

COVID-19 Evidence Support Team EVIDENCE SEARCH REPORT

Review Question:	Do motivational interviewing (MI) techniques effectively address vaccine hesitancy?		
Context:			
Review Code:	EOC220301 ESR	Complete Date:	March 11, 2022
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Librarian Notes & Comments

Hello,

I have provided a list of citations and grey literature relating to the use of motivational interviewing (MI) for vaccine hesitancy. I opted to exclude any findings older than 2017.

Sincerely,

Lukas

Disclaimer

This information is provided as a service by the Saskatchewan Health Authority and University of Saskatchewan Libraries. Professional librarians conduct searches of the literature. Results are subject to the limitations of the databases and the specificity, broadness and appropriateness of the search parameters presented by the requester. The Libraries do not represent in any matter that retrieved citations are complete, accurate or otherwise to be relied upon. The search results are only valid as of the date and time at which the search is conducted. The Libraries do not accept responsibility for any loss or damage arising from the use of, or reliance on, search results.

Search Results: Guidelines, Summaries & Other Grey Literature

McMaster University Health Forum

- COVID-19 Rapid Evidence Profile #24 (17 November 2020). What is known about strategies for encouraging vaccine acceptance and addressing vaccine hesitancy...
https://www.mcmasterforum.org/docs/default-source/covidend/rapid-evidence-profiles/covid-19-rep-24_vaccine-hesitancy_2020-11-18_final.pdf?sfvrsn=2d9556d5_5

PROSPERO International prospective register of systematic reviews

- Efficacy of motivational interviewing/communication and knowledge-based interventions for vaccination: a systematic review
https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=140255
 - States review is underway though the indicated completion date is 01 August 2020. I could not find any published review from these authors.
- Effects of motivational interviewing on parents' and guardians' hesitancy on childhood vaccination: a systematic review
https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42021274954
 - Another registry entry with no sign of a published paper.

Quebec Ministère de la Santé et des Services sociaux

- Programme d'entretien motivationnel en maternité pour l'immunisation des enfants (EMMIE). [French]. <https://www.msss.gouv.qc.ca/professionnels/vaccination/programme-d-entretien-motivationnel-en-maternite-pour-l-immunisation-des-enfants-emmie/a-propos/>
 - Provincial program using MI for post-partum vaccinations.
 - Short English summary: <https://www.quebec.ca/en/health/advice-and-prevention/vaccination/motivational-interviewing-in-maternity-for-the-immunization>

Centre to Advance Palliative Care (Mount Sinai School of Medicine)

- Communication Skills for Talking About COVID-19 Vaccines . n.d. <https://www.capc.org/covid-19/communication-skills-for-talking-about-covid-19-vaccines/>
 - Conversation map for clinicians

Camden Coalition of Healthcare Providers (NJ – USA)

- Guide: Talking to patients about the COVID-19 vaccines. <https://camdenhealth.org/wp-content/uploads/2021/05/Vaccine-confidence-packet-5.3.21.-combined-v.4-2.pdf>

APA

- Motivational Interviewing Guide. <https://www.apa.org/obesity-guideline/motivational-interviewing-guide.pdf>
 - This resource accompanies a CPG for treatment of obesity in children and adolescents. The CDC has listed it as a resource for talking with patients about COVID vaccines.

CDC

- Talking with Patients about COVID-19 Vaccination. 3 November 2021. <https://www.cdc.gov/vaccines/covid-19/hcp/engaging-patients.html>
- Interactive COVID-19 Vaccine Conversations Module for Healthcare Professionals. 1 December 2021. <https://www.cdc.gov/vaccines/covid-19/hcp/conversations-module.html>

ECDC

- Rapid literature review on motivating hesitant population groups in Europe to vaccinate. 22 February 2016.
<https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/vaccination-motivating-hesitant-populations-europe-literature-review.pdf>

WHO

- Communicating with patients about COVID-19 vaccination PPT [n.d.]
<https://apps.who.int/iris/bitstream/handle/10665/340751/WHO-EURO-2021-2281-42036-57837-eng.pdf>

The COVID-19 Vaccine Communication Handbook

- The COVID-19 Vaccine Communication Handbook. A practical guide for improving vaccine communication and fighting misinformation. <https://hackmd.io/@scibehC19vax/home>
 - PDF available
- Summary for policymakers <https://hackmd.io/@scibehC19vax/policy>
 - This resource is an international collaboration and grant-funded project at University of Bristol. Information re: contributors here: <https://hackmd.io/@scibehC19vax/contributors>.
 - Also associated with <https://www.scibeh.org/> SciBeh - a knowledge management thinktank/firm associated with the Max Planck Institute for Human Development in Germany.

Search Results: Journal Articles (includes preprints)

Sorted by newest-oldest.

1. Cole JW, A MHC, McGuire K, et al. Motivational interviewing and vaccine acceptance in children: The MOTIVE study. *Vaccine*. 2022;40(12):1846-54. DOI: 10.1016/j.vaccine.2022.01.058

ABSTRACT: BACKGROUND AND OBJECTIVE: Vaccine coverage have been less than desired in young children in part due to parental vaccine hesitancy. Addressing health beliefs through patient-centered communication approaches such as motivational interviewing (MI) may improve vaccine confidence. Thus, the objective of this study was to determine the difference in paediatric vaccination coverage rates based on the Advisory Committee on Immunization Practices (ACIP) and Centers for Disease Control and Prevention (CDC) recommended schedule in children 0-6 years of age after an educational intervention for providers and integration of an MI-based communication tool, MOTIVE (MOTivational Interviewing Tool to Improve Vaccine Acceptance). METHODS: Paediatric and family practice providers in a federally qualified health center in the United States completed an educational intervention regarding vaccine hesitancy and use of the MOTIVE tool. Providers then implemented the MOTIVE tool to address common health beliefs using strong, presumptive vaccine recommendations and an MI framework during encounters with patients 0-6 years of age. Data were collected from 1-year pre-educational intervention (July 2018-June 2019, N = 2504) and post-intervention (July 2019-March 2020, N = 1954) to examine differences in vaccination coverage rates and documented vaccine refusals. RESULTS: Use of the MOTIVE tool was associated with a statistically significant increase in IIV vaccination coverage rate in children 6 months to 6 years of age (32.4% versus 43.9%, $p < 0.01$). A significantly increased Hib vaccination coverage rate was observed in children 0-18 months of age. Patients with commercial insurance also had significantly higher vaccination coverage rates for the DTaP, IPV, and VAR

vaccines during the intervention period. Use of the MOTIVE tool was associated with a decrease in documented vaccine refusals per 100 patients in children 0-6 years of age (31.5 versus 17.6, $p < 0.01$). CONCLUSION: Use of an MI-based communication tool may decrease vaccine refusals and improve childhood vaccination coverage rates, particularly for IIV. CLINICAL TRIAL REGISTRATION:

ClinicalTrials.gov, NCT03934008, <https://clinicaltrials.gov/ct2/show/NCT03934008>, deidentified individual participant data will not be made available.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/35153096>

DOI: 10.1016/j.vaccine.2022.01.058

2. Cotache-Condor C, Peterson M, Asare M. Application of theoretical frameworks on human papillomavirus vaccine interventions in the United States: systematic review and meta-analysis. Cancer Causes Control. 2022;33(1):15-24. DOI: 10.1007/s10552-021-01509-y

ABSTRACT: PURPOSE: Theoretical frameworks are useful tools to explain the dynamics of behavioral change, develop, and implement intervention studies. The purpose of this systematic review and meta-analysis is to evaluate the application of theoretical frameworks and models to HPV vaccination intervention studies in the United States (US) from January 2006 to December 2019. METHODS: A comprehensive search across databases, including PubMed, EMBASE, ERIC, CINAHL, Academic Search Complete, Scopus, Web of Science, and PsycINFO, was conducted. Articles were included in the systematic analysis if at least one theory was used to develop the intervention phase. All intervention studies targeting populations in the US without restrictions of age, income, sex, and ethnicity were included. Articles were included in the meta-analysis if vaccine uptake and/or vaccine completion was addressed. RESULTS: The Health Belief Model, Motivational Interviewing, Theory of Planned Behavior, and Information-Motivation-Behavioral Skills were the most used theories. Based on theory integrity, theory rationale, and theory operationalization, most of the studies (60%) were rated high for the application of the theoretical frameworks. Our results suggest a preference for theoretical frameworks targeting individual change rather than community change and the existence of gender disparities in the application of theoretical frameworks. The association between theory and increase of likelihood in vaccine uptake and completion was not supported. CONCLUSION: This review spotlights common issues in the application of theoretical frameworks in HPV vaccine interventions in the US. Our results suggest we are still in a developmental phase on several aspects of theory application to HPV vaccination.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/34705121>

DOI: 10.1007/s10552-021-01509-y

3. Gebrezghi S, Muffly T, Schultz C, et al. Preoperative counseling regarding COVID-19 vaccination. American Journal of Obstetrics and Gynecology. 2022;226(3 Supplement):S1364-S5.

ABSTRACT: Objective: The objective of this video is to provide a tool to guide gynecologists in counseling patients about the COVID-19 vaccine. The COVID-19 pandemic has continued to overwhelm health care systems as infection rates rise in the United States as of September 2021. The pandemic reached an inflection point in June 2021 as the Delta variant, a new and more contagious COVID-19 variant, spread while vaccination rates slowed. Description: In this video, we describe how to use motivational interviewing to address vaccine hesitancy during a preoperative visit. The preoperative visit is an excellent time to review a patient's concerns related to the COVID-19 vaccine. A positive COVID-19 test will delay elective surgery, while COVID-19 infection at the time of surgery increases the risk of postoperative complications, intensive care unit admissions, and mortality. This video demonstrates the use of motivational interviewing during a brief interaction between a physician and a vaccine-hesitant preoperative patient. Conclusion(s): We both describe and model the techniques outlined by the Centers for Disease Control and Prevention to address a patient's vaccine hesitancy.⁴ We strongly

recommend that all providers counsel their unvaccinated patients about the COVID-19 vaccine during both preoperative and routine gynecologic visits. Copyright © 2022

4. Labbe S, Colmegna I, Valerio V, et al. Training Physicians in Motivational Communication to Address Influenza Vaccine Hesitation: A Proof-of-Concept Study. Vaccines (Basel). 2022;10(2):19. DOI: 10.3390/vaccines10020143

ABSTRACT: BACKGROUND: Strategies to support health care professionals on how to address vaccine hesitancy are needed. METHODS: We developed a 4-h Motivational Communication (MC) training program tailored to help physicians address hesitancy related to influenza vaccination among patients living with rheumatoid arthritis. Five MC competencies were evaluated at baseline and post-training with a standardized patient using the Motivational Interviewing Treatment Integrity [MITI] scale. Adherence to MC during clinical consultations and changes in vaccine intentions was measured as secondary outcomes. RESULTS: Seven rheumatology physicians participated in the training. MITI scores increased in all participants, and 71% (n = 5) achieved thresholds of clinical competency (i.e., $\geq 3.5/5$ at MITI global score and $\geq 3/5$ on at least 3 individual competency score) post-training. Autonomy/support and empathy competencies reached competency thresholds (+2.4 +/- 1.3 to +4.1 +/- 0.7 and +2.1 +/- 0.7 to +4.1 +/- 0.7, respectively). Evocation and collaboration competencies improved but without reaching competency thresholds (+1.4 +/- 0.8 to +3.1 +/- 1.1; +1.4 +/- 0.8 to +2.9 +/- 1.1, respectively). Direction did not improve. Among 21 patient consultations post-training, 15 (71%) were MC-consistent. Of the 15 patients, 67% (10/15) intended to receive the influenza vaccine and 33% (5/15) received it. CONCLUSION: A brief MC training program targeting vaccine hesitancy increased MC competency among rheumatology physicians and promoted behavioral change among patients. URL: <https://www.ncbi.nlm.nih.gov/pubmed/35214603> DOI: 10.3390/vaccines10020143

5. Meyer BA, Viskupic F, Wiltse DL. Pharmacists to partner with religious leaders to overcome vaccine hesitancy among Christians. J Am Pharm Assoc (2003). 2022;62(1):302-4. DOI: 10.1016/j.japh.2021.08.025

ABSTRACT: As pharmacists work to increase vaccine confidence and continued uptake, it is recommended to partner with trusted leaders to communicate these important messages. Evidence exists that religious leaders are effective messengers when it comes to encouraging coronavirus disease 2019 vaccination. Motivational interviewing employs empathy and reflective listening to promote self-change and is used to overcome vaccine hesitancy. Pharmacists are advised to work with religious leaders in their communities to reach the most vaccine-hesitant population through the shared resource of motivational interviewing. Pharmacists can refer interested religious leaders to available online resources to learn more about this effective tool. URL: <https://www.ncbi.nlm.nih.gov/pubmed/34531120> DOI: 10.1016/j.japh.2021.08.025

6. Payberah E, Payberah D, Sarangi A, et al. COVID-19 vaccine hesitancy in patients with mental illness: strategies to overcome barriers-a review. J Egypt Public Health Assoc. 2022;97:5. DOI: 10.1186/s42506-022-00102-8

ABSTRACT: Background: People with mental health problems are at particular risk both for infection with COVID-19 and for more severe course of illness. Understanding COVID-19 vaccine hesitancy is crucial in promoting vaccine acceptance among people with mental health diagnoses. This review aims to identify the prevalence and discuss factors associated with COVID-19 vaccine hesitancy among the mentally ill population. Main body: We conducted a detailed literature search and included 15 articles for discussion in this review. Several studies showed varying trends of vaccine hesitancy rates among

different countries. Major factors involved in vaccine hesitancy in general include mistrust, misinformation, believing in conspiracy theories, and negative attitudes towards vaccines. It was surprising that none of the studies were focused on vaccine acceptance rates and factors associated with vaccine hesitancy among the mentally ill population. However, studies do show that COVID-19 is associated with worse healthcare outcomes for psychiatric patients, and vaccine hesitancy correlated with a lower likelihood of receiving mental health treatment and vaccinations. Psychiatrists need to address issues among patients who are particularly vulnerable to the fear of vaccines which include anxiety, panic attacks, certain phobias including trypanophobia and agoraphobia, obsessive-compulsive disorder, and certain types of traumas. Psychiatrists need to communicate effectively, show respect, empathy, and deliver accurate and honest information about the vaccines. Motivational interviewing, getting people with mental health illness to organize vaccine campaigns, and involving families with mental health problems may promote vaccine acceptance among this group. Conclusion: Existing literature on the rates of vaccine hesitancy among people with mental health illness is limited. The mental health illness may increase the risk of hesitancy especially in patients having certain emotional disorders such as anxiety and phobia. More studies addressing vaccine hesitancy rates and factors associated with the mentally ill population need to be done in the future.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/35079435>

DOI: 10.1186/s42506-022-00102-8

7. Breckenridge LA, Burns D, Nye C. The use of motivational interviewing to overcome COVID-19 vaccine hesitancy in primary care settings. Public Health Nurs. 2021;29:29. DOI: 10.1111/phn.13003

ABSTRACT: Vaccine hesitancy is not a new phenomenon. However, the COVID-19 pandemic has highlighted the impact of political, racial, and health disparities on vaccine hesitancy at a global level. With the creation of the COVID-19 vaccine, a resurgence of vaccine hesitancy has emerged and many are reluctant to receive the vaccination. The reluctance varies from concerns about government interference in vaccine development, to the speed of vaccine development, to long-term health outcomes and potential side effects. Health care professionals need to consider evidence-based approaches that are effective in assisting patients with health care decision-making regarding vaccine uptake. Motivational Interviewing (MI) is an effective technique to positively impact behavior change. Definitions and examples of MI techniques are provided to illustrate how MI can be used to support patient autonomy and provide a safe and trusting environment, with the goal of increasing COVID-19 vaccination uptake.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/34716618>

DOI: 10.1111/phn.13003

8. Cataldi JR, O'Leary ST. Parental vaccine hesitancy: scope, causes, and potential responses. Curr Opin Infect Dis. 2021;34(5):519-26. DOI: 10.1097/QCO.0000000000000774

ABSTRACT: PURPOSE OF REVIEW: We reviewed the literature about parental vaccine hesitancy, focusing on publications from October 2019 to April 2021 to describe patterns and causes of hesitancy and interventions to address hesitancy. RECENT FINDINGS: Recent studies expand understanding of the prevalence of vaccine hesitancy globally and highlight associated individual and contextual factors. Common concerns underlying hesitancy include uncertainty about the need for vaccination and questions about vaccine safety and efficacy. Sociodemographic factors associated with parental vaccine hesitancy vary across locations and contexts. Studies about psychology of hesitancy and how parents respond to interventions highlight the role of cognitive biases, personal values, and vaccination as a social contract or norm. Evidence-based strategies to address vaccine hesitancy include presumptive or announcement approaches to vaccine recommendations, motivational interviewing, and use of immunization delivery strategies like standing orders and reminder/recall programs. A smaller number

of studies support use of social media and digital applications to improve vaccination intent. Strengthening school vaccine mandates can improve vaccination rates, but policy decisions must consider local context. SUMMARY: Vaccine hesitancy remains a challenge for child health. Future work must include more interventional studies to address hesitancy and regular global surveillance of parental vaccine hesitancy and vaccine content on social media.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/34524202>

DOI: 10.1097/QCO.0000000000000774

9. Cole J, Berman S, Gardner J, et al. Implementation of a motivational interviewing-based decision tool to improve childhood vaccination rates: Pilot study protocol. Res Social Adm Pharm. 2021;17(3):619-24. DOI: 10.1016/j.sapharm.2020.04.021

ABSTRACT: BACKGROUND: Parental concerns regarding the safety and efficacy of vaccines have been on the rise over the past decade, resulting in a decline in comprehensive vaccine coverage in children. Healthcare practitioners face many challenges when recommending childhood vaccinations, with many parents refusing vaccination due to these and other concerns. Effective communication strategies and tools can equip providers to communicate with vaccine hesitant parents, but validated tools are currently lacking. OBJECTIVES: This study aims to develop a validated parental communication tool utilizing motivational interviewing to increase vaccination adherence in children ages 6 years and younger. METHODS: The MOTIVE (Motivational Interviewing Tool to Improve Vaccination Adherence) tool will first be developed based on the most recent literature regarding vaccine hesitancy and related health beliefs. Following tool development, the tool will be reviewed via an external review process to ensure practicality of the tool for use in clinical practice. In implementing the MOTIVE tool, providers and clinic staff will be trained regarding vaccine hesitancy and motivational interviewing. The tool will then be implemented in routine well-child appointments. The primary outcome of this study is the percentage of children 0-6 years of age completing all recommended doses of the core vaccine series after implementation of the MOTIVE tool as compared to prior vaccination years. Secondary outcomes will also include parental attitudes towards vaccines and provider knowledge regarding motivational interviewing components and vaccine hesitancy. PROJECT IMPACT: Following completion of this study, the MOTIVE tool will be made available for other providers for use in their own clinical practice. The availability of effective communication tools will allow healthcare providers to engage in productive conversations regarding vaccination, aiming to increase vaccine uptake.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/32360123>

DOI: 10.1016/j.sapharm.2020.04.021

10. Gabarda A, Butterworth SW. Using Best Practices to Address COVID-19 Vaccine Hesitancy: The Case for the Motivational Interviewing Approach. Health Promot Pract. 2021;22(5):611-5. DOI: 10.1177/15248399211016463

ABSTRACT: Future control of the coronavirus disease 2019 (COVID-19) pandemic is dependent on the uptake of the COVID-19 vaccine. Many factors have swayed the public's perception of this coronavirus and the new vaccinations, including misinformation, heightened emotions, and the divisive and tumultuous partisan climate. As such, vaccine hesitancy may be more prevalent for the COVID-19 vaccine than others. Healthcare workers are trusted sources of information and have the opportunity to influence an individual's choice to take the vaccine. For those who initially present as unwilling to be vaccinated, trying to persuade them with facts and scare tactics may cause more resistance. By using the communication approach of motivational interviewing, practitioners can support autonomy to reduce defensiveness, use a guiding style to elicit ambivalence and provide information, address personal agency to ensure that their patients understand that their efforts can reduce risk, and evoke a person's own argument for vaccination to decrease vaccine hesitancy.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/33966471>

DOI: 10.1177/15248399211016463

11. Jusufoska M, Abreu de Azevedo M, Tolic J, et al. "Vaccination needs to be easy for the people, right ?": a qualitative study of the roles of physicians and pharmacists regarding vaccination in Switzerland. *BMJ Open*. 2021;11(12):e053163. DOI: 10.1136/bmjopen-2021-053163

ABSTRACT: OBJECTIVE: Vaccination in pharmacies has been a key component of national vaccination strategies to facilitate vaccination access. Qualitative data on the perspectives of professional stakeholders on vaccination in pharmacies and on the professional relations of pharmacists with physicians regarding increasing immunisation rates is limited. We conducted a qualitative study in Switzerland. The main aim was to gain further insight into professional stakeholders' perspectives on vaccination counselling and administration conducted in pharmacies, and to further understand their views on physicians' and pharmacists' roles in increasing immunisation rates. DESIGN: We conducted semistructured qualitative interviews. We coded and analysed transcripts using thematic analysis. SETTING: Face-to-face interviews took place in German-speaking and French-speaking regions of Switzerland. PARTICIPANTS: We interviewed 14 key vaccination stakeholders including health authorities, heads of pharmacy management and professional association boards. All participants had a background in medicine or pharmacy. RESULTS: Three main themes emerged from the qualitative data: (1) Participants viewed pharmacists as competent to provide vaccination counselling and administration based on their university training; (2) interprofessional cooperation between physicians and pharmacists on vaccination topics is limited and should be improved; and (3) pharmacists play an important role in increasing immunisation rates by facilitating vaccination access and through provision of vaccination counselling. CONCLUSION: By providing vaccination counselling and administering vaccines, pharmacists play an important public health role. Healthcare policies and health authorities should encourage more involvement of pharmacists and encourage interprofessional cooperation between physicians and pharmacists in order to improve vaccination counselling and increase immunisation rates.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/34921081>

DOI: 10.1136/bmjopen-2021-053163

12. Knight H, Jia R, Ayling K, et al. Understanding and addressing vaccine hesitancy in the context of COVID-19: development of a digital intervention. *Public Health*. 2021;201:98-107. DOI: 10.1016/j.puhe.2021.10.006

ABSTRACT: OBJECTIVES: Severe Acute Respiratory Coronavirus 2 (SARS-CoV-2) was identified in late 2019, spreading to over 200 countries and resulting in almost two million deaths worldwide. The emergence of safe and effective vaccines provides a route out of the pandemic, with vaccination uptake of 75-90% needed to achieve population protection. Vaccine hesitancy is problematic for vaccine rollout; global reports suggest only 73% of the population may agree to being vaccinated. As a result, there is an urgent need to develop equitable and accessible interventions to address vaccine hesitancy at the population level. STUDY DESIGN: & Method: We report the development of a scalable digital intervention seeking to address COVID-19 vaccine hesitancy and enhance uptake of COVID-19 vaccines in the United Kingdom. Guided by motivational interviewing (MI) principles, the intervention includes a series of therapeutic dialogues addressing 10 key concerns of vaccine-hesitant individuals. Development of the intervention occurred linearly across four stages. During stage 1, we identified common reasons for COVID-19 vaccine hesitancy through analysis of existing survey data, a rapid systematic literature review, and public engagement workshops. Stage 2 comprised qualitative interviews with medical, immunological, and public health experts. Rapid content and thematic analysis of the data provided evidence-based responses to common vaccine concerns. Stage 3 involved the development of therapeutic dialogues through workshops with psychological and digital behaviour change experts.

Dialogues were developed to address concerns using MI principles, including embracing resistance and supporting self-efficacy. Finally, stage 4 involved digitisation of the dialogues and pilot testing with members of the public. **DISCUSSION:** The digital intervention provides an evidence-based approach to addressing vaccine hesitancy through MI principles. The dialogues are user-selected, allowing exploration of relevant issues associated with hesitancy in a non-judgmental context. The text-based content and digital format allow for rapid modification to changing information and scalability for wider dissemination.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/34801843>

DOI: 10.1016/j.puhe.2021.10.006

13. Limaye RJ, Opel DJ, Dempsey A, et al. Communicating With Vaccine-Hesitant Parents: A Narrative Review. Acad Pediatr. 2021;21(4S):S24-S9. DOI: 10.1016/j.acap.2021.01.018

ABSTRACT: Although vaccines are considered one of the most effective medical interventions to prevent vaccine preventable disease and associated morbidity and mortality, a number of recent outbreaks are threatening the gains made by vaccines. Vaccine hesitancy is a key driver of vaccine refusal and has been associated with vaccine preventable outbreaks. While parents seek information from many sources to inform their vaccine decision-making process, they continue to view their child's pediatric provider as a trusted source of vaccine information. The communication that occurs between a provider and parent with regards to vaccination is critical in reducing concerns and nudging parents toward vaccine acceptance. However, vaccine-hesitant parents raise issues in this encounter that many providers feel ill-equipped to answer, due to lack of training on evidence-based communication strategies. We focus on promising approaches related to patient-provider communication within the context of vaccination. We found empirical evidence that the use of a presumptive format to recommend vaccines, motivational interviewing, and tailoring information to increase message salience are approaches that can positively affect vaccine acceptance. As providers continue to serve as important influencers in the vaccine decision-making process, it is evident that there is a need to continue to identify evidence-based, and practically implementable approaches to mitigate parental vaccine hesitancy. Providers play a key role in improving coverage rates, and therefore it is paramount to seek ways to improve how providers communicate about vaccines.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/33958087>

DOI: 10.1016/j.acap.2021.01.018

14. Liu CH, Blumberg E, Burdzy AE, et al. Outreach pilot to understand and overcome barriers to COVID-19 vaccination in liver transplant recipients. Hepatology. 2021;74(SUPPL 1):48A.

ABSTRACT: Background: Although the American Society of Transplantation (AST) recommends COVID-19 vaccination for transplant recipients, public health messaging has left out immunocompromised individuals, increasing the risk for misinformation. The aim of this study was to assess vaccine beliefs, concerns, and barriers to COVID-19 vaccination in liver transplant recipients (LTRs) at a large, diverse, transplant center in the mid-Atlantic. Method(s): We queried the electronic health record (EHR) of living patients 18 years of age or older who had received liver transplant at the University of Pennsylvania. LTRs not known to be vaccinated were called at random by transplant staff in June 2021 and asked whether they had received or scheduled for COVID-19 vaccination. A-priori we enrolled at least 50% racial/ethnic minorities given national data of lower vaccination proportion in these groups. Motivational interviewing was used for those who responded NO to assess for reasons for not yet getting the vaccine and to encourage vaccination. Up-to-date clinical information on the vaccine as well as scheduling assistance were provided. The following outcomes were evaluated: 1) willingness to be scheduled for vaccination with help or by themselves; 2) will consider vaccination in the future; and 3) not considering vaccination at this time. Barriers and concerns to COVID-19 vaccination were also

assessed. Result(s): A total of 50 LTRs without previously administered or scheduled COVID-19 vaccines were enrolled. Demographics summarized in Table 1 (median age 59 years; 52% female; 56% White and 18% Black and 14% Hispanic; median time from transplant 5.8 years; median income by ZIP code \$70,557). 32% of the cohort were willing to be scheduled for COVID-19 vaccination (6% scheduled during the call), 34% stated they would consider, and 40% stated they will not consider. Older age was associated with lower willingness to be vaccinated (age ≥ 55 vs. < 55 , OR 0.25, 95% CI 0.068-0.92, $p=0.037$). Common concerns expressed by LTRs included lack of efficacy and safety data of COVID-19 vaccine in transplant patients, lack of long-term vaccination data, and distrust in the vaccine development process. Conclusion(s): One third of unvaccinated LTRs were willing to schedule COVID-19 vaccination with the outreach effort. Patients desire additional short-term and long-term efficacy and safety data of COVID-19 vaccines in LTRs. Transplant professionals should provide clear and consistent messages to encourage vaccination.

15. McGregor S, Goldman RD. Determinants of parental vaccine hesitancy. Can Fam Physician. 2021;67(5):339-41. DOI: 10.46747/cfp.6705339

ABSTRACT: QUESTION: We engage parents on a daily basis in the office to discuss immunization for their children, and some of them are hesitant about vaccination. Discussing the importance of vaccines for the child and the public, and reviewing the safety of vaccines has not led to substantial increases in acceptance in our office. What factors influence a parent's views of vaccines, and how can we effectively address them in practice? ANSWER: Despite medical acceptance of vaccines and widespread accessibility, many Canadian children do not receive all their vaccines, and parental hesitancy has increased in the past 30 years. Thus, family physicians play an important role in addressing concerns that parents might have about vaccines and in increasing vaccine uptake. Determinants of vaccine hesitancy are heterogeneous and multifactorial. Factors that affect vaccine decision making include the perceived risks of vaccines, the relationship between parents and health care providers, and the social norm of vaccination. Communication strategies such as motivational interviewing and using presumptive language are valuable tools to increase vaccine uptake in children with vaccine-hesitant parents.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/33980625>

DOI: 10.46747/cfp.6705339

16. Modanloo S, Dunn S, Stacey D, et al. The feasibility, acceptability and preliminary efficacy of parent-targeted interventions in vaccination pain management of infants: a pilot randomized control trial (RCT). Pain Manag. 2021;11(3):287-301. DOI: 10.2217/pmt-2020-0072

ABSTRACT: Aim: To evaluate the feasibility, acceptability and preliminary efficacy of parent interventions for improving the use of pain management strategies during vaccination of infants, a two-armed pilot randomized control trial (RCT) was conducted. Materials & methods: 151 parents were randomized in two groups: Group 1) 'Be Sweet to Babies' videos and a tip sheet ($n = 76$); Group 2) As per Group 1 plus a motivational interviewing informed Affirmative Statements and Questions (AS&Q) ($n = 75$). Results & conclusion: Feasibility was evaluated by success of the recruitment (151 people in a week), rates of completed consent forms (85%), and surveys (59%). Over 94% satisfaction with interventions, processes and 88% intention to recommend the strategies to others determined the acceptability. Preliminary efficacy was evident by over 95% use of pain management strategies following the interventions. Clinical trial registration number: NCT03968432.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/33593096>

DOI: 10.2217/pmt-2020-0072

17. Munoz-Miralles R, Bonvehi Nadeu S, Sant Masoliver C, et al. Effectiveness of a brief intervention for acceptance of influenza vaccine in reluctant primary care patients. Gac Sanit. 2021;19:19. DOI: 10.1016/j.gaceta.2021.01.002

ABSTRACT: OBJECTIVE: To determine the effectiveness of a brief intervention in increasing influenza vaccination coverage compared with the usual advice in people who refuse it, and to record the main reasons for refusing to be vaccinated. METHOD: A cluster randomized clinical trial was conducted in which the study population was individuals with high risk factors who initially had refused to be vaccinated against influenza. Professionals (doctors and nurses) who voluntarily accepted to participate were assigned randomly to the intervention group (brief intervention) and the control group (usual advice). RESULTS: 57 professionals recruited 524 people who had previously declined the influenza vaccination (271 in the control group and 253 in the intervention group). Brief intervention showed its effectiveness with an odds ratio of 2.48 (1.61-3.82; $p < 0.001$), in individuals aged 60 or over, both healthy or with risk factors. The most frequent reasons for rejection of vaccination were the belief that there was no risk of getting sick (53.0%) and the fear of the side effects (33.3%). CONCLUSIONS: Brief intervention is an effective tool in improving vaccination coverage in people who have initially rejected it.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/33618930>

DOI: 10.1016/j.gaceta.2021.01.002

18. Reid RM, Vir-Leah Williams A, Bayer CR. Responding to Youth Opinions on Vaccination with Better Interventions. J Adolesc Health. 2021;69(6):1048. DOI: 10.1016/j.jadohealth.2021.08.008

ABSTRACT: Comments on an article by E. J. Brandt et al. (see record 2021-34288-001). The authors' use of open-ended questions and qualitative analyses gleaned important information to guide health messaging to enhance vaccine uptake among youth 14-24 years of age. Despite limits in reaching youth without phones, a texting and social media strategy was a powerful tool to reach this population. Given the variety of social media used by youth, it would help to include details on which platforms were used, frequency of message distribution, and possible incentives in recruitment. The authors' attention to demographic analysis is essential in understanding diverse youth perspectives across the country. It is unclear why race was framed as the sole predictor for vaccine unwillingness in black participants who comprised 8.8% of the sample, but there were no predictions for the 64% of white participants. The intersectionality of race, age, sex, gender, sexual orientation, education, and geography must be considered as influences on health decision-making. It is imperative to tailor future campaigns with mindfulness of vaccination services, cultural influences, youth intersectionality, and developmental changes between ages 14 and 24 years. Studies indicate youth benefit from interventions focused on empowering respect and status. Combining these efforts with motivational interviewing is a key strategy to help youth successfully internalize behavioral changes. (PsycInfo Database Record (c) 2021 APA, all rights reserved)

URL: <https://www.ncbi.nlm.nih.gov/pubmed/34809849>

DOI: 10.1016/j.jadohealth.2021.08.008

19. Shafer R, Sagar A. Pre-visit planning in internal medicine sub-specialty academic practices: A framework for improving pneumococcal vaccination rates in persons under the age of 65 years. Journal of General Internal Medicine. 2021;36(SUPPL 1):S137.

ABSTRACT: BACKGROUND: The Center for Disease Control and Prevention (CDC) supports the role of primary and subspecialty clinicians in counseling patients under the age of 65 years to receive pneumococcal vaccination if they are at an increased risk of pneumococcal infection. Despite the ready availability of pneumococcal vaccines, the rates among adults with chronic and immunocompromised conditions remains low, while burden of invasive pneumococcal disease is high. Our quality

improvement initiative aimed to improve vaccination rate for patients less than 65 years old and at increased risk of pneumococcal disease by utilizing a modified pre-visit huddle for subspecialty practices in a large academic health center. **METHOD(S):** Our quality improvement initiative incorporated a clinician education webinar, pre-visit nursing call to address vaccination status, pre-visit counseling and interdisciplinary pre-visit huddles. An evidenced based educational webinar was presented to interdisciplinary team members in medicine subspecialty practices. Subsequently, nurses performed pre-visit counseling for eligible patients, focusing on motivational interviewing, to confirm vaccination status, discuss vaccination needs, and update clinical records. The nurses would then discuss these findings at the pre-visit huddles to inform clinicians of pending vaccination needs. **RESULT(S):** The total number of patients deemed eligible for the initiative was 482. All patients were under the age of 65, and 59% were female, 41% were male. Of eligible patients, 34% identified as Asian (8%) or Black or African American (26%), while 36% identified as White. Of the 482, approximately 90 were removed from initiative due to telemedicine visits, new patient visits or cancelled appointments. Majority of the pre-visit patients (36%) were amenable to receiving a vaccine while 5% previously received vaccination, 17% deferred vaccination and 9% were unreachable. After 10 weeks of the initiative, 40% had documented pneumococcal vaccination, up from 28% at baseline. This resulted in a 43% increase in pneumococcal vaccination rate. **CONCLUSION(S):** While the CDC recommends pneumococcal vaccination for patients at increased risk of infection under the age of 65, the rates remain low. Our rapid cycle quality improvement initiative resulted in a 43% increase in vaccination rate in this cohort. Our quality improvement initiative incorporated a clinician education webinar, pre-visit nursing call addressing vaccination status, pre-visit counseling, and interdisciplinary pre-visit huddles. The significant increase in vaccination rate provides a framework of a multidisciplinary approach to pre-visit planning in subspecialty practices and could be utilized for other vaccination efforts. **LEARNING OBJECTIVE #1:** Identify patients at increased risk for pneumococcal infection through an evidence based educational webinar. **LEARNING OBJECTIVE #2:** Improve pneumococcal vaccination rates among patients at increased risk for pneumococcal infection by utilizing inter-professional pre-visit counseling and huddle.

20. Wang Z, Lau JTF, Ip TKM, et al. Two Web-Based and Theory-Based Interventions With and Without Brief Motivational Interviewing in the Promotion of Human Papillomavirus Vaccination Among Chinese Men Who Have Sex With Men: Randomized Controlled Trial. J Med Internet Res. 2021;23(2):e21465. DOI: 10.2196/21465

ABSTRACT: **BACKGROUND:** Human papillomavirus (HPV) vaccination is effective in the prevention of vaccine-type genital warts and cancers among men who have sex with men (MSM). **OBJECTIVE:** The primary objective of this randomized controlled trial (RCT) is to evaluate the efficacies of 2 web- and theory-based interventions with and without brief motivational interviewing (MI) over the phone to increase the completion of HPV vaccination among unvaccinated participants within a 24-month follow-up period compared with the control group. **METHODS:** A 3-arm parallel-group RCT was conducted between July 2017 and December 2019. Five telephone surveys were conducted at baseline and at 3, 6, 9, and 24 months by blinded interviewers. Participants were Hong Kong Chinese-speaking MSM aged between 18 and 45 years with regular internet access who were recruited from outreaching at venues, web-based recruitment, and peer referral. Those who had ever received HPV vaccination were excluded. A total of 624 participants were randomized into either the online tutorial (OT) only group (n=208), the OT plus MI group (OT-MI; n=208), or the control group (n=208). In total, 459 (459/624, 73.6%) completed the follow-up evaluation at 24 months. Participants in the OT group received a fully automated OT developed based on the health belief model. On top of the same OT, the OT-MI group received brief MI over the phone. Reminders were sent to the participants of the OT and OT-MI groups after 1, 2, 4, 6, and 8 months. Participants in the control group received web-based health communication messages unrelated to HPV or HPV vaccination. The research team validated the self-

reported HPV vaccination uptake. Intention-to-treat analysis was used for outcome analyses. Logistic regression models and multivariable linear regression models were used to test the between-group differences in primary and secondary outcomes. Baron and Kenny's methods were used to test the mediation hypothesis. RESULTS: The participants in the OT-MI group reported a significantly higher validated completion of HPV vaccination at 24 months than the control group (36/208, 17.3% vs 15/208, 7.2%; $P=.006$). However, the difference in HPV vaccination completion between the OT and the control groups (24/208, 11.5% vs 15/208, 7.2%; $P=.17$), or between OT-MI and OT groups ($P=.13$), was not statistically significant. The association between randomization status (OT-MI group vs control group) and HPV vaccination completion became statistically nonsignificant after controlling for changes in the perceived susceptibility to HPV (24 months vs baseline), whereas perceived susceptibility remained strongly associated with HPV vaccination uptake in the model ($P<.001$). Changes in perceived susceptibility fully mediated the intervention effect. CONCLUSIONS: Theory-based OT with brief MI over the phone was effective in increasing HPV vaccination completion among Chinese MSM. Perceived susceptibility is an active theoretical component that causes behavioral changes. TRIAL REGISTRATION: ClinicalTrials.gov NCT03286907; <https://clinicaltrials.gov/ct2/show/NCT03286907>. URL: <https://www.ncbi.nlm.nih.gov/pubmed/33528372> DOI: 10.2196/21465

21. Wermers R, Ostroski T, Hagler D. Health care provider use of motivational interviewing to address vaccine hesitancy in college students. *J Am Assoc Nurse Pract.* 2021;33(1):86-93. DOI: 10.1097/JXX.000000000000281

ABSTRACT: BACKGROUND: Vaccine-preventable diseases significantly influence the health and academic success of college students. Despite the known negative impact of these diseases, vaccination rates routinely fall short of national goals and recommendations. Although vaccination decisions are complex, a recommendation from a health care provider is one of the key motivators for individuals receiving a vaccine. Motivational interviewing (MI), a counseling approach primarily used to address substance abuse, can be applied to other health-related behaviors. LOCAL PROBLEM: Despite previous quality improvement efforts aimed at increasing vaccine rates for influenza, human papillomavirus (HPV), and meningitis B (MenB), vaccinations at large university health centers have been well below benchmarks set by Healthy People 2020. METHODS: This study was guided by the Theory of Planned Behavior and included MI training and regular reinforcement for health care providers to address vaccine hesitancy with college students. RESULTS: Influenza vaccination rates improved, but HPV vaccine rates remained stable and MenB vaccine rates decreased compared with the previous year. Clinicians demonstrated a significant increase in knowledge of MI techniques after a targeted educational intervention. Repeat measures indicate the potential for sustained improvement when ongoing reinforcement is provided. CONCLUSION: MI can be an effective part of a strategy to increase vaccination rates. URL: <https://www.ncbi.nlm.nih.gov/pubmed/31453827> DOI: 10.1097/JXX.000000000000281

22. Zolezzi M, Paravattil B, El-Gaili T. Using motivational interviewing techniques to inform decision-making for COVID-19 vaccination. *Int J Clin Pharm.* 2021;43(6):1728-34. DOI: 10.1007/s11096-021-01334-y

ABSTRACT: Motivational interviewing is a patient-centered communication style used to enhance a person's internal motivation for attitudinal change by exploring and solving inherent ambivalences. In the face of rising COVID-19 vaccine hesitancy, pharmacists and other health care professionals may use motivational interviewing to enable individuals making informed decisions with regards to the COVID-19 vaccines. The purpose of this article is to integrate theory with practice by describing a scenario that

illustrates how motivational interviewing skills and strategies can be used to reduce COVID-19 vaccine hesitancy.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/34599721>

DOI: 10.1007/s11096-021-01334-y

23. Braun C, O'Leary ST. Recent advances in addressing vaccine hesitancy. Curr Opin Pediatr. 2020;32(4):601-9. DOI: 10.1097/MOP.0000000000000929

ABSTRACT: PURPOSE OF REVIEW: To offer healthcare providers current, evidence-based approaches for addressing vaccine hesitancy to increase vaccine coverage and reduce the frequency of vaccine-preventable disease outbreaks. RECENT FINDINGS: Vaccine hesitancy is a growing problem with profound societal, economic, and medical consequences. Understanding the complexity of vaccine hesitancy can inform approaches to increasing vaccine uptake on both the individual and population levels. Notably, pediatricians play a critical role in increasing vaccine uptake due to their relationships with families. This doctor-patient relationship establishes trust and allows evidence-based intervention strategies to be effective in the office. Understanding potential solutions outside the office, such as media campaigns and policy changes, also provide insight into vaccine hesitancy and potential directions for future research. While pediatricians' attempts in the clinic to increase coverage remain crucial, vaccine hesitancy remains a formidable public health problem that requires attention on both the micro and macro levels to be addressed successfully. SUMMARY: Providers have an opportunity to increase both confidence in and uptake of vaccines. Public health interventions would effectively complement strategies in the clinic to increase overall coverage.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/32692056>

DOI: 10.1097/MOP.0000000000000929

24. Brewer SE, Cataldi JR, Fisher M, et al. Motivational Interviewing for Maternal Immunisation (MI4MI) study: a protocol for an implementation study of a clinician vaccine communication intervention for prenatal care settings. BMJ Open. 2020;10(11):e040226. DOI: 10.1136/bmjopen-2020-040226

ABSTRACT: INTRODUCTION: Vaccination against influenza and pertussis in pregnancy offers a 'two-for-one' opportunity to protect mother and child. Pregnant patients have increased risk of severe disease from influenza and newborns have increased risk of severe disease from both influenza and pertussis. Obstetricians need communication tools to support their self-efficacy and effectiveness in communicating the importance of immunisation during pregnancy and ultimately improving maternal vaccination rates. METHODS AND ANALYSIS: We describe the protocol for a pragmatic study testing the feasibility and potential impact of a clinician communication strategy on maternal vaccination uptake. This study will be conducted in five prenatal care settings in Colorado, USA. The Motivational Interviewing for Maternal Immunisation strategy involves training prenatal care providers to use motivational interviewing in the vaccine conversation with pregnant patients. Our primary outcomes will be the adoption and implementation of the intervention measured using the Enhanced RE-AIM/Practical Robust Implementation and Sustainability Model for dissemination and implementation. Secondary outcomes will include provider time spent, fidelity to Motivational Interviewing and self-efficacy measured through audio recorded visits and provider surveys, patients' visit experience based on audio recorded visits and follow-up interviews, and maternal vaccine uptake as measured through chart reviews. ETHICS AND DISSEMINATION: This study is approved by the following institutional review boards: Colorado Multiple Institutional Review Board. Results will be disseminated through peer-reviewed manuscripts and conference presentations. TRIAL REGISTRATION NUMBER: NCT04302675.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/33203635>

DOI: 10.1136/bmjopen-2020-040226

25. Cataldi JR, Kerns ME, O'Leary ST. Evidence-based strategies to increase vaccination uptake: a review. *Curr Opin Pediatr.* 2020;32(1):151-9. DOI: 10.1097/MOP.0000000000000843

ABSTRACT: PURPOSE OF REVIEW: To summarize evidence-based strategies for improving pediatric immunization rates including physician behaviors, clinic and public health processes, community-based and parent-focused interventions, and legal and policy approaches RECENT FINDINGS: Studies continue to show the effectiveness of audit and feedback, provider reminders, standing orders, and reminder/recall to increase immunization rates. Provider communication strategies may improve immunization rates including use of a presumptive approach and motivational interviewing. Centralized reminder/recall (using a state Immunization Information System) is more effective and cost-effective compared to a practice-based approach. Recent work shows the success of text messages for reminder/recall for vaccination. Web-based interventions, including informational vaccine websites with interactive social media components, have shown effectiveness at increasing uptake of pediatric and maternal immunizations. Vaccination requirements for school attendance continue to be effective policy interventions for increasing pediatric and adolescent vaccination rates. Allowance for and ease of obtaining exemptions to vaccine requirements are associated with increased exemption rates. SUMMARY: Strategies to increase vaccination rates include interventions that directly impact physician behavior, clinic and public health processes, patient behaviors, and policy. Combining multiple strategies to work across different settings and addressing different barriers may offer the best approach to optimize immunization coverage.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/31790027>

DOI: 10.1097/MOP.0000000000000843

26. Coley KC, Gessler C, McGivney M, et al. Increasing adult vaccinations at a regional supermarket chain pharmacy: A multi-site demonstration project. *Vaccine.* 2020;38(24):4044-9. DOI: 10.1016/j.vaccine.2020.02.040

ABSTRACT: BACKGROUND: Millions of American adults do not receive the recommended vaccinations each year. Community pharmacies are well positioned to help fill this gap through easy access and innovative patient-centered interventions. The primary goal of this demonstration project was to implement new notification and motivational interviewing processes at a regional supermarket chain pharmacy to increase the number of influenza, pertussis, pneumococcal, and herpes zoster vaccines provided to adults. METHODS: This prospective, observational project utilized a pre-post design. Algorithms were developed with pharmacy dispensing data to identify vaccine-eligible patients. Pharmacy staff then received automated notifications through one of the following: (1) a vaccine message printed on the prescription receipt or on paper attached to the prescription bag when patients came to the pharmacy; or (2) a patient list generated through commercially-available software listing patient contact information and which vaccine they were eligible to receive. Irrespective of the notification process, pharmacy staff employed motivational interviewing techniques either face-to-face or telephonic to engage patients in conversation about getting vaccinated. Finally, an interface to the statewide vaccination registry was developed and tested to transmit vaccination information from all pharmacy locations. RESULTS: Ninety-nine pharmacies participated in the demonstration project across western Pennsylvania. A 33% increase in vaccinations was recorded over the prior year. Increases in vaccines were demonstrated in three of the four vaccine types: 45% for influenza, 31% for pertussis, and 7% for pneumococcal vaccinations. A decrease of 5% was observed for herpes zoster vaccinations. A successful connection to the statewide vaccine registry was established and 100% of all vaccines administered were transmitted to the registry. CONCLUSION: A combination of face-to-face and telephonic interventions with motivational interviewing were successful at increasing adult vaccinations

in a regional supermarket chain pharmacy. Equal and sustained prioritization for all vaccines is necessary to achieve increases across all vaccine types.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/32093985>

DOI: 10.1016/j.vaccine.2020.02.040

27. Gagneur A. Motivational interviewing: A powerful tool to address vaccine hesitancy. Can Commun Dis Rep. 2020;46(4):93-7. DOI: 10.14745/ccdr.v46i04a06

ABSTRACT: According to the World Health Organization, vaccine hesitancy is among the top threats to global health and few effective strategies address this growing problem. In Canada, approximately 20% of parents/caregivers are concerned about their children receiving vaccines. Trying to convince them by simply providing the facts about vaccination may backfire and make parents/caregivers even more hesitant. In this context, how can health care providers overcome the challenge of parental decision-making needs regarding vaccination of their children? Motivational interviewing aims to support decision making by eliciting and strengthening a person's motivation to change their behaviour based on their own arguments for change. This approach is based on three main components: the spirit to cultivate a culture of partnership and compassion; the processes to foster engagement in the relationship and focus the discussion on the target of change; and the skills that enable health care providers to understand and address the parent/caregiver's real concerns. With regard to immunization, the motivational interviewing approach aims to inform parents/caregivers about vaccinations, according to their specific needs and their individual level of knowledge, with respectful acceptance of their beliefs. The use of motivational interviewing calls for a respectful and empathetic discussion of vaccination and helps to build a strong relationship. Numerous studies in Canada, including multicentre randomized controlled trials, have proven the effectiveness of the motivational interviewing approach. Since 2018, the PromoVac strategy, an educational intervention based on the motivational interviewing approach, has been implemented as a new practice of care in maternity wards across the province of Quebec through the Entretien Motivationnel en Maternité pour l'Immunisation des Enfants (EMMIE) program.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/32281992>

DOI: 10.14745/ccdr.v46i04a06

28. Hunter P, Fryhofer SA, Szilagyi PG. Vaccination of Adults in General Medical Practice. Mayo Clin Proc. 2020;95(1):169-83. DOI: 10.1016/j.mayocp.2019.02.024

ABSTRACT: In vaccinating adults, clinicians face 2 types of challenges: (1) staying current on recommendations for influenza, pneumococcal, hepatitis A and B, zoster, and other vaccines and (2) addressing systemic barriers to implementing practices that increase vaccination rates. Although adult immunization rates remain suboptimal, there has been much good news in adult vaccination recently. New high-dose and adjuvanted influenza vaccines help improve immune response and may reduce influenza complications in older adults. The new recombinant zoster vaccine offers significantly more efficacy against zoster outbreaks and postherpetic neuralgia than zoster vaccine live. Pertussis vaccine given during the third trimester of pregnancy may prevent between 50% and 90% of pertussis infections in infants. Shorter time for completion (1 vs 6 months) of new, adjuvanted hepatitis B vaccine may increase adherence. Clinicians can address systemic barriers to increasing vaccination rates in their clinics and health care systems by following the Centers for Disease Control and Prevention's Standards for Adult Immunization Practice. Clinicians can help increase vaccination rates by writing standing orders and by advocating for nurses or medical assistants to receive training and protected time for assessing and documenting vaccination histories and administration. Strong recommendations that presume acceptance of vaccination are effective with most patients. Communication techniques similar to motivational interviewing can help with vaccine-hesitant patients. Clinicians, as experts on providing

preventive services, can educate community leaders about the benefits of immunization and can inform vaccine experts about challenges of implementing vaccination recommendations in clinical practice and strategies that can work to raise vaccination rates.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/31902413>

DOI: 10.1016/j.mayocp.2019.02.024

29. Mbaeyi S, Fisher A, Cohn A. Strengthening Vaccine Confidence and Acceptance in the Pediatric Provider Office. *Pediatr Ann.* 2020;49(12):e523-e31. DOI: 10.3928/19382359-20201115-02

ABSTRACT: Although vaccine acceptance and uptake are overall high among children in the United States, vaccine delays or refusals are a growing concern. Vaccine hesitancy is a challenge for the pediatric provider, given the diverse factors associated with hesitancy and the limited evidence on effective strategies for addressing vaccine hesitancy in the provider office. In this article, we review available evidence and approaches for vaccine communication, including the importance of using a whole-team approach, building trust, starting the conversation early, using a presumptive approach for vaccine recommendations, motivational interviewing with parents who have concerns for vaccines, and additional techniques for responding to parent questions. We also review organizational strategies to help create a culture of immunization in the practice, including evidence-based approaches for increasing vaccine uptake and efficiency. Although these communication approaches and organizational strategies are intended to reassure parents who are vaccine hesitant that all routine, universally recommended vaccines are safe and effective, they likely will take on increased significance as the development, implementation, and evaluation of coronavirus disease 2019 vaccines continue to unfold. [*Pediatr Ann.* 2020;49(12):e523-e531.].

URL: <https://www.ncbi.nlm.nih.gov/pubmed/33290570>

DOI: 10.3928/19382359-20201115-02

30. Opel DJ, Robinson JD, Spielvogel H, et al. 'Presumptively Initiating Vaccines and Optimizing Talk with Motivational Interviewing' (PIVOT with MI) trial: a protocol for a cluster randomised controlled trial of a clinician vaccine communication intervention. *BMJ Open.* 2020;10(8):e039299. DOI: 10.1136/bmjopen-2020-039299

ABSTRACT: INTRODUCTION: A key contributor to underimmunisation is parental refusal or delay of vaccines due to vaccine concerns. Many clinicians lack confidence in communicating with vaccine-hesitant parents (VHP) and perceive that their discussions will do little to change parents' minds. Improving clinician communication with VHPs is critical to increasing childhood vaccine uptake. METHODS AND ANALYSIS: We describe the protocol for a cluster randomised controlled trial to test the impact of a novel, multifaceted clinician vaccine communication strategy on child immunisation status. The trial will be conducted in 24 primary care practices in two US states (Washington and Colorado). The strategy is called Presumptively Initiating Vaccines and Optimizing Talk with Motivational Interviewing (PIVOT with MI), and involves clinicians initiating the vaccine conversation with all parents of young children using the presumptive format, and among those parents who resist vaccines, pivoting to using MI. Our primary outcome is the immunisation status of children of VHPs at 19 months, 0 day of age expressed as the percentage of days underimmunised from birth to 19 months for 22 doses of eight vaccines recommended during this interval. Secondary outcomes include clinician experience communicating with VHPs, parent visit experience and clinician adherence to the PIVOT with MI communication strategy. ETHICS AND DISSEMINATION: This study is approved by the following institutional review boards: Colorado Multiple Institutional Review Board, Washington State Institutional Review Board and Swedish Health Services Institutional Review Board. Results will be disseminated through peer-reviewed manuscripts and conference presentations. TRIAL REGISTRATION NUMBER: NCT03885232.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/32784263>

DOI: 10.1136/bmjopen-2020-039299

31. Randall S, Leask J, Robinson P, et al. Underpinning of the sharing knowledge about immunisation (skai) communication approach: A qualitative study using recorded observations. Patient Education and Counseling. 2020;103(6):1118-24.

ABSTRACT: Objective: To refine communication strategies to assist clinician conversations with vaccine hesitant and declining parents as part of the Sharing Knowledge About Immunisation (SKAI) package. Methods: We recorded and analysed consultations held in two Specialist Immunisation Clinics in tertiary hospitals in Australia between consenting clinicians and parents. We undertook content analysis that was both iterative and informed by the Calgary Cambridge Model of health communication and motivational interviewing. Results: We found common strengths and opportunities in clinician's communication styles. Strengths included: rapport building; communicating care for both the parent and child; exhibiting depth of vaccination-specific communication skill and content knowledge. Opportunities for strengthening communication practices included: eliciting parents' concerns to saturation early in the consultation; structuring the consultation to prioritise and address parents' concerns; recognising and responding to parents' motivation to vaccinate; effectively closing consultations. Conclusion: This study has synthesised clinical communication strategies from expert vaccination communicators using well-established communication frameworks to advance a unique approach to the challenging task of addressing vaccine hesitancy and refusal. Practice implications: The clinic observations helped us to create a structured consultation guide that can enhance and provide greater structure to a clinician's existing communication skills. (PsycInfo Database Record (c) 2021 APA, all rights reserved)

32. Sondagar C, Xu R, MacDonald NE, et al. Vaccine acceptance: How to build and maintain trust in immunization. Can Commun Dis Rep. 2020;46(5):155-9. DOI: 10.14745/ccdr.v46i05a09

ABSTRACT: In Canada, over 80% of parents choose to vaccinate their children. Although this may appear positive, it is one of the lowest vaccination rates in the western world, and does not meet the 95% coverage rate needed to prevent outbreaks of vaccine-preventable diseases such as measles. A recent national immunization survey showed approximately 50% of parents are concerned about potential side-effects from vaccines, 25% believe that a vaccine can cause the disease it was meant to prevent, and 13% think alternative practices could eliminate the need for vaccines. In addition, vaccine hesitancy-defined by its determinants: confidence, complacency and convenience-is on rise. To address the complacency and trust (confidence) components of vaccine hesitancy, four best practices to optimize trust in vaccines and promote vaccine acceptance are presented. The first best practice is to understand the concerns; this is done at a population level via research and at individual level via motivational interviewing. The second best practice is to address these concerns by effectively presenting science-based information. This is done at a population level by communicating research and at an individual level by applying this research to the specific concerns, values and norms of the individual. Third, present immunization as a social norm, both in educational materials and in conversations. Finally, resilience is fostered by planning ahead (both at a population level and for individual practitioners) to manage events that can undermine trust and drive negative vaccine concerns, such as a new vaccine being added to the routine schedule or the emergence of an unexpected adverse event. Building and maintaining public trust in immunization takes time. Healthcare practitioners must keep in mind that while trust is a key element in vaccine acceptance, it is not the only element; convenience and access can also impact vaccine uptake. Nurturing trust is but one part of increasing vaccine acceptance and this brief will focus on strategies to build and nurture trust.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/32558811>

DOI: 10.14745/ccdr.v46i05a09

33. Wallace-Brodeur R, Li R, Davis W, et al. A quality improvement collaborative to increase human papillomavirus vaccination rates in local health department clinics. *Prev Med.* 2020;139:106235. DOI: 10.1016/j.ypmed.2020.106235

ABSTRACT: Human papillomavirus (HPV) vaccination rates are well below the Healthy People 2020 goal of 80%. Vaccinating in settings other than primary care, such as local health departments (LHDs), may help achieve higher HPV immunization rates. We tested the effect of a quality improvement (QI) collaborative to reduce missed opportunities (MOs) for HPV vaccine in LHDs. Between 2016 and 2019, we conducted four consecutive cohorts of a virtual QI collaborative at 24 LHDs across multiple states. Participants were trained on topics including how to provide an effective recommendation for HPV vaccine, strategies to reduce MOs, and motivational interviewing. Throughout the 6-month project implementation, LHDs tested strategies to reduce MOs through Plan-Do-Study-Act cycles, performed chart reviews to identify and characterize MOs, and received feedback reports to assess progress on MOs. HPV vaccination rates were assessed pre- and post-intervention. LHDs reduced MOs for HPV vaccine in all four cohorts with aggregated data showing a 25.3 percentage point reduction in MOs. Modified Poisson regression analysis found a 44% reduction in the relative risk of missing the opportunity for an HPV vaccine at a visit (RR = 0.56, 0.46-0.68, $p < .001$). This project shows that strategies effective in reducing MO for HPV vaccine in primary care settings are also effective in LHD settings. Training LHD staff on these strategies may help the U.S. approach national goals for HPV vaccine coverage.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/32800972>

DOI: 10.1016/j.ypmed.2020.106235

34. Attwell K, Dube E, Gagneur A, et al. Vaccine acceptance: Science, policy, and practice in a 'post-fact' world. *Vaccine.* 2019;37(5):677-82. DOI: 10.1016/j.vaccine.2018.12.014

ABSTRACT: Suboptimal vaccination uptake may be associated with outbreaks of vaccine-preventable diseases in many parts of the world. Researchers and practitioners working on improving vaccine acceptance and uptake gathered together for the fifth annual meeting on vaccine acceptance, organized by the Fondation Merieux at its conference centre in Veyrier-du-Lac, France, to share their experiences in building, improving and sustaining vaccine confidence and uptake. The importance and value of truly listening to people and seeking to understand the perspectives of vaccine hesitant people was emphasized throughout the meeting. The benefits of social marketing, which can be used to influence behavior that benefit individuals and communities for the greater social good, and its integration into strategies aimed at improving vaccine acceptance and uptake, were discussed. Healthcare professionals (HCPs) need tools and training to help them engage effectively in vaccination acceptance conversations with parents and other patients. Two potential tools, motivational interviewing (MI) and AIMS (Announce, Inquire, Mirror, Secure), were presented. Examples of MI approaches that have successfully improved vaccination acceptance and uptake included a project in Canada aimed at parents just after the birth of their baby. The role of mandates to increase vaccination uptake in the short-term was discussed, but to achieve sustainable vaccination uptake this must be complemented with other strategies. These annual meetings have led to the creation of an informal community of practice that facilitates cross-pollination between the various disciplines and different settings of those involved in this area of research and implementation. It was agreed that we must continue our efforts to promote vaccine acceptance and thus increase vaccination uptake, by fostering more effective vaccination communication, monitoring of the media conversation on vaccination, designing and rigorously evaluating targeted interventions, and surveillance of vaccine acceptance and uptake with pertinent, reliable measures.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/30616955>

DOI: 10.1016/j.vaccine.2018.12.014

35. Dutilleul A, Morel J, Schilte C, et al. How to improve vaccine acceptability (evaluation, pharmacovigilance, communication, public health, mandatory vaccination, fears and beliefs). *Therapie*. 2019;74(1):131-40. DOI: 10.1016/j.therap.2018.12.005

ABSTRACT: A flagship recommendation of the citizen's steering committee on immunization, the mandatory immunization for infants extended to 11 vaccines, introduced in January 2018, is part of a set of recommendations that must be considered as a whole, each component being indispensable to the achievement of objectives: restore confidence in vaccination and increase immunization coverage. Roundtable # 6 participants identified a decade of concrete initiatives that could address, at least in part, the committee's recommendations, including: developing information systems and data generation; simplify the vaccination journey and increase vaccination opportunities; developing training of health professionals; learning vaccines at school; using motivational interviewing in educational intervention; undertaking local initiatives; improving supply and communicate on the value of vaccines. To carry out these actions, it has been proposed that a joint ministerial task-force bringing together the different stakeholders at the national level should be set up to promote their implementation and follow-up, and at regional level, the establishment of an Agences regionales de sante awareness plan making vaccination a priority.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/30660377>

DOI: 10.1016/j.therap.2018.12.005

36. Gagneur A, Battista MC, Boucher FD, et al. Promoting vaccination in maternity wards horizontal line motivational interview technique reduces hesitancy and enhances intention to vaccinate, results from a multicentre non-controlled pre- and post-intervention RCT-nested study, Quebec, March 2014 to February 2015. *Euro Surveill*. 2019;24(36). DOI: 10.2807/1560-7917.ES.2019.24.36.1800641

ABSTRACT: Background Many countries are grappling with growing numbers of parents who delay or refuse recommended vaccinations for their children. This has created a need for strategies to address vaccine hesitancy (VH) and better support parental decision-making regarding vaccination. Aim To assess vaccination intention (VI) and VH among parents who received an individual motivational-interview (MI) based intervention on infant immunisation during post-partum stay at a maternity ward between March 2014 and February 2015. Methods This non-controlled pre-/post-intervention study was conducted using the results from parents enrolled in the intervention arm of the PromoVaQ randomised control trial (RCT), which was conducted in four maternity wards across the Province of Quebec. Participants (n = 1,223) completed pre- and post-intervention questionnaires on VI and VH using Opel's score. Pre-/post-intervention measures were compared using McNemar's test for categorical variables and Wilcoxon signed-rank test for continuous variables. Results Pre-intervention: overall VI was 78% and significantly differed across maternity wards (74%, 77%, 84%, 79%, p = 0.02). Post-intervention: VI rose significantly across maternity wards (89%, 85%, 95%, 93%) and the overall increase in VI was 12% (78% vs 90%, p < 0.0001). VH corroborated these observations, pre- vs post-intervention, for each maternity ward (28% vs 16%, 29% vs 21%, 27% vs 17%, 24% vs 13%). Overall, VH was curbed post-intervention by 40% (27% vs 16%; p < 0.0001). Conclusions Compared with pre-intervention status, participants who received the MI-based intervention on immunisation displayed lower hesitancy and greater intention to vaccinate their infant at 2 months of age.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/31507265>

DOI: 10.2807/1560-7917.ES.2019.24.36.1800641

37. Gagneur A, Bergeron J, Gosselin V, et al. A complementary approach to the vaccination promotion continuum: An immunization-specific motivational-interview training for nurses. *Vaccine*. 2019;37(20):2748-56. DOI: 10.1016/j.vaccine.2019.03.076

ABSTRACT: AIM: To develop and validate immunization-specific motivational-interview (MI) training for immunization nurses. BACKGROUND: We previously demonstrated that a MI-based intervention on immunisation, performed during postpartum by MI-trained healthcare workers at the hospital maternity ward, reduced parental vaccine hesitancy (VH) and increased vaccine coverage of their children. In this study, we propose immunization-specific MI training for immunization nurses. Together, MI-based training and interventions provide complementary approaches to existing strategies along the vaccination promotion continuum. DESIGN: Multiple pretest/posttest design with questionnaires self-administered before and after each training days (4 time points). METHODS: We developed an in-person immunization-specific MI-training workshop for immunization nurses, held on two days three months apart, with 7h of MI-training dispensed on day 1, and 4h on day 2. The self-administered Motivational Interviewing Skills in Immunization (MISI) questionnaire was used at four time points (before and after each of the 2 training days) to evaluate three core aspects of participant MI training: (1) MI-knowledge acquisition; (2) MI-skills application and (3) self-rated self-confidence in applying MI knowledge and skills in vaccination clinical practice. Between November 2016 to December 2017, 34 immunization nurses enrolled in our MI-training workshops. RESULTS: The immunization-specific MI-training improved the three core areas evaluated in participants i.e. MI-knowledge acquisition, MI-skills application, and self-rated self-confidence in applying these in vaccination clinical practice. CONCLUSIONS: Our immunization-specific MI-training enabled immunization nurses to significantly improve MI knowledge, skills and self-confidence in applying MI in the clinic. These results, taken together with those on the MI-based intervention for parents that we previously reported, support the notion of proposing validated immunization-specific MI training for immunization nurses in order to curb parental VH. IMPACT: Immunization-specific MI-training would be easily amenable for the training of other health professionals in the field of immunization to help promote vaccination and curb parental VH. URL: <https://www.ncbi.nlm.nih.gov/pubmed/30954309> DOI: 10.1016/j.vaccine.2019.03.076

38. Gagneur A, Gosselin V, Bergeron J, et al. Development of motivational interviewing skills in immunization (MISI): a questionnaire to assess MI learning, knowledge and skills for vaccination promotion. *Hum Vaccin Immunother*. 2019;15(10):2446-52. DOI: 10.1080/21645515.2019.1586030

ABSTRACT: Objective: Vaccine hesitancy is a complex problem. We previously demonstrated that motivational interviewing (MI) could be helpful to enhance parents' motivation to vaccinate their child. The aim of this study is to develop a new, simple and robust evaluation tool that is suitable for evaluating MI learning of vaccination health professionals. Methods: We designed the Motivational Interviewing Skills in Immunization (MISI), a short written questionnaire to evaluate the MI knowledge and skills of participants in an immunization context. It covers three key areas: knowledge of MI, ability to apply MI-related skills, participant self-confidence in using MI. Questionnaire content and face validity were assessed by MI experts and internal consistency, reliability and effect size were analyzed using a multiple pretest-posttest design. Results: Psychometric measures showed good to excellent internal consistency of the questionnaire for all three areas (Cronbach's and KR coefficient: 0.70 to 0.88). Test-retest reliability showed good measurement stability (ICC: 0.53). Good sensitivity to change was also obtained (Cohen's d: 0.80 to 1.66). Conclusion: The MISI questionnaire is the first paper/pencil evaluation method to assess MI training specific to immunization. Psychometric measures showed high reliability. Practice implications: This questionnaire could provide a convenient and inexpensive method to evaluate knowledge and competencies following immunization-specific MI training. URL: <https://www.ncbi.nlm.nih.gov/pubmed/30829114>

DOI: 10.1080/21645515.2019.1586030

39. Gagneur A, Quach C, Boucher FD, et al. Promoting vaccination in the province of Quebec: the PromoVaQ randomized controlled trial protocol. BMC Public Health. 2019;19(1):160. DOI: 10.1186/s12889-019-6468-z

ABSTRACT: BACKGROUND: Vaccination has a huge public health impact. Maintaining vaccine coverage is key to avoid the devastating consequences of resurgence. In the Province of Quebec, vaccine coverage in young children are sub-optimal, mostly due to ambivalence toward vaccine safety and efficacy. We previously conducted a regional study in the Quebec's Eastern Townships region, the PromoVac Study, to test a new educational intervention, based on motivational interviewing techniques, aimed at promoting infant vaccination. This first study evidenced that the intervention led to a marked increase in mothers' intention to vaccinate, and vaccine coverage in their infants. The current study protocol aims at scaling up these results at a provincial level using a randomized controlled trial design. METHODS: This pragmatic, randomized, controlled, parallel-group clinical trial will compare the effectiveness of the motivational interviewing to an educational intervention, including the distribution of an information flyer as standard of care on vaccination coverage in four maternity wards across the Province of Quebec (PromovaQ). Adult mothers of children born in participating maternity wards were recruited between March 2014 and February 2015. Vaccination coverage will be assessed at 3-years of age, thus the trial is expected to be completed in March 2019. Statistical analyses will be conducted under the intention-to-treat principle. Vaccine coverage will be analyzed using Chi-squared distribution testing and logistic regression to identify determinant factors. Secondary outcomes will include vaccine hesitation and intention scores, mother's knowledge, attitudes and beliefs about immunization, and psychosocial determinants of intention to vaccinate. DISCUSSION: In the case results of this Provincial RCT be confirmed, serious consideration should then be given by Ministry of Health authorities to the possible implementation of MI-based strategies across provincial maternity wards. To ensure adequate input and secure implementation, study design and results will be reviewed with relevant stakeholders, including the children's families, and provincial and regional decision-makers. Results will be adapted and shared with all stakeholders. TRIAL REGISTRATION: ClinicalTrials.gov NCT02666872 (Retrospectively registered as January 28, 2016).

URL: <https://www.ncbi.nlm.nih.gov/pubmed/30727991>

DOI: 10.1186/s12889-019-6468-z

40. Kaufman J, Attwell K, Hauck Y, et al. Vaccine discussions in pregnancy: interviews with midwives to inform design of an intervention to promote uptake of maternal and childhood vaccines. Hum Vaccin Immunother. 2019;15(11):2534-43. DOI: 10.1080/21645515.2019.1607131

ABSTRACT: Presumptive and Motivational Interviewing communication styles have successfully promoted childhood and adolescent vaccination to parents, but less is known about effective communication approaches during pregnancy to promote maternal vaccination and childhood vaccines. In Australian public antenatal settings, midwives provide a substantial proportion of care and are highly accessed and trusted sources of vaccine information for expectant parents. However, there are no evidence-based interventions incorporating communication strategies and resources for midwives to optimize discussions and promote acceptance of maternal and childhood vaccines. This study aimed to gather qualitative data from midwives to inform the design of a feasible and acceptable vaccine communication intervention package building on an evidence-based model utilized with US obstetricians. We explored midwives' attitudes and values regarding maternal and childhood vaccination, their perceived role in vaccine advocacy and delivery, and barriers and enablers to implementation of a potential communication intervention. We recruited 12 midwives for semi-structured interviews at two Australian tertiary public hospitals (one with antenatal vaccines onsite, one

without). Interviews were analyzed using thematic template analysis. Midwives supported vaccination but expressed varied views regarding its centrality to their role. Most reported receiving minimal or no training on vaccine communication. Their communication practices focused primarily on vaccine information provision rather than persuasion, although some midwives shared personal views and actively encouraged vaccination. More vaccine and communication training and resources were requested. Findings highlight the need for communication tools that align with midwifery standards for practice to support midwives to address parents' questions and concerns about maternal and childhood vaccines.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/31124728>

DOI: 10.1080/21645515.2019.1607131

41. Lemaitre T, Carrier N, Farrands A, et al. Impact of a vaccination promotion intervention using motivational interview techniques on long-term vaccine coverage: the PromoVac strategy. Hum Vaccin Immunother. 2019;15(3):732-9. DOI: 10.1080/21645515.2018.1549451

ABSTRACT: BACKGROUND: Delayed vaccinations at 2, 4, and 6 months are associated with a higher probability of delayed age-appropriate vaccination during childhood. This study aimed to assess the effectiveness of an information session on immunization during infancy. METHODS: An individual educational information session with motivational interview techniques for immunization of infants was conducted (experimental group) or not conducted (control group) during postpartum stay in a quasi-experimental cohort study. Immunization data were collected from the Eastern Townships Public Health registry at 3, 5, 7, 13, 19, and 24 months of age. Logistic regressions with repeated measures were performed to assess the intervention's impact. Relative risks (RR) were estimated. A multivariate model was obtained adjusted for confounding factors. RESULTS: The experimental and control groups included 1140 and 1249 families, respectively. In per protocol analysis, a significant increase in VC of 3.2, 4.9, 7.3, 6.7, 10.6, and 5.1% was observed at 3, 5, 7, 13, 19, and 24 months. Children from experimental group had 9% more chance at a complete vaccination status between 3 and 24 months compared to children from control group (RR (95% CI): 1.09 (1.05-1.13), $p < .001$). Children with complete vaccination status at 3 months were more likely to have a complete vaccination status at 24 months (82.3 vs. 48.1%, RR (95% CI): 2.72 (2.28-3.24), $p < .001$). After adjustment, the estimated RR of the intervention's impact was 1.05 (1.02-1.07), $p < .001$. CONCLUSIONS: An educational information session about immunization based on motivational interview techniques conducted during postpartum hospitalization could improve immunization during infancy.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/30457421>

DOI: 10.1080/21645515.2018.1549451

42. Reno JE, Thomas J, Pyrzanowski J, et al. Examining strategies for improving healthcare providers' communication about adolescent HPV vaccination: evaluation of secondary outcomes in a randomized controlled trial. Hum Vaccin Immunother. 2019;15(7-8):1592-8. DOI: 10.1080/21645515.2018.1547607

ABSTRACT: There is a critical need for campaigns and interventions to increase rates of human papillomavirus (HPV) vaccination among U.S. adolescents. Healthcare providers are key stakeholders in parents' HPV vaccine decision-making. The current study presents the evaluation of secondary outcomes in a multi-component communication-based intervention to improve healthcare providers' communication about HPV vaccination. Evaluation was conducted via surveys of providers participating in a 12-month randomized controlled trial. Findings suggest use of communication components (combined use of the presumptive approach [PA] with all patients, and motivational interviewing and a fact sheet with vaccine hesitant parents) contributed to providers in the intervention group reporting

higher perceived levels of parental HPV vaccine acceptance than control providers, as well as increased vaccination rates in the intervention arm in the main RCT.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/30433845>

DOI: 10.1080/21645515.2018.1547607

43. Boucher V, Pelaez S, Lavoie K, et al. Perceived barriers and facilitators of vaccination acceptance among rheumatoid arthritis patients from the perspective of physician and nurse providers. *Journal of Rheumatology*. 2018;45(7):1028.

ABSTRACT: Objectives: Despite national guidelines emphasizing the importance of immunization for infection prevention, vaccination rates remain suboptimal among rheumatoid arthritis (RA) patients. We aimed to explore health care professionals' perspectives regarding barriers and enablers of vaccine acceptance among RA patients, which will be targeted in a motivational communication intervention to increase vaccine uptake. Method(s): We conducted 3 focus group (FG) interviews with English-speaking rheumatologists, general practitioners, and nurses affiliated with an academic center. The purpose of the interviews was to ask questions about what they perceived to be the main barriers to and facilitators for vaccination acceptance among RA patients, in order to determine potential targets to develop an intervention. The interviews consisted of questions on vaccine barriers (e.g. "To what extent should discussions with patients about the importance of getting vaccinated for the flu/pneumonia be a priority?") and facilitators (e.g. "What do you believe are the main factors determining your RA patients' willingness to get the flu/pneumonia vaccines?"). Thematic analysis was conducted. All FG interviews were transcribed and uploaded into MAXQDA 12, which was used to code, categorize, compare, and contrast the data with the purpose of developing a conceptual understanding of identified themes related to barriers and facilitators of vaccine acceptance. Result(s): Eighteen health care professionals participated in the three FGs (nurses n = 5, rheumatologists n = 7, general practitioners n = 6). Health care professionals identified barriers and facilitators to vaccination acceptance that were related to one of the following three categories: (1) the patient, (2) the provider, and (3) the healthcare system. The most salient perceived barriers to vaccination acceptance were patients' knowledge and beliefs (e.g., fears of side effects), followed by accessibility (e.g., difficulties accessing the healthcare centre and/or provider), and negative social media messages (e.g., Facebook). Health care professionals' level of conviction of the importance of vaccination and conveying this to the patient, as well as taking the time to educate patients regarding vaccination, and listening to and supporting patients' decision-making, were seen as important facilitators of patients' acceptance of vaccination. Conclusion(s): Health professionals recognize knowledge, beliefs, accessibility, and social media as main barriers to vaccine acceptance, and education and supporting patient's decision-making as key facilitators of vaccine acceptance. Enhancing patients' and providers' knowledge of the importance of vaccines for RA prevention, and promoting effective provider-patient communication, may help increase vaccine uptake among RA patients.

44. Dempsey AF, O'Leary ST. Human Papillomavirus Vaccination: Narrative Review of Studies on How Providers' Vaccine Communication Affects Attitudes and Uptake. *Academic Pediatrics*. 2018;18(2 Supplement):S23-S7.

ABSTRACT: The burden of human papillomavirus (HPV) infections is substantial, causing thousands of cancers and deaths in the United States yearly. Safe and effective vaccines exist, yet remains underutilized, particularly among younger adolescents for whom the vaccine is targeted. Provider communication techniques are known to affect parents' and adolescents' acceptance of this vaccine. In this review, we examine the influence that provider communication techniques have on parental attitudes regarding HPV vaccine, as well as how those techniques affect vaccination uptake. We explore the limited literature that has directly measured the influence of provider communication techniques on

parental attitudes, which suggests that the strength of a provider recommendation strongly influences parents' perceptions regarding the safety of HPV vaccine, and that brief recommendations might be best for parents without significant concerns. We also review the literature regarding the use of so-called 'presumptive' recommendations, and how these types of recommendations are associated with increased HPV vaccine uptake. Finally, we present new information regarding the use of motivational interviewing as a provider communication technique to improve vaccination uptake, particularly among vaccine-hesitant parents. We close with suggestions for 'best practices' that include using brief, strong, unambiguous language to introduce the HPV vaccine, followed by more nuanced communication techniques, such as motivational interviewing, when encountering resistance. Copyright © 2017 Academic Pediatric Association

45. Gagneur A, Gosselin V, Dube E. Motivational interviewing: A promising tool to address vaccine hesitancy. *Vaccine*. 2018;36(44):6553-5. DOI: 10.1016/j.vaccine.2017.10.049

URL: <https://www.ncbi.nlm.nih.gov/pubmed/30301523>

DOI: 10.1016/j.vaccine.2017.10.049

46. Gagneur A, Lemaitre T, Gosselin V, et al. A postpartum vaccination promotion intervention using motivational interviewing techniques improves short-term vaccine coverage: PromoVac study. *BMC Public Health*. 2018;18(1):811. DOI: 10.1186/s12889-018-5724-y

ABSTRACT: BACKGROUND: Due to the increasing number of vaccine-hesitant parents, new effective immunization promotion strategies need to be developed to improve the vaccine coverage (VC) of infants. This study aimed to assess the impact of an educational strategy of vaccination promotion based on motivational interviewing (MI) techniques targeting parents and delivered at the maternity ward, for the VC of infants at 3, 5, and 7 months of age. METHODS: An individual educational information session, administered using MI techniques, regarding immunization of infants aged 2, 4, and 6 months was (experimental group) or was not (control group) proposed to parents during the postpartum stay at the maternity ward. Immunization data were obtained through the Eastern Townships Public Health registry for infants at 3, 5, and 7 months of age. Absolute VC increases at 3, 5, and 7 months in the experimental group were calculated and the relative risks with the respective 95% confidence intervals were computed using univariate logistic regression with the generalized estimating equations (GEE) procedure. Multivariate regression using GEE was used to adjust for confounding variables. RESULTS: In the experimental and control groups, 1140 and 1249 newborns were included, respectively. A significant increase in VC of 3.2, 4.9, and 7.3% was observed at 3, 5, and 7 months of age ($P < 0.05$), respectively. The adjusted relative risk of the intervention's impact on vaccination status at 7 months of age was 1.08 (95% confidence interval: 1.03-1.14) ($P = 0.002$). CONCLUSIONS: An educational strategy using MI techniques delivered at the maternity ward may be effective in increasing VC of infants at ages 3, 5, and 7 months. MI could be an effective tool to overcome vaccine hesitancy.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/29954370>

DOI: 10.1186/s12889-018-5724-y

47. Lockhart S, Dempsey AF, Pyrzanowski J, et al. Provider and Parent Perspectives on Enhanced Communication Tools for Human Papillomavirus Vaccine-Hesitant Parents. *Acad Pediatr*. 2018;18(7):776-82. DOI: 10.1016/j.acap.2018.05.012

ABSTRACT: OBJECTIVE: Human papillomavirus (HPV) vaccine initiation and completion rates remain far below the Healthy People 2020 goal, suggesting that additional tools and training may be needed to help medical staff provide a quality recommendation. As part of a larger pragmatic trial, we conducted a qualitative study to understand how a multifaceted communication intervention used by medical staff with HPV vaccine-hesitant parents can improve HPV vaccination rates in the primary care setting.

METHODS: At 8 primary care intervention clinics in the Denver metro area, medical staff and parents of adolescent boys and girls ages 11 to 17 years eligible to start the HPV vaccine series at a recent well care visit were recruited for study participation. Focus groups with medical staff and in-depth interviews with hesitant parents were conducted during the post-intervention period. All data were recorded, transcribed, and analyzed using established qualitative methods. **RESULTS:** Twenty parents and 46 medical staff participated. All parents and medical staff felt that the overall intervention was beneficial and should continue to be used and preferred the HPV vaccine fact sheet component. Medical staff reported that communication trainings (intervention component) that taught a presumptive approach and motivational interviewing were the most beneficial for introducing the HPV vaccine and for countering HPV vaccine hesitancy, respectively. Least favorable components were the decision aid, disease images, and parent website. **CONCLUSIONS:** Select components of a multifaceted communication intervention were seen as beneficial to HPV vaccine-hesitant parents and medical staff. Future studies should look at how to implement these intervention components in a greater number of primary care settings.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/30177028>

DOI: 10.1016/j.acap.2018.05.012

48. MacDonald NE, Desai S, Gerstein B. Working with vaccine-hesitant parents: An update. Paediatr Child Health. 2018;23(8):561-2. DOI: 10.1093/pch/pxy144

ABSTRACT: Most Canadian parents make sure that their children are immunized on time, but health care providers often encounter parents who are hesitant about vaccination or refuse recommended vaccines. This practice point offers evidence-based guidance to clinicians on how to work with vaccine-hesitant parents. Steps include: 1) Understanding the health care provider's key role in parental decision-making and not dismissing vaccine refusers from practice; 2) Using presumptive and motivational interviewing techniques to identify specific vaccine concerns; 3) Using effective, clear language to present evidence for disease risks and vaccine benefits fairly and accurately; 4) Managing pain on immunization; and 5) Reinforcing the importance of and parental responsibility for community protection. Immunization is one of the most important preventive health measures in existence and responsible for saving millions of lives. Addressing the concerns of vaccine-hesitant parents is a priority for health care providers.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/31043844>

DOI: 10.1093/pch/pxy144

49. Reno JE, O'Leary S, Garrett K, et al. Improving Provider Communication about HPV Vaccines for Vaccine-Hesitant Parents Through the Use of Motivational Interviewing. J Health Commun. 2018;23(4):313-20. DOI: 10.1080/10810730.2018.1442530

ABSTRACT: Human papillomavirus (HPV) vaccine uptake is below that of other routine adolescent vaccines. This is due in part to the fact that the HPV vaccine is often not routinely recommended by providers to all eligible adolescents. While providers' recommendations are crucial, even a strongly stated recommendation can be insufficient among HPV vaccine-hesitant parents. Providers must be prepared to respond to parental concerns following giving the recommendation for the HPV vaccine. This paper presents the analysis of implementation of an intervention aimed at improving provider communication with HPV vaccine-hesitant parents. Healthcare providers and staff at eight pediatric and family medicine clinics received communication training that included motivational interviewing (MI) techniques. Process evaluation in the form of serial surveys, as well as program evaluation in the form of focus groups with participating providers and staff, assessed the perceived efficacy of the intervention. Outcomes included time spent discussing the HPV vaccine during clinical visits, providers' self-efficacy for addressing parental HPV vaccine hesitancy, and their general perceptions of the effectiveness of MI

techniques. Overall, findings indicate the intervention improved providers' communication with HPV vaccine-hesitant parents and providers reported the use of MI played a central role in improved HPV vaccine acceptance. Lessons learned and recommendations for future interventions are also discussed.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/29474117>

DOI: 10.1080/10810730.2018.1442530

50. Connors JT, Slotwinski KL, Hodges EA. Provider-parent Communication When Discussing Vaccines: A Systematic Review. J Pediatr Nurs. 2017;33:10-5. DOI: 10.1016/j.pedn.2016.11.002

ABSTRACT: PROBLEM: Expert literature on communication practices with vaccine hesitant parents posits that a non-confrontational/participatory discussion with the parent would be the best approach to improve compliance. A prior literature review found limited evidence to recommend any particular face to face intervention other than to incorporate communication about vaccination effectiveness during an encounter. Hence, a systematic review was performed in an attempt to determine the most efficacious communication practices to use with parents with vaccination concerns. ELIGIBILITY CRITERIA:

Quantitative and qualitative studies written in English that assessed the communication framework/style of the provider-parent interaction and studies where provider communication was listed as an intervention were reviewed. SAMPLE: Nine articles were included in the sample. RESULTS: The majority of the studies were descriptive and qualitative in nature with only one randomized controlled trial. Five of the 9 studies utilized a descriptive cross-sectional design. Two main themes included message types recommended or given by the provider and message types that were requested by the parent. CONCLUSIONS: Overall, findings showed that there is currently not enough information to definitively state the type of provider-parent communication style that should be employed to affect the parents' vaccination viewpoint. However, recurring themes of trust in the provider and a personalized provider-parent interaction were evident, which promotes a participatory type of interaction.

IMPLICATIONS: The literature indirectly supports providers engaging with vaccine hesitant parents in a more individualized, participatory format, though higher quality and more rigorous studies that focus specifically on provider-parent communication practices are needed.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/27863734>

DOI: 10.1016/j.pedn.2016.11.002

51. McClure CC, Cataldi JR, O'Leary ST. Vaccine Hesitancy: Where We Are and Where We Are Going. Clin Ther. 2017;39(8):1550-62. DOI: 10.1016/j.clinthera.2017.07.003

ABSTRACT: PURPOSE: Vaccines represent one of the most important aspects of pediatric preventive care. However, parents are increasingly questioning the safety of and need for vaccines, and as a result, vaccination rates have fallen to dangerously low levels in certain communities. The effects of vaccine hesitancy are widespread. Community pediatricians who interact regularly with vaccine-hesitant parents report higher levels of burnout and lower levels of job satisfaction. Not surprisingly, vaccine hesitancy has also had direct influence on vaccination rates, which in turn are linked to increased emergency department use, morbidity, and mortality. METHODS: Literature from 1999 to 2017 regarding vaccines and vaccine hesitancy was reviewed. FINDINGS: Few evidence-based strategies exist to guide providers in their discussions with vaccines-hesitant parents. Recent research has shown a presumptive approach (ie, the provider uses language that presumes the caregiver will vaccinate his or her child) is associated with higher vaccination uptake. Motivational interviewing is a promising technique for more hesitant parents. IMPLICATIONS: At the community level, evidence-based communication strategies to address vaccine hesitancy are needed. The practice of dismissing families from pediatric practices who refuse to vaccinate is common, although widely criticized. Other controversial and rapidly evolving topics include statewide vaccination mandates and school exemption policies. Electronic interventions, such as text-

messaging services and social media, have recently emerged as effective methods of communication and may become more important in coming years.

URL: <https://www.ncbi.nlm.nih.gov/pubmed/28774498>

DOI: 10.1016/j.clinthera.2017.07.003

52. O'Leary S, Pyrzanowski J, Lockhart S, et al. Impact of a provider communication training intervention on adolescent human papillomavirus vaccination: A cluster randomized, clinical trial. Open Forum Infectious Diseases. 2017;4(Supplement 1):S61.

ABSTRACT: Background. Effective human papillomavirus (HPV) vaccines have been available in the US for several years but are underutilized. Provider communication about the vaccine is a key factor influencing uptake, yet effective communication tools are lacking or untested. Our objective was to evaluate the impact of a Motivational Interviewing-based 5-component provider HPV vaccine communication intervention on adolescent HPV vaccine uptake. Methods. This was a cluster randomized controlled trial of 16 primary care practices in the Denver area that included 188 medical providers and 43,132 adolescent (11-17 years old) patients. The 5-components of the intervention included an HPV fact library to create practice-specific HPV fact sheets, a tailored parent education website, HPV-related disease images, an HPV vaccine decision aid, and 2 hours of in-person communication training on using a presumptive vaccine recommendation followed by Motivational Interviewing (MI) if parents were vaccine hesitant. Each practice participated in a series of 4 intervention development meetings over a 6 month period (8/2014-1/2015) before launching the intervention. Primary outcomes were differences between control and intervention practices over time (i.e., "Difference in difference" (DID)) in HPV series initiation (≥ 1 dose), and completion (≥ 3 doses) among 11-17 year old patients seen between 09/01/2013-08/31/2014 and 2/1/2015-1/31/2016. Vaccination data were obtained from clinics' records and augmented with a state immunization registry. Results. Adolescents in the intervention practices had a significantly higher odds of HPV series initiation over time than those in control practices (DID Adjusted Odds Ratio (AOR) 1.46, 95% Confidence Interval (CI) 1.31-1.62) and completion (AOR 1.56, 95% CI 1.27-1.92). This translated into a 9.5 absolute percentage point (PP) increase in HPV series initiation, and a 4.4 PP increase in HPV series completion in intervention practices over control practices. The intervention had a greater impact in pediatric compared with family medicine practices, and in private practices compared with public. Conclusion. Implementation of a 5-component HPV vaccine provider communication intervention significantly improved HPV vaccine series initiation and completion among adolescent patients.

Appendix 1: Evidence Search Details

Filters, Limits & Exclusions:	2017 – Current English
Sources Searched:	<ul style="list-style-type: none">• APA PsycInfo (Ovid)• Clinicaltrials.gov• Embase (Ovid)• MEDLINE (Ovid)• Trip• Google (Web)• Google Scholar• LitCOVID• WHO Global Literature on Coronavirus Disease
Librarian(s):	Lukas Miller, Clinical Librarian, Saskatchewan Health Authority

Appendix 2: Search Strategies

Ovid MEDLINE(R) ALL <1946 to March 10, 2022>		
#	Searches	Results
1	exp Vaccination Refusal/ or exp Immunization/	194600
2	((vaccin* or inoculat* or immuniz* or immunotherap*) adj4 (refus* or resist* or hesitan* or deny or denial? or denier? or denied or accept* or uptake? or skeptic* or mistrust* or distrust* or disbelie* or reluctan*)).tw,kf.	17524
3	("anti" adj ("vax" or vaxx or vaccin* or inoculat* or immuniz* or immunotherap*)).tw,kf.	718
4	1 or 2 or 3	204646
5	Motivational Interviewing/or Directive Counseling/	4730
6	((motivational adj2 (interview* or communicat*)) or directive counsel*).tw,kf.	5244
7	5 or 6	8018
8	4 and 7	115
9	limit 8 to (english language and yr="2017 -Current")	71

Embase <1974 to 2022 March 10>		
#	Searches	Results
1	vaccination refusal/ or exp *immunization/ or vaccination/	223070
2	((vaccin* or inoculat* or immuniz* or immunotherap*) adj4 (refus* or resist* or hesitan* or deny or denial? or denier? or denied or accept* or uptake? or skeptic* or mistrust* or distrust* or disbelie* or reluctan*)).tw,kf.	20674
3	("anti" adj ("vax" or vaxx or vaccin* or inoculat* or immuniz* or immunotherap*)).tw,kf.	810
4	1 or 2 or 3	232546
5	motivational interviewing/	5911
6	((motivational adj2 (interview* or communicat*)) or directive counsel*).tw,kf.	7649
7	5 or 6	9259
8	4 and 7	99
9	limit 8 to (english language and yr="2017 -Current")	83
10	limit 9 to medline	15
11	9 not 10	68

12	from 11 keep 1-3, 5-8, 10-11, 15, 19, 25...	25
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APA PsycInfo <1806 to March Week 1 2022>		
#	Searches	Results
1	treatment refusal/ or immunization/	6160
2	((vaccin* or inoculat* or immuniz* or immunotherap*) adj4 (refus* or resist* or hesitan* or deny or denial? or denier? or denied or accept* or uptake? or skepti* or mistrust* or distrust* or disbelie* or reluctan*)).tw,hw,sh.	1515
3	("anti" adj ("vax" or vaxx or vaccin* or inoculat* or immuniz* or immunotherap*)).tw,hw,sh.	115
4	1 or 2 or 3	6512
5	motivational interviewing/	2805
6	(motivational adj2 (interview* or communicat*)).tw,hw,sh.	4724
7	5 or 6	4724
8	4 and 7	14
9	from 8 keep 1-4, 7	5

Keywords Used in Other Resources

- Vaccine hesitancy, refusal, denial, resistance, skepticism, reluctance
- Anti-vaxx, antivaccination etc
- Motivational interviewing, directive counseling



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