Assessing willingness to be vaccinated

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What do we want to know when we assess willingness to be vaccinated?

How many/what proportion of eligible individuals will be vaccinated if a vaccine exists?

What factors would influence this number/proportion?
Issues to be addressed

- Relationship of assessed willingness to be vaccinated and actual willingness
- Considerations in approaching the question
  - Conceptual framework
  - Data gathering approach
  - Data gathering format
  - Informant Perspective
- Unintended changes
Relationship of assessed willingness to be vaccinated and actual willingness
Professed willingness and actual willingness to be vaccinated

- Assessing intention

- Intention is one of best predictors of subsequent behavior

- Intention is an imperfect predictor of behavior
Professed willingness and actual willingness to be vaccinated

- *Samoff 2004*: Among respondents at a STD clinic who had never been vaccinated against Hep B *and* were offered free vaccine *and* who said that they intended to be vaccinated (64% of eligible), *only* 56% did actually accept the vaccine when immediately after affirmative answer it was offered.
Professed willingness ≠ actual willingness to be vaccinated

- Seek to develop assessment tools in which the expression of desire/intention to be vaccinated are interchangeable AND
- Able to identify those factors which would increase/decrease vaccine intention and uptake
Considerations in approaching assessing willingness to be vaccinated

– Conceptual framework

– Data gathering *approach*

– Data gathering *format*

– Informant Perspective
Conceptual Framework

- **Grounded**: Observe and question before and ideally after decision made

- **Theory-based**: Guides the design of the assessment interview/tool and the intervention
Models of Behavior/Behavioral Change

- Social Cognitive Theories including:
  - Health Belief Model
  - Protection Motivation Theory
Health Belief Model (Liau 1999)

Perceived Vulnerability, Severity, Benefits (Efficacy), Barriers

Developed scales to assess willingness to be vaccinated for HIV
First three had one scale consisting of six items with adequate Cronbach’s alpha. Fourth (barriers) consisted of 4 subscales:
1. Pragmatic obstacles;
2. Conditional non-membership in a Risk Group (i.e. if you are not doing risky things you do not need to be vaccinated);
3. Fear of the Vaccine; and 4. Fear of Needles not being Clean)

Acceptance of vaccine was assessed along 4 key dimensions corresponding to two of these four constructs:

**Efficacy** (90%, 70% or 50% efficacious)

**Barriers**
Cost (free, $25 or $100);
Mode of administration (oral, 1 injection or 3 injections),
Type of vaccine (live, attenuated, whole killed, or viral fragment)
Overall vaccine acceptability=53%

Most acceptable was lowest cost, most efficacious, 1 injection, viral fragment=73% acceptance; least acceptable (most expensive, 50% efficacious, 1 injection, live attenuated)=32%

Factors associated with non-acceptance: Perceived non-membership in HIV susceptible group and fear of vaccine
Protection Motivation Theory

**Self efficacy** (I could get to the clinic) 
*plus* **Response efficacy** (the vaccine would prevent HPV) *minus*

**Response cost** (the vaccine might cause disease) *balanced by*

**Intrinsic** (my daughter is a good girl) and **Extrinsic rewards** (my friends think virgins should not be vaccinated) *minus* **Severity** (of the bad outcome) and **Vulnerability** (cancer is bad but I probably would not get it) *yield*
Protection Motivation Theory, con.

Questionnaires developed along dimensions of PMT to assess willingness to be vaccinated with shigella, cholera and typhoid vaccines among > 4000 residents of 5 Asian countries (geographic sampling frame). Included willingness to pay.

Youlong 2004; Pack 2006; Chen 2006
Perceived **vulnerability** of specific subgroups (odds ratios ranging from 1.6 to 8.1), knowing someone died of the disease (OR reached infinity) and **response efficacy (satisfaction with past vaccination services)** (OR reached infinity) consistently associated with perceived need for vaccines of specific subgroups.

Perceived need for a vaccine was positively associated with willingness to pay for the vaccine. *Chen 2006*
Other Models of Behavioral Change

- **Related to Social Cognitive Theories**
  - Theory of Reasoned Action
  - Theory of Interpersonal Behavior (Triandis)
  - Self-Determination Theory

- **Transtheoretical Model (Stages of Change)** (precontemplation, contemplation, preparation, action, and maintenance)

- **Diffusion Theory** (early adaptor, opinion leaders, laggards)
Considerations in approaching assessing willingness to be vaccinated

- Conceptual framework
- Data gathering format

- Data gathering approach
- Informant Perspective
Data Gathering *Format*: Interviews

**Participant Observation**
- Especially useful to gain full range of possibilities
  - Whose opinion might be influential
  - Perceptions of disease---severity, vulnerability
  - Perceptions of vaccines in general—vaccines in children---vaccines and STIs

**Focus group**
- Especially useful for understanding a specific phenomenon or perspective
  - Less helpful to understand the possible range of certain opinions or popularity of specific views
Data gathering *format:* Quantitative (Questionnaire)

- Open versus closed choice
- Computer or Web-based (online)*
- Personal Tape-recording*
- Telephone survey*
- Pencil and paper
- Likert scale
- True/False
- Multiple choice
- Tree
- Rank Ordering

*=higher rates of risk reported
Considerations in approaching assessing willingness to be vaccinated

- Conceptual framework

- Data gathering *forma*

- Data gathering *approach*

- Informant Perspective
Data Gathering *Approach*

**Vignettes and Case Scenarios**

- Stories
- Descriptions of circumstances*
- Alterations of circumstances*
- Provision of basic facts*
- Free-listing (word association)
- Pile-sorting
- “Voting” (commitment, discussion of views)
Data Gathering **Approach:** Case scenario with changing component

Zimet 2005—HPV vaccine

- Use of scenarios in which the mode of vaccination, severity of infection (curable, chronic, fatal), vaccine efficacy (50%, 70%, 90%) were varied;

- Findings
  - Age of recipient important: Providers and parents concerned about vaccinating children <12 for HPV;
  - Endorsement by one or more professional society (AAP, AAFP or ACOG) important especially to providers
Data Gathering **Approach**: Case scenario with changing component

Vary disease, cost, age of vaccine recipient

*Pack 2006; Youlong 2004; Chen 2006*

- How much >3000 respondents willing to pay taken as a proxy for perceived need for Typhoid and Shigella vaccine in 5 Asian countries

- Much more enthusiasm for preschoolers to be vaccinated against dysentery and enteric fever (98% for both) compared to adults (66% and 60%); also varies by disease (77% thought elderly should get vaccine against shigella compared to 49% against enteric fever)
Combining variations in **Approach** and **Format**: **Information scenarios and Likert**

- Each item preceded with a brief summary of facts about the disease ("A person usually gets GC through sex. GC can usually be cured with antibiotics. If untreated it can cause a painful pelvic infection that may affect a person’s ability to have children") followed by questions assessing perceived physical and emotional severity of infection to the child, perceived vulnerability of the child to STI, and belief that vaccine would promote unsafe sex.

- 87% of parents accepted vaccines. With each 1 point higher perceived **vulnerability**, parent was >2 times more likely to accept vaccine and with each 1 point higher in **severity** scale, 1.6 fold more likely to accept.

- Adolescents whose parents were in the high acceptor model were threefold more likely to accept a vaccine.

  – Zimet 2005b
Considerations in approaching assessing willingness to be vaccinated

- Conceptual framework
- Data gathering approach
- Data gathering format
- Informant Perspective
Three issues:
- What does the informant (vacinnee) think?
- What does the informant think other key individuals think do what do they actually think?)
- Who, then, might be included as in willingness-to-be-vaccinated assessments and intervention efforts?
Informant Perspective: Vaccinee

What do you think?

Perceptions of individual to be vaccinated

- HPV adolescents: Researchers expected that adolescents would be concerned about relationship to STIs and fear that acceptance of vaccine would imply that they were “at risk”
- Found that the adolescents were interested in what their pediatricians and parents recommended
- Parents in turn were interested in what their pediatricians recommended
Informant Perspective: Provider
What do you think your provider thinks?

Fernandez 2007: Only 69% of ED HCW likely or very likely to be vaccinated this year (only 42% of nurses compared to 82% of physicians); **HCW likely to be vaccinated more likely to support a ED vaccination plan for patients than those unlikely to be vaccinated (80% versus 55%)**
Informant Perspective: Provider

- **Norwalk 2006**: Using a 56-question questionnaire based on Triandis Theory, **85% of individuals whose physician recommended vaccination in fact did get vaccinated.**

- **Daniels 2004**: Focus group among 22 groups of African American adults, major factor for unwillingness to be vaccinated was providers who did not routinely discuss or recommend vaccination. In general lacked information about vaccines.
Informant Perspective: Provider Authorizing Agencies

- **Zimet 2005**: In three studies, one of 224 pediatric nurse practitioners, one of family practitioners and another of Fellows of the American College of OB-GYN, asked to rate 13 *scenarios* which varied by patient age (11, 14 or 17), infection prevented by the vaccine (herpes genitalis, mononucleosis, HIV), gender of the patient, and whether the vaccine had been endorsed by the professional society.

- Across all of these categories, ratings highest when the vaccine endorsed by AAP, AAFP or ACOG.
Informant Perspective: Authorities

What do public health authorities think?

- **Youlong 2004**: In China, in focus group discussions and then confirmed by cross-sectional data, public health authorities frequently cited as authoritative and respected figures in determining vaccine acceptance.
- Similar in other Asian nations.
Informant Perspective: Family

What do my parents/family members think?

- Family significant in vaccine decision-making in all cultures but role varies considerably
- Parents (mother, father or both) or grandparents decide on infant and child care
- In some societies immunization of women may be decided by themselves or husband but strong influences; in others women may be driver
- Immunization of the elderly by self or children or by providers
Unintended changes
Effect of questioning

- Will/can questioning create concerns by reporting or raising false concerns – e.g. despite research finding that parents were not concerned about STIs, news media reported that they were and raised anxieties. *Can we raise concerns when they did not exist by our research questions?*

- One study approach is to raise frequently asked questions (get response)---but then in the study provide the answer (in a fairly detailed fashion) *Gilbert 2003*
Thank you!
Triandis Model, (Theory of Interpersonal Behavior)

Adapted from the Theory of Reasoned Action. Postulates that there are *facilitating conditions* (e.g. ease of getting to place where vaccines are given); *behavioral intention* which includes attitude toward behavior (getting a vaccine is wise); *social influences* (what family members think); and the *value of the consequences* of the action (prevents disease).

Norwalk 2006 used iterative process to develop 57 questions assessing perceptions of disease and vaccine.