Unit No. 3

CONFIDENCE THROUGH CONNECTION: SUPPORTING CONFIDENT VACCINE CHOICES IN PRIMARY CARE

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ABSTRACT

Adult vaccine hesitancy presents a formidable barrier to addressing the escalating burden of vaccine-preventable diseases (VPDs) in an ageing population. Conveying the clinical urgency for adult immunisation to vulnerable populations often collides with a complex landscape of patient doubt, misinformation, and low-risk perception. Overcoming this challenge requires a fundamental shift from simple information provision to a relational, patient-centred approach designed to build trust and foster confidence. Clinicians may utilise a structured framework to examine the psychological drivers of hesitancy through the 5C model (Confidence, Complacency, Convenience, Calculation, Collective Responsibility). By using evidence-based communication strategies, including the presumptive recommendation, Motivational Interviewing (MI), the SHARE model for shared decision-making, and the Empathetic Refutational Interview for addressing misinformation. By integrating these techniques, we would be able to transform challenging vaccine discussions into opportunities to strengthen the patient-provider relationship and support confident, informed health decisions.

Keywords: Vaccine Hesitancy, Health Communication, Primary Care, Motivational Interviewing, Shared Decision-Making, Adult Immunisation, Patient-Centred Care

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INTRODUCTION

Singapore's childhood immunisation programme has been very successful, achieving high community vaccination uptake rates,[1] yet a significant but narrowing gap persists in adult preventive care, which is a core mission of Family Physicians (FPs) nationally.[2] In rapidly ageing societies, this gap represents a growing threat. Older adults face a dual vulnerability: they have a higher prevalence of chronic comorbidities, while facing an age-related decline in immunity (ARDI), which increases susceptibility to infections and increases their risk of severe complications.[3]

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However, the availability of effective vaccines[4] is only half the equation. The biological problem of waning immunity especially in the vulnerable middle-aged to elderly population has a profound and complex psychological counterpart: vaccine hesitancy.

Here, we narratively review the drivers leading to vaccine hesitancy and confidence, outline how FPs can participate in whole-of-society change management efforts to improve vaccine confidence, and provide communication and motivational interviewing strategies to tactically support these objectives at the individual FP level.

THE CHALLENGE OF VACCINE HESITANCY

Vaccine hesitancy has been variably defined as a delay in acceptance or refusal of vaccination despite the availability of vaccination services[5]; a set of attitudes and beliefs associated with vaccine decision-making that precedes a decision to (not get) vaccinated.[6] Vaccine hesitancy exists on a spectrum, ranging from minor uncertainty or a desire for more information to a firm, belief-driven refusal.

Thus it may not be solely due to a knowledge deficit that can be addressed simply by presenting facts, but rather might be attitudinal, stemming from complex, context-specific psychological, social, emotional, and political phenomena.[6] The modern information ecosystem, saturated with misinformation and disinformation, further complicates the landscape, making it difficult for patients to distinguish credible health information from persuasive but false claims.

Family Physicians play a pivotal role alongside specialists and the Government in tackling vaccine hesitancy by multimodal interventions including social media outreach. At the individual level, Family Physicians are well placed—as per the seven CANMEDS roles[7]–to reach out to vaccine-hesitant patients as medical experts, scholars, and communicators. At the societal level, FPs are well placed to collaborate with other specialists, healthcare institutions, and the government, co-leading efforts in this area to influence public perception.

There is local[8] and international[9] evidence of the efficacy of FPs in improving vaccination uptake. For example, Ho et al noted[8] in a pragmatic cluster-randomised crossover trial across 22 general practices in Singapore in the pre-COVID era how a 3-month intervention with flyers and posters encouraging vaccination could modestly influence influenza and pneumococcal vaccination uptake, and with the 100 percent Healthier SG subsidies for these vaccinations for eligible patients, the impact is likely to be even greater in current times.

Despite the pervasive influence of online sources of health information, such as social media, among older adults,

information from doctors or healthcare institutions are perceived as trusted sources, as well as information from governmental organisations and institutions of higher learning.[10,11]

Specifically, in a cross sectional study[11] on data from the Singapore Life Panel (SLP) by Tan et al, a population representative monthly survey of Singaporeans aged 56–75 by SMU researchers, it was noted that 60–92 percent of those aged 56–74 years in Singapore receive somewhat trusted information from social media, family, and friends, specifically with 60 percent shown to "slightly trust" social media. A latent class analysis by the authors noted that a portion of respondents who placed broad trust in all sources of information, especially those with low trust in formal sources of information and high trust in informal sources, have higher odds of being vaccine-hesitant. Especially for this subgroup who place equal or greater weight on social media, family, and friends' recommendations, the authors proposed that they might fall through the cracks, and that it was necessary to develop interventions to tackle this significant subgroup. This was leveraged by Singapore's government, which tackled via a whole-of-government approach misinformation and ambivalence via multi-pronged interventions including social media accounts and videos and targeted use of legislation.[12]

Family Medicine defines itself by its primary, continuing, and patient-centred nature, building a trusted relationship longitudinally, which can be leveraged for fostering vaccine confidence.

There remains a gap of tailored knowledge and skills for Family Physicians at all levels to address vaccine hesitancy. As such, we review, describe, and expand the application of structured communication frameworks such as the 3Cs (of complacency, convenience, and convenience) that have hitherto been described in this journal by Prof See Kay Choong in 202413 and that FPs can use in fostering vaccine confidence.

DECONSTRUCTING VACCINE HESITANCY

Understanding and Tackling the Hesitancy Spectrum at the Individual and Societal Level
Vaccine hesitancy and confidence are a continuum, the vast majority of hesitant individuals do not hold intractable, identity-defining beliefs. Instead, most individuals span a wide and varied middle ground of ambivalence, uncertainty, and legitimate questioning.

At the **patient level**, approaching patients as individuals whose unique concerns and perspective must be understood before they can be addressed, we are able to define the specific nature of the hesitation and tailor interventions and communication strategies.

For FP leaders, it is equally important to apply **societal level** change management techniques such as Kotter's Model[14] that provide a "how" to improve vaccine confidence after diagnosing "why" vaccine hesitancy is present with models such as WHO's Behavioural and Social Drivers of Vaccine Uptake.[15] With the "how" and "why" addressed, structured, people-centred strategies can be employed to address the core motivations of individuals, build a broad-based community of support, tackle misinformation, and proactively remove barriers to action. By generating measurable wins and sustaining acceleration, public health leaders can anchor a new health behaviour of smart trust and evidence-based vaccine confidence in public culture. **Table 1** provides tangible examples of how each of the eight steps of Kotter's Change Management techniques were applied in Singapore's COVID-19 Vaccination campaign that enabled it to urgently vaccinate a large proportion of her population,[16] at one time the highest in the world.

Table 1: Kotter's 8 Steps of Change Management as applied to Singapore's COVID-19 Vaccine Campaign

Kotter's 8 Steps	Application in Singapore's COVID-19 Vaccine Campaign
1. Create a Sense of Urgency	Public communications highlighted the high risk of severe outcomes, hospitalisation, and death, especially among older adults and the immunocompromised. The government also framed misinformation and falsehoods as a parallel threat to public health that required a unified response.
2. Build a Guiding Coalition	A Multi-Ministry Taskforce (MTF) with key leaders from various sectors (Health, Finance, Trade and Industry, etc.) led the response. This was advised by an independent Expert Committee on COVID-19 Vaccination (EC-19V) to ensure all decisions were evidence-based.
3. Form a Strategic Vision	The campaign was guided by a clear, unifying vision to become a "COVID-19-resilient nation", which was tied to the tangible goal of safely reopening the economy and returning to normalcy.

4. Enlist a Volunteer Army	The government mobilised a wide network of “trusted messengers”, including General Practitioners (GPs), community ambassadors, and social service organisations, to provide personalised information and address concerns at the local level. They also engaged local celebrities and artistes to create content in multiple languages to reach diverse audiences.
5. Enable Action by Removing Barriers	Vaccination was made free for all Singapore citizens and residents to remove financial barriers. A vast network of community vaccination centres, polyclinics, and mobile vaccination teams was established to ensure convenient and widespread access for all, including homebound seniors. A unified IT system was also created for seamless booking and data synchronisation.
6. Generate Short-Term Wins	The government used a “carrot-and-stick” approach, implementing vaccination-differentiated safe-management measures that provided vaccinated individuals with tangible, immediate benefits, such as eased restrictions on social gatherings and dining. These incentives were introduced after key vaccination milestones were met, reinforcing the value of the collective effort.
7. Sustain Acceleration	As immunity waned and new variants emerged, the campaign transitioned to a continuous booster programme, demonstrating an ongoing effort to maintain a high level of protection. This involved progressively closing large, temporary vaccination centres and moving the responsibility for ongoing vaccination back to polyclinics and GP clinics, integrating the practice into routine healthcare.
8. Institute Change in the Culture	The behaviours and lessons learnt were formally anchored into the national culture. The government created the “COVID-19 Resilience Medal” to publicly recognise and celebrate the contributions of individuals and teams. They also established a new, disease-agnostic “Pandemic Preparedness and Response Framework” to ensure the nation is ready for future public health challenges.

The remainder of this article will focus on the individual level techniques for the practising FP to tackle vaccine hesitancy.

THE 5C AND 7C FRAMEWORKS FOR VACCINATION READINESS

By actively listening, FPs can obtain the necessary information from patients to utilise the 5C model, a validated psychological framework that identifies five key drivers of vaccine hesitancy[17] to diagnose the root cause(s) of their reluctance.

The five drivers are:

- **Confidence:** This refers to the level of trust in the safety and efficacy of vaccines, the reliability and competence of the healthcare system and its professionals, and the motivations of the policymakers who decide on vaccine schedules. A patient expressing fear of side effects (“I’ll get sick from the vaccine”) or citing stories of adverse events is signalling a deficit in **Confidence**. This is perhaps the most intuitive driver of hesitancy and is often fuelled by misinformation.
- **Complacency:** This driver is characterised by a low perceived risk of contracting a VPD. When the threat of a disease seems distant or insignificant, the motivation to vaccinate is correspondingly low. A patient who states, “I’m healthy, I don’t need it” is demonstrating **Complacency**. They do not necessarily distrust the vaccine; they simply do not believe the disease poses a personal threat, making vaccination seem superfluous. This is a common barrier in adults who have not personally witnessed the severe impact of vaccine-preventable diseases. GPs are well placed to provide the necessary information on the (mitigatable) consequences of vaccine-preventable diseases.
- **Convenience:** This dimension encompasses structural and practical barriers to vaccination. It includes factors like the physical availability of the vaccine, geographic accessibility, affordability, and the ease of scheduling an appointment. A patient concerned about cost (“It’s too expensive”) or time (“I don’t have time”) is facing a **Convenience** barrier. These are often the most straightforward barriers to address, yet they can be a significant deterrent if not acknowledged and resolved. GPs laboured round the clock to vaccinate patients during the COVID pandemic, enabling convenient vaccination for the populace especially the working class.
- **Calculation:** This refers to an individual’s active and deliberate process of seeking information to weigh the perceived risks and benefits of vaccination. A patient who has done extensive online research and comes to the appointment with a list of detailed questions is engaged in **Calculation**. While this behaviour can be challenging, it also signals a high level of engagement with their health. The key for GPs is to ensure patients’ calculations are based on accurate understanding of risk.

- **Collective Responsibility:** This dimension relates to the willingness to be vaccinated to protect others in the community, contributing to herd immunity. While a powerful motivator for some, an appeal to collective responsibility is often less effective for adult vaccines (which primarily offer direct protection) compared to childhood or pandemic vaccines. Nonetheless, understanding a patient's orientation toward this concept can inform the communication approach.

EXPANSION TO THE 7C MODEL IN THE POST-PANDEMIC ERA

The global experience during the COVID-19 pandemic highlighted the need for a more comprehensive framework. The model was expanded to include two additional drivers, creating the **7C model of vaccination readiness**[18]:

- **Compliance (or Conformity):** This dimension captures the influence of mandates, rules, and social pressure. It was a particularly strong driver in Singapore, where Vaccination-Differentiated Safe Management Measures (VDS) linked vaccination status to access to public spaces like malls and restaurants, creating a powerful incentive for compliance. In the appropriate setting, individual clinicians can leverage on this particularly strong trait in Singapore for individual patients, pointing how the majority of other patients, friends, and family have undergone vaccination.
- **Conspiracy:** This refers to the belief that vaccines are part of a secret, harmful plot by powerful organisations. Such a mindset makes individuals distrust official health advice. Whilst the Singaporean government actively addressed this driver by promoting official information channels and using legislation like POFMA to counter the spread of dangerous misinformation, **at the individual level**, clinicians can reflectively listen and **reflect back** the misinformation for the **patient's** consideration, **encouraging** them to **critically review**, and **evaluate** for themselves the correctness of this information.[19]

USING THE 7C MODEL AS A CLINICAL TOOL

The clinician can use the **7C model** to perform a "psychosocial diagnosis" to plan their approach. The process involves two steps. First, the clinician must listen carefully to the patient's expressed barrier. This might be a direct statement like "I'm scared of needles", or a more complex belief like "Vaccines cause disease".

Second, the clinician maps this symptom to the underlying **7C driver**. For instance:

- **"It's too expensive"** is a symptom of a **Convenience** issue.
- **"I'm healthy and rarely get sick, so I don't need it"** is a symptom of **Complacency**.
- **"I've read that the new mRNA vaccines can alter your DNA"** is a symptom of low **Confidence** and flawed **Calculation**.

A clinician who only responds to the symptom might offer a simple, factual rebuttal (e.g., "Subsidies are available" or "That's a myth"). While not incorrect, this approach fails to address the root cause. In contrast, a clinician who has diagnosed the underlying driver can select a much more targeted and effective communication strategy.

For a patient driven by **Compliance**, the focus should be on validating their decision and making the process efficient, rather than debating the vaccine's merits. For a patient expressing **Conspiracy**-related beliefs, the goal is not to win a factual debate, but to maintain the therapeutic relationship, find common ground, and preserve trust for future encounters.

COMMUNICATION STRATEGIES FOR BUILDING PATIENT CONFIDENCE

The Power of the Presumptive Recommendation

For the majority of patients who are not hesitant, the most effective and efficient way to initiate a vaccine conversation is with a presumptive recommendation.[20] Frame vaccination as a routine and expected part of good clinical care, thereby normalising the behaviour. Instead of asking an open-ended question like "What are your thoughts on getting the shingles vaccine today?", make a clear, confident recommendation. "Let's do your shingles vaccine today to protect you".

The presumptive approach helps efficiently identify patients who are ready to accept vaccination. If the patient agrees, the clinician can proceed. However, if the patient expresses any hesitation, consider pivoting to a more patient-centred, exploratory approach like Motivational Interviewing. Failure to pivot is a common mistake that can shut down the conversation.

Motivational Interviewing (MI) for the Ambivalent Patient

When a patient expresses ambivalence, the goal shifts from recommending to understanding. Motivational Interviewing (MI) is a collaborative conversational style for strengthening a person's own motivation and commitment to change.[17] It is ideally suited for vaccine conversations because it avoids the "righting reflex", the natural tendency for clinicians to correct what they perceive as wrong thinking, which often elicits patient defensiveness.

- **Core Philosophy (The "Spirit" of MI):** MI is guided by four principles:
  - **Partnership:** The clinician works collaboratively with the patient, who is viewed as the expert on their own life.

  - **Acceptance:** The clinician respects the patient's autonomy, worth, and perspective, even if they disagree.
  - **Compassion:** The clinician actively promotes the patient's welfare with empathy.
  - **Evocation:** The clinician's primary task is to draw out the patient's own arguments for change, rather than imposing their own.
- **Core Skills (OARS):** These four skills are the practical application of the MI spirit.
  - **Open Questions:** Questions that cannot be answered with a simple "yes" or "no". They invite the patient to tell their story.
    - *Example:* "What have you heard about the RSV vaccine?" or "Help me understand your concerns about getting vaccinated today".
  - Affirmations: Statements that recognise the patient's strengths, efforts, or positive qualities. This builds rapport and self-efficacy.
    - *Example:* "I can see you've put a lot of thought into this, and I appreciate you sharing your concerns with me."
  - **Reflections:** The clinician makes a statement that reflects back the meaning of what the patient has said. This is the most powerful MI skill, as it shows the patient they are being heard and understood.
    - Patient: "I'm just not sure the risk of shingles is a big deal for me. I'm pretty healthy."
    - Clinician (Simple Reflection): "So you feel that because you're in good health, shingles isn't a major risk for you."
    - Clinician (Complex Reflection): "On the one hand, you feel healthy and the risk seems distant, but on the other, you're here today talking about it, so a part of you is considering it." This highlights the patient's own ambivalence.
  - **Summaries:** A collection of reflections that pull together the key elements of the conversation, often used to transition to the next step.
    - *Example:* "So, let me see if I have this right. You're worried about potential side effects you've read about online, but you also know your neighbour had a terrible case of shingles and you want to avoid that. Where does that leave us?"

MI is the ideal tool when the underlying 7C driver is **Complacency** or **Calculation**. It helps the patient explore their own reasons for and against vaccination, allowing them to resolve their ambivalence in favour of protecting their health.

The SHARE Model for True Shared Decision-Making

While MI is designed to help a patient find their own motivation, shared decision-making is a collaborative process of weighing evidence and preferences together to make a choice. The SHARE model provides a five-step framework[21] for this process and is particularly useful when a patient is actively engaged in Calculation and wants to be a partner in the decision.

The Five Steps of SHARE:

1. **Seek** your patient's participation. Explicitly invite the patient to be part of the decision-making process.
   - *Example:* "There are a couple of ways we can approach protecting you from pneumococcal disease. I'd like to talk through the options with you and decide together what makes the most sense."
2. **Help** your patient explore and compare treatment options. Present the options clearly, using plain language and decision aids if available. Discuss the risks and benefits of each choice, including the option of not vaccinating.
   - *Example:* "We have two types of pneumococcal vaccines available. Vaccine A is one dose, while Vaccine B requires two doses but might offer broader protection for someone with your health condition. Let's look at what that means."
3. **Assess** your patient's values and preferences. Understand what matters most to the patient. Is it convenience? Maximum efficacy? Avoiding side effects?
   - *Example:* "Given these two options, what's most important to you right now? Is it getting it done in one visit, or are you more focused on the long-term protection?"
4. **Reach** a decision with your patient. Check for understanding and make a decision together.
   - *Example:* "It sounds like the single-dose option fits best with your priorities. Are you comfortable moving forward with that plan?"
5. **Evaluate** your patient's decision. Follow up to ensure the patient is comfortable with the plan and that it is implemented.

Follow this conversational algorithm: **Start Presumptive → If Hesitation, Assess Cause → If Ambivalence, Use MI → If Collaborative/Data-Seeking, Use SHARE** to navigate the majority of vaccine conversations in a way that is both efficient and tailored.

NAVIGATING DIFFICULT CONVERSATIONS

One of the most challenging scenarios in a vaccine conversation is when a patient presents a piece of specific

misinformation. Countering misinformation is crucial to ensure patients make informed decisions based on factual information, and misinformation can be successfully debunked.[22,23] The Empathetic Refutational Interview[24] is a guided conversation that integrates psychological research with best clinical practices to correct false information while preserving the trusted relationship with the patient. It does so by refuting misconceptions within a supportive framework that shows empathy and understanding for the patient's underlying motivations.

The Four-Step Method:

1. **Step 1: Elicit Concerns**

- Invite the patient to share their thoughts, drawing from motivational interviewing techniques like active listening. This helps establish common ground and allows the healthcare professional (HCP) to understand the underlying motivation, or "attitude root", for the patient's concern.

2. **Step 2: Affirm**

- Express empathy by affirming the patient's concerns or the values behind them. The HCP can agree with the legitimate part of a patient's worry (e.g., that it's wise to be cautious about medications) without endorsing the specific misconception. This affirmation builds trust, shows the patient they are being heard, and increases their receptiveness to further information.

3. **Step 3: Offer a Tailored Refutation**

- After building rapport, the HCP refutes the misconception. This is more effective than simply stating facts. The refutation should be tailored not just to the false information but also to the patient's underlying motivation (attitude root) to avoid threatening their worldview. The goal is to replace the misconception with a believable and acceptable alternative for the patient.

4. **Step 4: Provide Factual Information**

- The interview concludes by providing additional, evidence-based facts that are known to be effective at increasing vaccine acceptance. This can include explaining the risks of the disease or the benefits of immunity.

MAPPING COMMUNICATION STRATEGIES TO COMMON VACCINATION BARRIERS

To make these frameworks immediately applicable in a busy clinical setting, the following table serves as a practical, quick-reference guide. It synthesises the entire communication process, helping clinicians move swiftly from a patient's expressed concern (the symptom), to a diagnosis of the underlying psychological driver (the 5C model), and finally to the selection of the most appropriate evidence-based communication strategy and sample phrasing.

Common Patient Barrier & Phrasing	Likely Primary 7C Driver(s)	Recommended Communication Strategy	Sample Phrasing & Clinical Pearls
Pain/Fear of Injection "Injections are painful." "I'm scared of needles."	Low Confidence (in a painless experience)	Simple Reassurance & Procedural Support	"I hear you. Many people feel that way. The needle is very small, and it will be over in just a few seconds. We can use a distraction technique, like coughing right as I give the injection, which can help a lot. How does that sound?"
Perceived Inconvenience "I don't have time."	Convenience	Problem-Solving & Benefit Framing	"It's definitely a challenge to fit one more thing into a busy day. The good news is we can do it right now, and it will only take a minute. This one quick step can save you from being sick for weeks with something like RSV, which would be a much bigger disruption."
Cost Concerns "It's too expensive."	Convenience	Education & Cost-Benefit Analysis	"That's a very practical concern. HealthierSG or Medisave may help cover some of the cost. When we compare that to the potential cost of hospitalisation or missed work from a serious illness, the vaccine is incredibly great value for your health."
Lack of Knowledge "I'm not sure if I need this."	Calculation (early stage)	Education & Personalisation (using analogies)	"That's a great question. Your immune system is like a security force that gets a little slower as we age. This vaccine helps to train up that security force, preparing it to fight off a real shingles infection. For someone your age, that training is really important."

Low Perceived Risk "I'm healthy." "Vaccines are for children only, not adults."	Complacency	Motivational Interviewing (MI) to Develop Discrepancy	"It's wonderful that you feel so healthy, and you've clearly taken great care of yourself. Help me understand what your health looks like for you in 10 years. How does staying active and independent fit into that picture? Sometimes, an illness like shingles can unexpectedly get in the way of those plans."
Fear of Side Effects "I'll get sick from the vaccine."	Low Confidence	MI to Explore Fears & Normalise Response	"It's understandable to be worried about side effects. What specific things are you most concerned about? It's helpful to know that feeling a bit tired or having a sore arm is actually a sign that your immune system is learning and building protection. These feelings are mild and temporary, unlike the illness which can be more severe."
Misinformation "Vaccines cause disease."	Low Confidence & Flawed Calculation	Empathetic Refutational Interview (ERI)	1. **Elicit:** "Thanks for sharing that with me. There's a lot of conflicting information out there. Can you tell me a bit more about that?" 2. **Affirm:** "I can see why that would be worrying. It's smart to be cautious and want to be sure about safety. It's normal to wonder about that." 3. **Tailored Refutation:** "That's an important question. The great thing about this vaccine is that it's designed to be impossible to cause the disease because it only uses a small, inactive piece of the virus. It's like giving your immune system a photo of the intruder without ever letting them in the house." 4. **Provide Facts:** "So we can be confident that it's safe, and the benefit is that it is very effective at preventing a severe infection that could lead to hospitalisation."

CONCLUSION

The growing burden of adult vaccine-preventable diseases demands a renewed focus on prevention. The behavioural and social drivers of vaccine hesitancy can be diagnosed at the societal level, and change management strategies to tackle these have been outlined.

At the individual level, clinicians can effectively approach vaccine hesitancy by diagnosing the root causes of vaccine hesitancy with the 7Cs model and apply tailored, evidence-based communication. Strategies like Presumptive Recommendation, Motivational Interviewing, SHARES, and the Empathetic Refutational Interview (ERI) are key approaches to addressing vaccine hesitancy and helping healthcare professionals refute misconceptions while maintaining trust and rapport with patients. An empathetic response, such as affirming a patient's concerns, helps support a FP's refutation and subsequent information. Each conversation is a critical opportunity to strengthen the therapeutic alliance, and directly contributes to community-wide disease prevention.

REFERENCES

1. Tan NC, Pang J, Koh E. The Impact of a Revised National Childhood Immunization Schedule on Vaccination Defaulters. Vaccines (Basel). 2023 Apr 17;11(4):859. doi: 10.3390/vaccines11040859. PMID: 37112771; PMCID: PMC10145191.
2. MINISTRY OF HEALTH. TAKE-UP AND SUBSIDY RATES FOR VACCINES LISTED IN NATIONAL ADULT IMMUNISATION SCHEDULE NOTICE PAPER NO. 3477. Published online February 27, 2025. Accessed August 24, 2025. https://www.moh.gov.sg/newsroom/take-up-and-subsidy-rates-for-vaccines-listed-in-national-adult-immunisation-schedule
3. Vetrano DL, Triolo F, Maggi S, et al. Fostering healthy aging: The interdependency of infections, immunity and frailty. Ageing Res Rev. 2021 Aug;69:101351. doi: 10.1016/j.arr.2021.101351. Epub 2021 May 7. PMID: 33971332; PMCID: PMC9588151.
4. Soegiarto G, Purnomosari D. Challenges in the Vaccination of the Elderly and Strategies for Improvement. Pathophysiology. 2023 Apr 22;30(2):155-173. doi: 10.3390/pathophysiology30020014. PMID: 37218912; PMCID: PMC10204411.

5. MacDonald NE; SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. Vaccine. 2015 Aug 14;33(34):4161-4. doi: 10.1016/j.vaccine.2015.04.036. Epub 2015 Apr 17. PMID: 25896383.
6. Larson HJ, Gakidou E, Murray CJL. The Vaccine-Hesitant Moment. N Engl J Med. 2022 Jul 7;387(1):58-65. doi: 10.1056/NEJMra2106441. Epub 2022 Jun 29. PMID: 35767527; PMCID: PMC9258752.
7. CanMEDS-Family Medicine | The College of Family Physicians of Canada. Accessed August 30, 2025. https://www.cfpc.ca/en/education-professional-development/educational-frameworks-and-reference-guides/canmeds-family-medicine
8. Ho HJ, Tan YR, Cook AR, et al. Increasing Influenza and Pneumococcal Vaccination Uptake in Seniors Using Point-of-Care Informational Interventions in Primary Care in Singapore: A Pragmatic, Cluster-Randomized Crossover Trial. Am J Public Health. 2019 Dec;109(12):1776-1783. doi: 10.2105/AJPH.2019.305328. Epub 2019 Oct 17. PMID: 31622142; PMCID: PMC6836784.
9. Ceccarelli A, Munafò G, Sintoni F, Cintori C, Gori D, Montalti M. Effectiveness of General Practitioners' Involvement in Adult Vaccination Practices: A Systematic Review and Meta-Analysis of International Evidence. Vaccines (Basel). 2024 Dec 20;12(12):1438. doi: 10.3390/vaccines12121438. PMID: 39772098; PMCID: PMC11680296.
10. Leong QY, Lee VV, Ng WY, et al. Older Adults' Perspectives and Experiences With Digital Health in Singapore: Qualitative Study. JMIR Hum Factors. 2024 Nov 11;11:e58641. doi: 10.2196/58641. PMID: 39527787; PMCID: PMC11589501.
11. Tan M, Straughan PT, Cheong G. Information trust and COVID-19 vaccine hesitancy amongst middle-aged and older adults in Singapore: A latent class analysis Approach. Soc Sci Med. 2022 Mar;296:114767. doi: 10.1016/j.socscimed.2022.114767. Epub 2022 Feb 3. PMID: 35144226; PMCID: PMC8812088.
12. The Role of Public Communications and Engagement in a Pandemic. Accessed August 30, 2025. https://knowledge.csc.gov.sg/ethos-issue-22/the-role-of-public-communications-and-engagement-in-a-pandemic/
13. See KC. COVID-19: Where are we now? Singap Fam Physician. 2024;50(10). Accessed August 30, 2025. https://cfps.org.sg/publications/the-singapore-family-physician/article/2135
14. Baker EL, Musselwhite C. Leading Organizational Change in the Post-COVID Pandemic Era. J Public Health Manag Pract. 2023 May-Jun 01;29(3):411-414. doi: 10.1097/PHH.0000000000001735. PMID: 36961542; PMCID: PMC10062651.
15. Behavioural and social drivers of vaccination: tools and practical guidance for achieving high uptake. Accessed August 30, 2025. https://www.who.int/publications/i/item/9789240049680
16. COVID-19 Vaccination Dose Interval To Be Shortened As National Vaccination Programme Is Accelerated. Ministry of Health. Accessed August 30, 2025. https://www.moh.gov.sg/newsroom/covid-19-vaccination-dose-interval-to-be-shortened-as-national-vaccination-programme-is-accelerated/
17. Betsch C, Schmid P, Heinemeier D, Korn L, Holtmann C, Böhm R. Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. PLoS One. 2018 Dec 7;13(12):e0208601. doi: 10.1371/journal.pone.0208601. PMID: 30532274; PMCID: PMC6285469.
18. Oudin Doglioni D, Gagneux-Brunon A, Gauchet A, et al. Psychometric validation of a 7C-model of antecedents of vaccine acceptance among healthcare workers, parents and adolescents in France. Sci Rep. 2023 Nov 14;13(1):19895. doi: 10.1038/s41598-023-46864-9. PMID: 37963903; PMCID: PMC10646074.
19. Bam NE. Strategies to address conspiracy beliefs and misinformation on COVID-19 in South Africa: A narrative literature review. Health SA. 2022 Nov 8;27:1851. doi: 10.4102/hsag.v27i0.1851. PMID: 36483504; PMCID: PMC9723965.
20. Jacobson RM, St Sauver JL, Griffin JM, MacLaughlin KL, Finney Rutten LJ. How health care providers should address vaccine hesitancy in the clinical setting: Evidence for presumptive language in making a strong recommendation. Hum Vaccin Immunother. 2020 Sep 1;16(9):2131-2135. doi: 10.1080/21645515.2020.1735226. Epub 2020 Apr 3. PMID: 32242766; PMCID: PMC7553710.
21. Hargraves IG, Fournier AK, Montori VM, Bierman AS. Generalized shared decision making approaches and patient problems. Adapting AHRQ's SHARE Approach for Purposeful SDM. Patient Educ Couns. 2020 Oct;103(10):2192-2199. doi: 10.1016/j.pec.2020.06.022. Epub 2020 Jun 27. PMID: 32636085; PMCID: PMC8142549.
22. Schmid P, Betsch C. Effective strategies for rebutting science denialism in public discussions. Nat Hum Behav. 2019 Sep;3(9):931-939. doi: 10.1038/s41562-019-0632-4. Epub 2019 Jun 24. PMID: 31235861.
23. Ecker UKH, Lewandowsky S, Cook J, et al. The psychological drivers of misinformation belief and its resistance to correction. Nat Rev Psychol. 2022 1;(1):13-29. doi:10.1038/s44159-021-00006-y.
24. Holford D, Schmid P, Fasce A, Lewandowsky S. The empathetic refutational interview to tackle vaccine misconceptions: Four randomized experiments. Health Psychol. 2024 Jun;43(6):426-437. doi: 10.1037/hea0001354. Epub 2024 Mar 4. PMID: 38436659.

LEARNING POINTS

- **Effective vaccine conversations require a shift from simply providing facts to first understanding the root cause of a patient's hesitation. Use the 7C model to perform a "psychosocial diagnosis" and identify the driver behind a patient's reluctance.**
- **Use a tailored communication strategy based on the diagnosed driver of hesitancy. This involves using a presumptive recommendation for accepting patients, Motivational Interviewing (MI) for ambivalent patients, the SHARE model for collaborative patients engaged in calculation, and the Empathetic Refutational Interview (ERI) for those presenting specific misinformation.**
- **Avoid the "righting reflex" (the urge to immediately correct a patient), which can cause defensiveness and damage trust.**