



Vaccine Hesitancy

**Dr Ruth Ceannt, Specialist Registrar in Public Health Medicine
National Immunisation Office**

NIO Lunch and Learn Series – April 2023



Objectives

- Understand what vaccine hesitancy is
- Understand why some people are vaccine hesitant, and the different components of vaccine hesitancy
- Take a closer look at COVID-19 vaccine hesitancy in parents
- Gain insight into how to address vaccine hesitancy



What is vaccine hesitancy?

WHO:

“Vaccine hesitancy refers to delay in acceptance or refusal of vaccination despite availability of vaccination services. Vaccine hesitancy is complex and context specific, varying across time, place and vaccines. It is influenced by factors such as complacency, convenience and confidence”¹



What is vaccine hesitancy?

- Vaccine hesitancy is **dynamic**.
- A person may accept one vaccine but not another, or at one time but not at a different time
- Vaccine hesitancy is
“complex and context-specific,”
“varying over time and place,” and
“vaccine specific.”



What is vaccine hesitancy?

- Vaccine hesitancy is complex
- Vaccine hesitant people do not form a heterogeneous group
- There are many factors at play
- There are many different reasons a person may be vaccine hesitant



Vaccine hesitancy- why is it important?

- The WHO identify vaccine hesitancy as one of the top 10 global health threats
- As vaccine hesitancy increases, vaccine uptake can decrease and this can impact on the re-emergence of infectious diseases that had been kept at bay by vaccination
- This is a threat at an individual level and at a population level for herd immunity
- Some vaccines require a very high level of uptake in order to maintain herd immunity and effective control of the disease (e.g. 95% for measles).
- Herd immunity is important to protect those in the “herd” that cannot be vaccinated
- So any small uptick in vaccine hesitancy and therefore decrease in uptake can have effects on a population level
- This is why it is essential to maintain confidence in vaccines



Vaccine hesitancy- why is it important?

- The fact that some people are vaccine hesitant is probably a good sign!- vaccines have worked so well that people no longer fear the diseases they protect against, as they are so rare that people do not remember their devastating effects
- This of course creates its own problems
- As mentioned above, if hesitancy increases so too will the diseases that vaccines protect against
- This can be seen currently in real time with the re- emergence of diseases, such as recent measles outbreaks in various parts of the world



Vaccine hesitancy- why is it important?

- There are some rather worrying findings contained in a report published last week by UNICEF that confidence in vaccines is slipping globally.²
- The public perception of the importance of vaccines for children declined during the COVID-19 pandemic in 52 out of 55 countries studied, including in Ireland
- In Ireland, the perception of the importance of childhood vaccination fell 6% from 91.5% to 85.5%.
- Those under the age of 35 showed a greater reduction in confidence, as did males
- Pre Covid Ireland's vaccine hesitancy rates were 31st out of the 55 countries compared, post Covid they are now ranked 17th among nations.
- The ECDC has recently warned about the potential for rising measles outbreaks in Europe, and even the re-emergence of polio*



Vaccine hesitancy- why is it important?

- A recent paper from Japan demonstrates the potentially tragic effects of vaccine hesitancy
- HPV vaccination began in 2010 in Japan for girls aged between 12 and 16
- Initial coverage was 70%
- This dropped to 1% due to hesitancy related to now disproven concerns regarding the vaccine's side effects.
- The rates have not recovered
- This paper used modelling to estimate rates of cancer and deaths
- “The vaccine crisis from 2013 to 2019 is predicted to result in an additional 24 600–27 300 cases and 5000–5700 deaths over the lifetime of cohorts born between 1994 and 2007, compared with if coverage had remained at around 70% since 2013” ³



Why are some people vaccine hesitant?

Complacency

Convenience

Confidence



Complacency

- This is when people are not particularly worried about the risks or are not aware of the level of risk
- They perceive the risk to be low
- They are complacent about it

“It won’t affect me, we live in a safe part of the World”

“My children don’t need a measles vaccine, sure there’s no measles here”

- Vaccination is not seen as a high priority compared to life’s other competing interests



Convenience

- This is when the logistics of getting the vaccine outweigh the perceived benefit for the person
- They see it as difficult to access
- It might involve time off work, travelling to a clinic, language barriers
- The person believes that it is just too inconvenient to get the vaccine, not weighing up how inconvenient it might be to get the disease



Confidence

- Perhaps the most complex of the factors and most relevant following the COVID-19 pandemic
- A person may lack confidence that the vaccine is safe, effective or necessary
- Getting a vaccine involves a big leap of faith in some ways
- It involves trusting in many different people, institutions and factors



Confidence

Getting a vaccine involves trust/confidence in:

- ✓ Policy makers , politicians and government
 - ✓ Your health system
 - ✓ Your health care worker, doctor, nurse, or pharmacist
 - ✓ Scientists and experts
 - ✓ Health professionals in general
 - ✓ The mainstream media (sometimes)
 - ✓ YOURSELF- Do I know who to trust? Do I know what sources are reliable? Do I know how to make sense of all of the information available?
- ...to name but a few!



Confidence

- When you think about it this way it is understandable that some people are vaccine hesitant, and that it is becoming more prevalent now in the age of mass media, the internet and social media
- Navigating the online world and scientific evidence is difficult – Most education systems do not teach critical thinking skills and scientific reasoning! (Perhaps they should!)

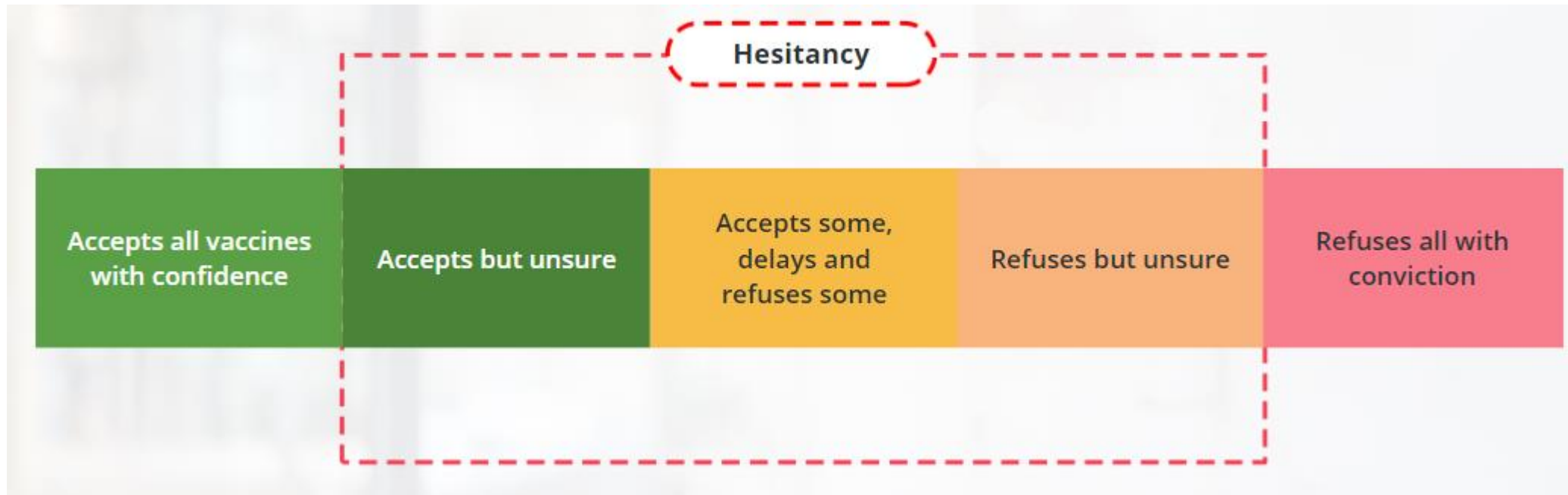


Who is vaccine hesitant?

- Lots of people!
- From all walks of life
- Not just 'conspiracy theorists', these are a very small minority
- Vaccine hesitancy is a spectrum, from downright refusal of all vaccines (resistant), to just requiring reassurance about some vaccines
- This is good news!
- It means that it may be possible to educate most vaccine hesitant people and to increase vaccine uptake in these groups
- Remember that many people who are vaccine hesitant have genuine concerns, that once addressed may persuade them to get themselves or their children vaccinated. It is natural for people to worry about their own health and about vaccinating their children.



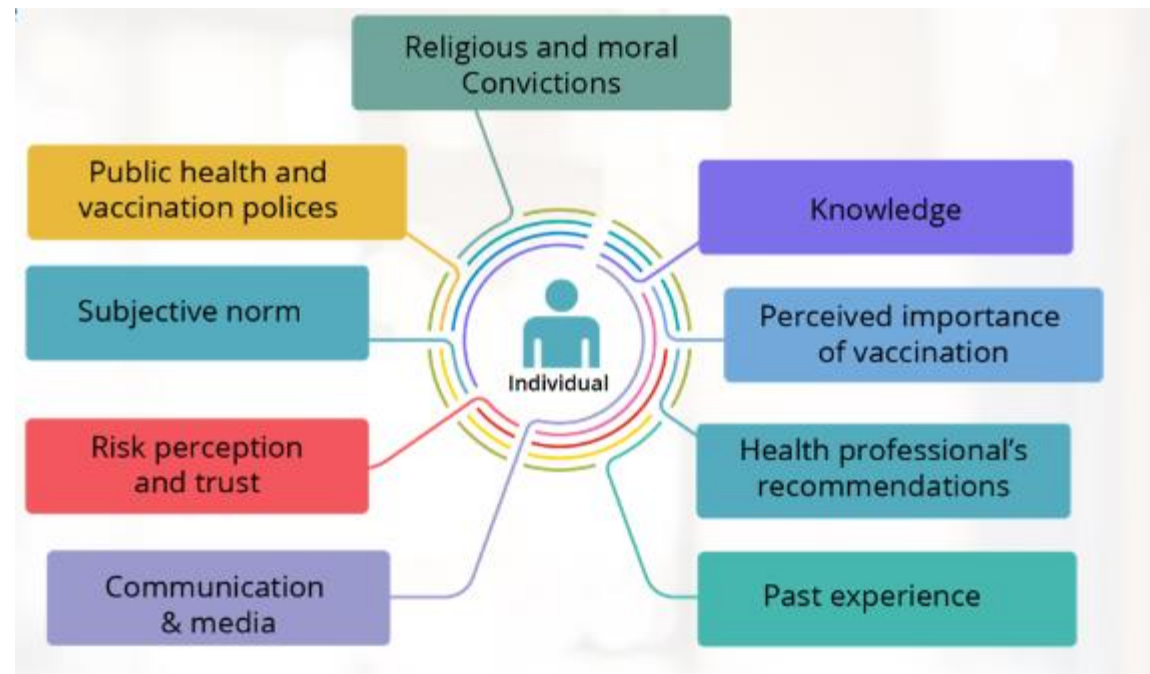
Who is vaccine hesitant?





What influences a person's decision to vaccinate?

- As mentioned above it is very complex
- Multiple influences act on a person to make them to decide to get vaccinated or not
- These include:





What influences a person's decision to vaccinate?

- Data, evidence and science play a part
- But in reality people are influenced by other factors too such as anecdotal evidence, lived experiences and emotions
- None of us are completely rational beings
- We tend to see what we believe, rather than believing what we see
- Taking all this into account, **HOW** we deliver our messages is just as important as what these messages are



Is vaccine hesitancy increasing? Why?

- Yes
- It is hard to quantify the rates of vaccine hesitancy, as it is not a routinely collected piece of data and is complex
- However, we know it is increasing from population based surveys and from the proxy measure of falling vaccination rates in some cases



Is vaccine hesitancy increasing? Why?

- This is due to a number of factors, including:⁴
 - A culture of decreased trust in experts
 - The rise of the internet and of social media
 - A rise in belief-based extremism/wider dissemination of belief-based extremism
 - Political polarisation
 - Libertarian views
 - Alternative health care advocacy
 - Bad science: The MMR vaccine and Autism
 - Many new vaccines coming on stream- parents concerned about “overloading” their infants
 - The focus on vaccines and their safety during the COVID-19 pandemic (Good and bad)

(Reference: The Vaccine Hesitant Moment, NEJM- see references slide)



Is vaccine hesitancy increasing? Why?

- Vaccine uptake in Ireland for all childhood vaccines remains below the WHO 95% target, some well below. ⁵
- MMR vaccination rates have fallen in Ireland over the last few years*
- In a recent (2021) national survey of parents' attitudes to childhood vaccines in Ireland, 96.1% of parents/guardians had or intended to have their children fully vaccinated. However a vaccine hesitancy rate of 7.1% was also observed.
- 1 in 10 respondents reported that everyday stresses prevented them from getting their child vaccinated
- Encouragingly overall rates of hesitancy were low, and most parents retained trust in healthcare workers and in official HSE information.⁶



Vaccine hesitancy and the internet

- Even back in 2002 academics were warning about the effects of the internet on vaccine hesitancy:

“The anti-vaccination message on the internet is far more unbridled than in other media.... The internet represents a greater potential for the public to make uninformed decisions about vaccination” ⁷

- BUT the internet can also be a force for good, to tackle misinformation, and to disseminate accurate scientific information, however it can be very challenging to compete with the vocal anti- vaccination movement, and we have to tackle this actively.



The internet and vaccine hesitancy

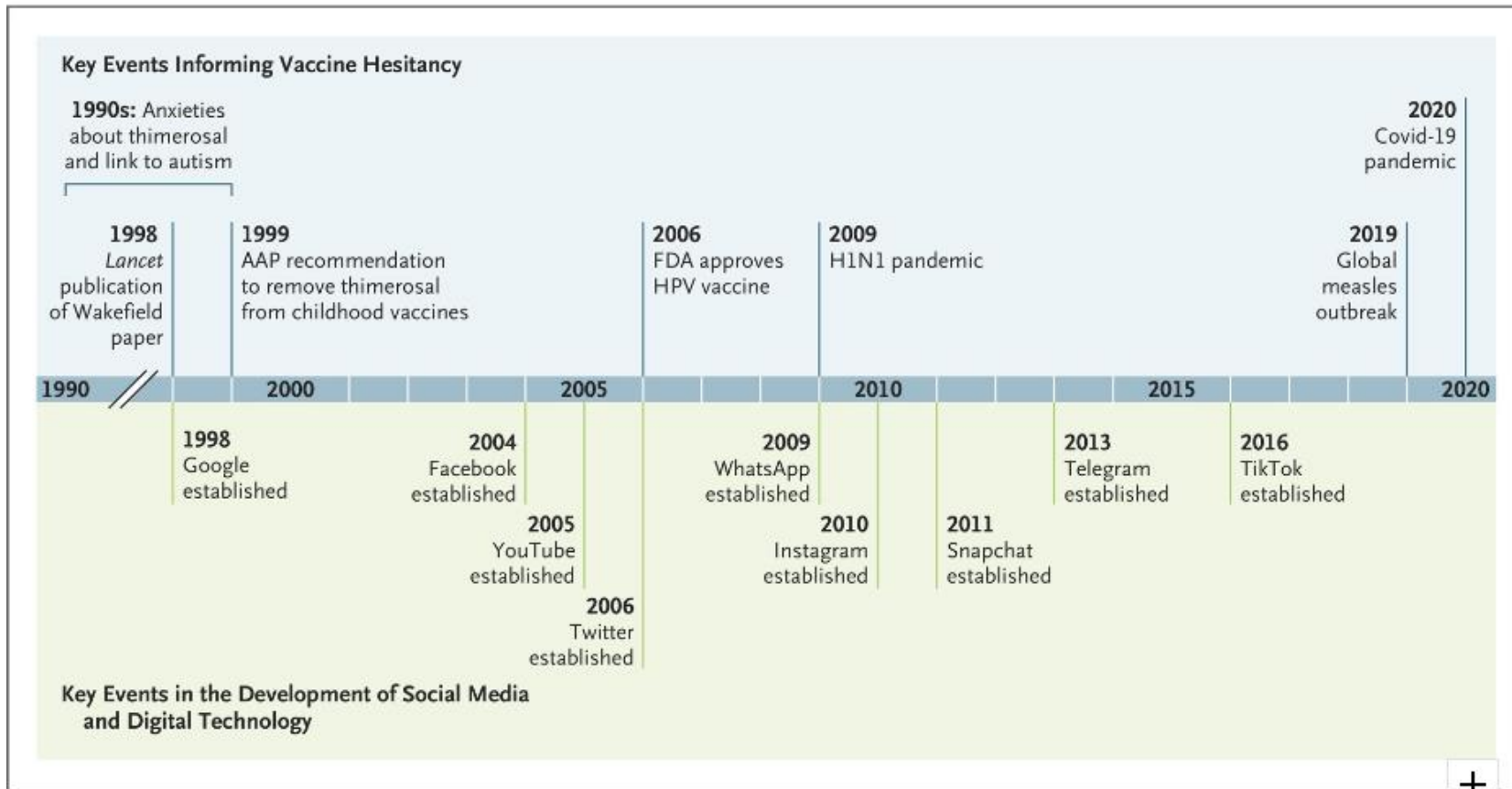


Figure 1. Timeline of Key Events Prompting Vaccine Hesitancy and Milestones in the Expansion of Social Media and Digital Technology.

Reference 4- 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. Access here: <https://www.nejm.org/doi/full/10.1056/nejmra2106441>



Recent challenges to vaccine confidence

- MMR and autism – an example of the effects of bad science
- H1N1- one of the original vaccines had a small but significant association with narcolepsy in Northern Europe. This was multifactorial, involving genetic predisposition as well. This vaccine is no longer used. However, I mention it to highlight that sometimes people have justifiable concerns and these should be acknowledged, investigated, and an explanation given, rather than dismissed, as this approach will be unsuccessful.
- HPV- well-organised lobby groups spreading misinformation (know who you are up against!)
- COVID-19 – more vaccine sceptics emerged online and there was an initial glut of conspiracy theories.
- However COVID-19 has also been a success for vaccine confidence in some ways. Many people will acknowledge that the vaccines helped us to get our lives back.
- The COVID-19 pandemic highlighted the importance of human behaviour in controlling infectious diseases



HPV in Ireland- vaccine hesitancy reversal, a success story ⁸

- Initially the HPV vaccine in Ireland had an uptake of over 80%
- It was as high as 86.9% in 2014-2015
- Parental concerns arose in relation to vaccine safety based on information spread by lobby groups, misinformation spread, it was a well-organised and far reaching group, even lobbying politicians and mainstream media
- Resulting in a documentary being aired on national television
- Confidence in the vaccine was really dented
- Uptake of first dose fell as low as 50% in 2016-2017
- Something had to be done



HPV in Ireland- vaccine hesitancy reversal- a success story

- Steering group of concerned organisations convened
- A strong and coordinated response was initiated
- Focus groups with parents were arranged to identify concerns
- All relevant stakeholders in education, parenting, politics etc., were consulted
- An analysis of social media content was conducted
- Online training materials were reviewed
- Training was delivered to healthcare professionals
- Rates increased to 61.7% in 2016-2017
- Rates increased still further following Laura Brennan's selfless and heroic advocacy on HPV vaccination. She was also instrumental in turning this tide of hesitancy
- Current HPV first dose vaccination uptake in Ireland- 78.4% 2021/2022 academic year ⁹



Covid-19 Vaccine Hesitancy and Resistance Amongst Parents of Children Under 18 Years of Age in Ireland: An Analysis Of Data From The Covid-19 Psychological Research Consortium Study¹⁰



BACKGROUND

- COVID-19 vaccines are now available in Ireland for children aged 6 months +
- To maximize uptake it is essential to understand how to communicate with parents
- An understanding of their backgrounds, beliefs and concerns relating to COVID-19 vaccines is required

CURRENT KNOWLEDGE

- Vaccine hesitancy has been increasing globally, pre-dating the COVID-19 pandemic
- Internationally parental COVID-19 vaccine acceptance rates vary widely
- Common factors that impact COVID-19 vaccine hesitancy:
 - younger parental age
 - lower income and education
 - female sex
 - safety and efficacy concerns in children
 - the rapidity of vaccine development
 - political influences
- Many of these studies were carried out early on in the pandemic and before vaccine approval



AIMS OF THIS PROJECT

1. **To determine levels of child COVID-19 vaccine acceptance, hesitancy, and resistance** among parents of children under 18 in the Republic of Ireland
2. **To identify the predictors of COVID-19 vaccine hesitancy and resistance** amongst parents of children under the age of 18 in Ireland
3. **To inform communication campaigns to enhance acceptance** of vaccinations for COVID-19 in children



ABOUT THE MAIN STUDY

Design

- Data from the COVID-19 Psychological Research Consortium (C19PRC) study
- Multi-national longitudinal study, examining the social and psychological impacts of the COVID-19 pandemic on the adult populations of the UK, Ireland, and Spain

Sampling procedure & participants

- Quota Sampling
- Nationally Representative (3 Quota Variables- Age, Sex, Geographical location)
- Administered by Qualtrics
- 5 Waves of data collection

Funding & ethics

- The parent study was funded under the COVID-19 Pandemic Rapid Response Funding Call [COV19-2020-025] by the HRB and the Irish Research Council
- Ethical Approval from the Social Research Ethics Committee in Maynooth University

CURRENT STUDY METHODS



Participants

- This study utilised data from March/April 2021 (Wave 5 of C19PRC data collection)
- Of the 1,110 participants, 482 had children under the age of 18



Variables

- **Dependent variable:** parental vaccine acceptance, hesitancy or resistance for their child
- **Reference Category:** Vaccine acceptance
- **Question:** “Multiple vaccines for COVID-19 have now been developed. Will you give your child a vaccine for COVID-19 when it becomes available?”
 - “Yes” or “My child has already been vaccinated” - vaccine accepting
 - “Maybe” - vaccine hesitant
 - “No” - vaccine resistant
- **Independent variables:** Sociodemographic factors; health and COVID-19 related factors; variables assessing trust and beliefs relating to COVID-19 vaccines

CURRENT STUDY METHODS

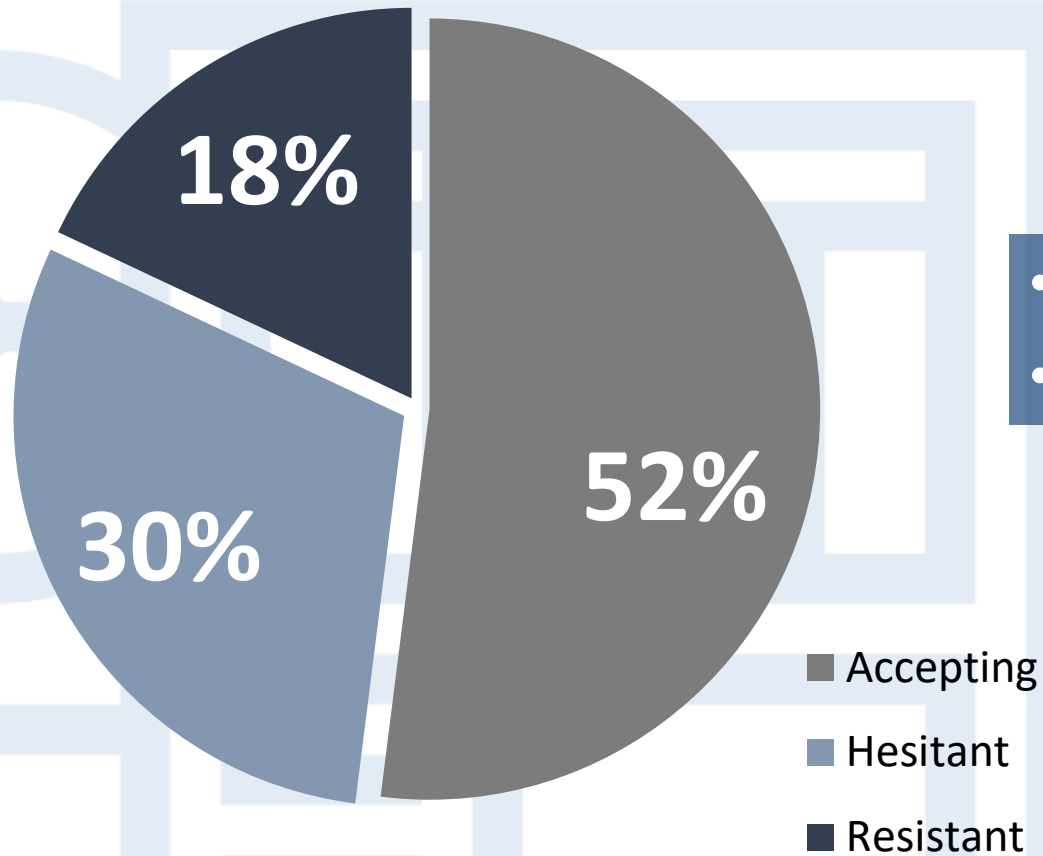


Analysis

- **Descriptive analyses:** Cross-tabulation and chi square test
- **Statistical modelling:** Associations between the dependent and independent variables were interrogated using main effects multinomial logistic regression
- **Reference category for dependent variable in regression:** Vaccine acceptance
- **Software:** SPSS version 27

RESULTS

Vaccine acceptance for child (parents)



- 1,110 people participated in the study
- 482 (43.4%) had a child under the age of 18

VACCINE HESITANT GROUP

Compared with the vaccine accepting group, the vaccine hesitant group were significantly ($p < 0.05$):

>Younger	AOR 0.966	$p = 0.013$
>Less well educated (Ref- Postgraduate Degree)	Junior Cert Leaving Cert Technical qualification	AOR 4.4 ($p = 0.049$) AOR 2.4 ($p = 0.037$) AOR 3.7 ($p = 0.008$)
>Less well off	AOR 0.753	$p = 0.008$
>More likely to have had someone close to them sick with COVID-19	AOR 0.470	$p = 0.013$

VACCINE HESITANT GROUP

Compared with the vaccine accepting group, the vaccine hesitant group were significantly more likely to believe that:

>The vaccines were unsafe due to their rapid development	AOR 1.024	p= 0.001
>The vaccines can damage fertility	AOR 1.018	p= 0.015
>Scientists and healthcare workers often cover up their mistakes	AOR 1.016	p= 0.030

VACCINE RESISTANT GROUP

Compared with the vaccine accepting group the vaccine resistant group were significantly ($p < 0.05$):

>Younger	AOR 0.962	$p = 0.037$
>More likely to live alone	AOR 4.405	$p = 0.011$
>Less likely to trust in scientists	AOR 0.643	$p = 0.028$

They were also more likely to believe that the vaccines:

>Are not safe due to their rapid development	AOR 1.033	$p < 0.001$
>Can damage fertility	AOR 1.020	$p = 0.017$

NON-SIGNIFICANT FINDINGS



Conspiracy theories

Belief in some popular conspiracy theories was not significantly correlated with increased hesitance/resistance:

- The vaccine giving you COVID-19
- The vaccine altering your DNA
- The vaccine contains a microchip

STUDY LIMITATIONS

- **Non-probability sample**
- **Not broken down by age subgroup (heterogeneous sample)**
- **Data collected pre vaccine approval for children**
- **Bias: Selection bias, non-response bias**
- **Sample size**



CONCLUSIONS AND IMPLICATIONS



Targeting

- Younger, less well off, and less well educated parents are a target group for communications to increase COVID-19 vaccine uptake in children
- As both the hesitant and resistant groups share similar beliefs, messages could be similar



Content

- Messaging should be clear, concise and jargon free
- Messages should focus on the safety profile of vaccines, outlining how they were developed rapidly without compromising safety and addressing any concerns regarding fertility, rather than focusing on debunking non-scientific conspiracy theories



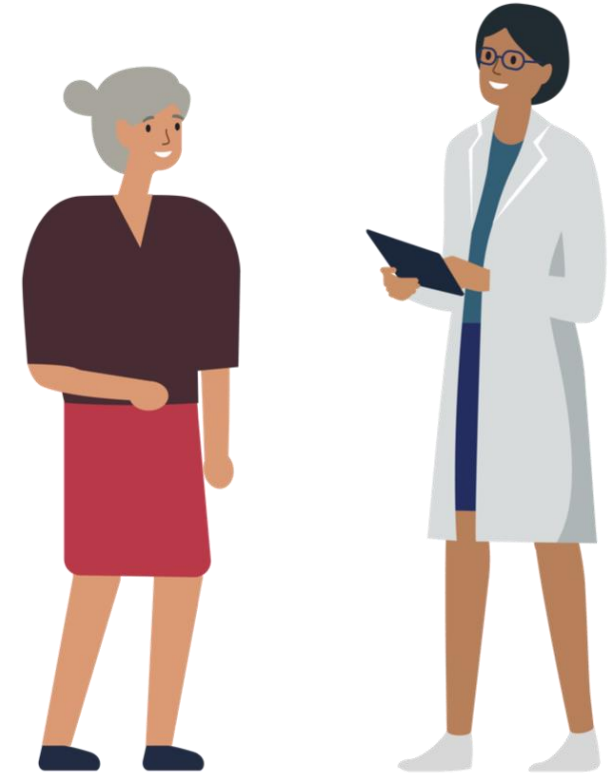
Delivery

- HOW messages are delivered, and by WHOM, may need to differ- with the vaccine resistant group trusting less in scientists
- The vaccine resistant group may be better targeted via trusted peers, community leaders, and social media, perhaps online parenting groups, influencers and celebrities etc
- Don't get into a fight. See HSELand module 'Talking About Immunisation'.



What can I do?

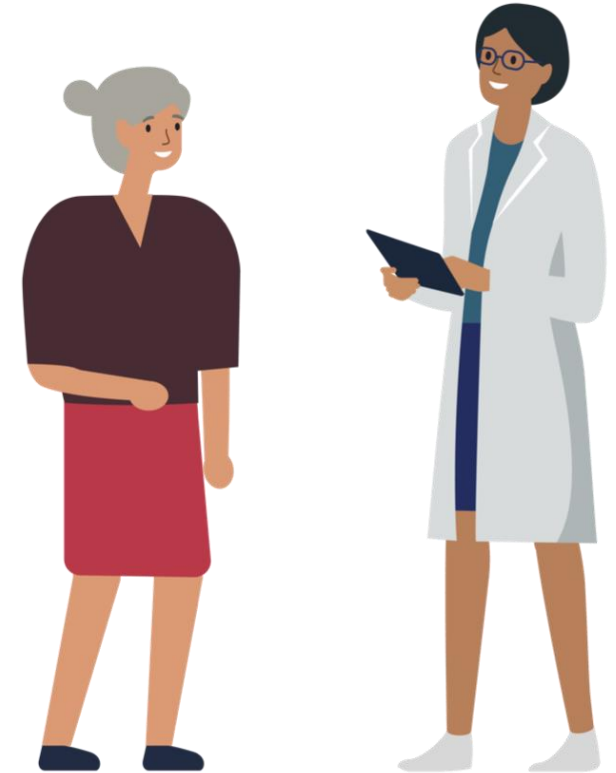
- People trust healthcare workers
- Vaccine decisions are based on many factors, including emotional
- The way we talk to patients matters
- The messages we deliver matter
- How you say it matters as much as what you say
- Clear concise easy to understand information
- No jargon
- Address genuine concerns
- Motivational interviewing





What can I do?

- Methods proven to help increase uptake include:
 - ✓ Reminding people about vaccination
 - ✓ Make appointment times convenient
 - ✓ Make the location as accessible to the person as you can
 - ✓ Take opportunities to recommend vaccines – e.g. at a pregnancy visit





What can I do?- Motivational Interviewing

- The WHO recommend motivational interviewing techniques
- Motivational interviewing is covered in a HSE Land course ('Talking About Immunisation') that we will direct you to but briefly, it involves:
 - ✓ Ask open-ended questions
 - ✓ Reflect information back to the person what they have said/what you think they mean
 - ✓ Respond to any concerns raised
 - ✓ Affirm strengths and validate concerns- "it is great you are thinking about vaccines".
"It is natural to worry about doing the right thing for your baby"
 - ✓ Ask, provide, verify- ask what they understand, provide information, verify what their understanding is now
 - ✓ Summarise and describe action- At the end, summarise the discussion and describe the next action





What can I do?- Motivational Interviewing

- Motivational interviewing techniques can be used for short interventions, it does not always have to be a long conversation
- HSELand resources- the next speaker will direct you to these courses.
- Particularly relevant is 'Talking About Immunisation' for useful scenarios and tricky questions you may get asked by those who are vaccine hesitant





Further Resources:

For those listening back the following quick reads may be of interest:

The Vaccine Hesitant Moment in the New England Journal of Medicine , author- Larson. Year 2022.

AND

Rapid response to HPV vaccination crisis in Ireland- Lancet, author – Corcoran. Year 2018.

For some light relief you can look up these short videos that encourage vaccination!

Just an example of the effects of appealing to people's emotions....

Youtube: 'Have the New Jab' by the Marsh Family, 2 years ago

<https://www.youtube.com/watch?v=ZnbOKH9Oe9s>

Youtube: The Vaccine Song, brainwarmups , 12 years ago

<https://www.youtube.com/watch?v=u1xw0Ob5bqs>





References:

References are listed here and are available on request.

- 1) MacDonald NE; SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: definition, scope and determinants. *Vaccine* 2015;33:4161-4164. Access here: <https://pubmed.ncbi.nlm.nih.gov/25896383/>
- 2) UNICEF; The State of the World's Children 2023. UNICEF 2023. Access here: <https://www.unicef.org/reports/state-worlds-children-2023#Reportarea>
- 3) Simms KT, Hanley SJB, Smith MA, Keane A, Canfell K. Impact of HPV vaccine hesitancy on cervical cancer in Japan: a modelling study. *Lancet Public Health*. 2020 Apr;5(4):e223-e234. doi: 10.1016/S2468-2667(20)30010-4. Epub 2020 Feb 10. PMID: 32057317.
- 4) 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. Access here: <https://www.nejm.org/doi/full/10.1056/nejmra2106441>
- 5) HPSC Vaccination immunisation uptake statistics. HPSC 2023 Access here: <https://www.hpsc.ie/a-z/vaccinepreventable/vaccination/immunisationuptakestatistics/immunisationuptakestatisticsat12and24monthsofage/>
- 6) Marron, L. et al., A national survey of parents' views on childhood vaccinations in Ireland. NIO, HPSC 2022. Access here: <https://www.hse.ie/eng/health/immunisation/news/16-louise-marron-a-national-survey-of-parents-views-on-childhood-vaccinations-in-ireland1.pdf>
- 7) Davies P, Chapman S, Leask J. Antivaccination activists on the world wide web. *Arch Dis Child*. 2002 Jul;87(1):22-5. doi: 10.1136/ad.87.1.22. PMID: 12089115; PMCID: PMC1751143. Access here: <https://pubmed.ncbi.nlm.nih.gov/12089115/>
- 8) Corcoran B, Clarke A, Barrett T. Rapid response to HPV vaccination crisis in Ireland. *Lancet*. 2018 May 26;391(10135):2103. doi: 10.1016/S0140-6736(18)30854-7. Epub 2018 May 24. PMID: 29856339. Access here: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(18\)30854-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)30854-7/fulltext)
- 9) HPSC Vaccination immunisation uptake statistics. HPSC 2023 . Access here – <https://www.hpsc.ie/a-z/vaccinepreventable/vaccination/immunisationuptakestatistics/hpvtdapmenacmenacwyuptakestatistics/>
- 10) Ceannt R, Vallieres F, Burns H, Murphy J, Hyland P. Covid-19 vaccine hesitancy and resistance amongst parents of children under 18 years of age in Ireland. *Vaccine*. 2022 Oct 12;40(43):6196-6200. doi: 10.1016/j.vaccine.2022.08.073. Epub 2022 Sep 7. PMID: 36127211; PMCID: PMC9448701. Access here: <https://pubmed.ncbi.nlm.nih.gov/36127211/>





**Thanks for listening and good luck
in your work helping us to promote
vaccines!**

