHO public health research agenda for influenza

- “The specific challenge is to provide clear, credible and appropriate communication to meet the needs of diverse communities and retain public trust in a dynamic process characterized by uncertainty.” (p. 17)

- multidisciplinary approach needed
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Challenges: Facts to be communicated

- Vaccinate [despite low(er than assumed) effectiveness]
- Follow recommendations
Evidence base

- Are doubts regarding the effectiveness a systematic reason for not-vaccinating?

- What other drivers of vaccine uptake are important for successful vaccine communication?
  - Trust in NITAGs/official recommendations
    - What is the effect of recommendations?
  - Indirect protection of risk groups with low vaccine effectiveness?
    - cocooning, herd immunity
    - Vaccination motivated by social benefit (not individual benefit)
Perceived vaccine effectiveness as a predictor of vaccine uptake?

Mean scores across N = 21 studies. Scores express the absolute frequencies of each reason of being given for or against vaccination. Samples: HCW.

Hollmeyer, Hayden, Poland & Buchholz, 2009, VACCINE
Effectiveness should play a role in the vaccination decision

- Health Belief Model (e.g. Janz & Becker, 1984)
  - Perceived probability and severity (risk), benefits (effectiveness), barriers (...)
- But: relative importance of the predictors?
  - Risk perceptions (of contracting influenza, of suffering from side-effects) seem much more important (e.g. Janz & Becker, 1984; Harrison et al., 1992)

Effective vaccines lower the probability of infection with a serious disease.

- But is influenza perceived as a serious disease? (perception of severity)
- Do people think they will catch the flu? (perception of probability)
Mean ratings of the risk of contracting influenza and the risk of suffering from side effects. N = 1335; German pregnant women. Preliminary results.
3rd trimenon: probability and severity ratings

Mean ratings of the perceived probability and severity of influenza. 
N = 1335; German pregnant women.

Betsch, Wichmann & Walter, IN PREP
3rd trimenon: probability and severity ratings

Mean ratings of the perceived probability and severity of influenza and potential side effects of influenza vaccination. N = 1335; German pregnant women.

Betsch, Wichmann & Walter, IN PREP
Communication challenge: change/correct risk perceptions

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Betsch, Wichmann & Walter, IN PREP
Risk and affect

(Slovic & Peters, 2006; Loewenstein et al., 2001)

Cognitive risk perception, risk as analysis
- I know/judge my probability to contract influenza
- I know/judge influenza's severity

Affective risk perception, risk as feelings
- I fear the disease, I am scared to contract influenza
- I fear side-effects of the vaccination
Fear of side-effects systematically decreases vaccination intentions

Predicted intention to vaccinate as a function of fear of influenza (H1N1) and fear of side-effects. N = 520; German students and non-students.

Betsch & Schmid, in press BUNDES-GESUNDHEITSBLATT
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HCW and recommendations

Predicted intention to vaccinate as a function of knowledge, risk of contracting influenza, risk of side-effects. N =310; German medical students (HCW).

Betsch & Wicker, 2012

VACCINE
Predicted intention to vaccinate as a function of knowledge, risk of contracting influenza, risk of side-effects and the recommendation. N = 310; German medical students (HCW).

Betsch & Wicker, 2012
VACCINE
Evidence base

- Are doubts regarding the effectiveness a systematic reason for not-vaccinating?
- What other drivers of vaccine uptake are important for successful vaccine communication?
- Trust in NITAGs/official recommendations
  - What is the effect of recommendations?
- Indirect protection of risk groups with low vaccine effectiveness?
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Indirect protection

Rationale of a universal recommendation:

- „Observational studies and a mathematical model suggested that indirect protection, or “herd immunity,” resulting from vaccination of school-age children would substantially reduce the incidence of disease in other age groups.“ (Schwartz et al., 2006; Journal of Infectious Diseases)
Saliency of individual and/or social benefit (or none)

- Herd immunity denotes the effect, which occurs when acquired immunity, generated through infection or vaccination, against a pathogen within a population (the „herd“) is thus far widespread, that in this population also non-immune individuals are protected because the pathogen cannot spread.

  - *Individual benefit*: “The more people are vaccinated in your environment, the more likely you are protected without vaccination” → free-riding

  - *Social benefit*: “If you get vaccinated, then you can protect others, who are not vaccinated” → pro-social behavior

Betsch, Böhm & Korn, in press, *HEALTH PSYCHOLOGY*
Communicating herd immunity can lead to free-riding if the social benefit is not explicaded.

Intention to vaccinate as a function of communicated social benefit and communicated individual benefit. N = 342; German students and non-students.

Betsch, Böhm & Korn, in press, HEALTH PSYCHOLOGY
Summary of findings

- Perceptions of low vaccine effectiveness can lower vaccination intention

- Personal risk perceptions and fear are potentially stronger drivers for BUT ALSO AGAINST vaccination
  - e.g. pregnant women perceive greater risk of side effects than of contracting influenza
  - Even if fear of the disease is high, vaccine fears lower vaccine intentions

- Recommendations are effective, but their relative effect is low at least for HCW

- If individual decisions are meant to consider public health benefits, public health messages should communicate the concept of herd immunity
  - BUT: explicitly stress social benefits to avoid free-riding!
Wishful thinking?

Systematic evaluation of evidence-based messages

Empirical Findings

• Surveys
• Experiments

Theory

• of behavior change
• of decision making
Lessons learned and things to consider in the future

- a long way towards evidence-based vaccine advocacy
  - Uncertainty of scientific evidence
  - Still: best way to go!
  - Theoretical frameworks suggest specific sets of relevant variables to be measured and manipulated (e.g. perceived risk of influenza, of vaccine side-effects)
Lessons learned and things to consider in the future

- Acceptability of cocooning strategies (e.g. for parents)
  - pro-social behavior not/rarely observed
  - Own risks are strong predictors
  - Social benefit / social dimension of vaccination should be subject of much more communications and psychological research
Lessons learned and things to consider in the future

- Flu vaccine effectiveness varies considerably
  - Benefit varies
  - Risk reduction varies
  - Vaccination is still more effective than other interventions

- BUT: (High) perceived risk of influenza and (low) perceived risk of side effects are a precondition for effectiveness to become important (for the public)
  - Communication efforts!
Thank you.

Credits
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