RAPID REVIEW:
VACCINE HESITANCY AND BUILDING CONFIDENCE IN COVID-19 VACCINATION

A COVID-19 vaccine has been framed as the ultimate solution needed to end the pandemic. A substantial number of vaccine candidates are in development, and several are undergoing clinical trials, with the first promising results recently published.[1] While this provides hope as part of a solution to the pandemic it also raises concerns over how vaccines will be deployed and accepted. One challenge is 'vaccine hesitancy.' Evidence suggests that the public health benefits of approved COVID-19 vaccines will be undermined by hesitancy from populations to be vaccinated.[2–9] Evident in the emergence of the new discipline of 'infodemiology' and 'misinfodemic debates'[10,11], there is an assumption that this reticence is primarily driven by people's exposure to misinformation and that this can be countered by 'inoculating' publics with facts.[12]

This brief draws on social science literature and informal interviews with experts to illustrate that vaccine hesitancy is more complex and context-specific, and often reflects diverse, everyday anxieties – not just, or even primarily, exposure to misinformation or anti-vaccine campaigners. Based on this, the brief proposes strategies to guide policy makers, public health officials, vaccine developers, health workers, researchers, advocates, communicators, media actors and others involved in vaccine development, communication and deployment to boost confidence in COVID-19 vaccines. This brief is part of the Social Science in Humanitarian Action Platform (SSHAP) series on social science considerations relating to COVID-19 vaccines, and was written by Tabitha Hrynick, Santiago Ripoll, and Megan Schmidt-Sane. The brief is the responsibility of SSHAP.

VACCINE HESITANCY AND CONFIDENCE

VACCINE HESITANCY

While vaccines are celebrated as one of the most successful public health measures, an increasing number of people believe vaccines are either unsafe or unnecessary. it is considered a growing threat to the success of vaccination programmes as vaccine coverage rates are decreasing globally.[14] In 2019, the World Health Organization (WHO)

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identified it as a top threat to global health.[17] The WHO defines vaccine hesitancy as a 'delay in acceptance or refusal of vaccines despite the availability of vaccination services'.[18] It is a continuum ranging from complete acceptance to complete refusal.[13,15,19] A Working Group on Vaccine Hesitancy in the UK Scientific Advisory Group for Emergencies further defines it as: *A behaviour, influenced by a number of factors including issues of confidence [do not trust vaccine or provider], complacency [do not perceive a need for a vaccine, do not value the vaccine], and convenience [access].*[19]

The working group delineated determinants of vaccine hesitancy along three domains:

Individual and group influences	Personal perceptions of the vaccines or influences of the social environment
Contextual influences	Historic, socio-cultural, environmental, health system/institutional, economic or political factors
Vaccine and vaccination	Issues related to the characteristics of the vaccine, vaccine development, or the vaccination process

Additional behavioural factors may shape vaccine uptake, including complacency (perception of risk, severity of disease), sources of information,[20] socio-demographic characteristics,[5] people's level of commitment to risk culture and their level of confidence in health authorities and mainstream medicine.[21]

VACCINE CONFIDENCE

Conversely, vaccine confidence is the belief that vaccination, and the providers, private sector, and political actors behind it, serve the public's best health interests.[22] Like 'hesitancy,' it is highly variable and rooted in political-economic context.[23,24] Provision of consistent and scientifically accurate information can mediate some vaccine hesitancy, but vaccine confidence may not improve unless efforts are made to increase public trust in vaccine effectiveness and safety, in public health response, and in health systems and government more broadly.[23,24]

EVOLUTION OF VACCINE HESITANCY AND CONFIDENCE

Vaccine hesitancy is nothing new, indeed it is as old as vaccination.[13–16] In 18th century Europe, many viewed vaccination as 'against God's plan.' The following century saw the emergence of an Anti-Vaccination League in Britain.[25] In the early 20th century in some African settings, colonial authorities forced vaccination onto populations, provoking resistance.[26] By the 1970s, anti-vaccination gained further traction in Western settings following a report[27] (later refuted) on adverse reactions to the pertussis vaccine. Since the late 1990s, hesitancy has been further spurred by controversy over alleged (since scientifically refuted) links between the MMR vaccination and autism.[28,29] In the 1990s and early 2000s rumours emerged linking vaccines to infertility derailing vaccination efforts

in West Africa.[30] When placed in historical perspective, two patterns emerge: first, that vaccines have been perceived to cause more harm than the diseases they are intended to prevent; and second, that much of this concern is rooted in tensions between citizens and authorities, often resulting from compulsory vaccination policies.[31–33]

Despite an abundance of scientific data on the safety and effectiveness of existing vaccines, alternative narratives have continued to emerge in the 21st century, driving vaccine hesitancy.[34] These are often driven by certain types of negative information used to discuss vaccine issues. Broadly these can be categorised as:

Misinformation: false or inaccurate information, including rumours, whether intended to deceive or not;[35,36] and *disinformation*: intentionally false information, spread for political, economic or social gain and *conspiracy theories*: alternative explanations for events; [37,38] These types of information typically thrive during times of uncertainty (such as during epidemics), have been linked to lower likelihood of adopting public health behaviours, including vaccination and often spread fast, particularly via social media. [13,14,36,37] People sometimes use misinformation to attempt to collectively solve problems in the absence of good information, including when information from authorities is contradictory or incoherent.[36]

SOCIAL SCIENCE LESSONS ON VACCINE HESITANCY

Social science researchers during previous epidemics have illustrated that vaccine hesitancy is shaped by additional and complex dimensions beyond information alone. Consideration of the communities and contexts in which vaccination occurs, and what motivates people to participate, will be important considerations for COVID-19 vaccines.

INDIVIDUAL AND GROUP INFLUENCES

Information and knowledge. Debates about vaccine hesitancy often ignore sociocultural and political realities. They interpret publics as ignorant, subject to dis- or misinformation, and thus in need of 'correct' information. However, it is important to understand the broader contexts in which the different forms of information emerge and thrive. They do not emerge in vacuums, but from ecosystems of 'culture, politics, personal experiences, beliefs, and histories'.[36] A narrow interpretation of publics as 'blank slates' misses the reasons why people interpret information in particular ways. People are diverse, with individual health, social and political experiences that influence the way they feel about vaccination. For example, individuals may accept some vaccines while refusing others, they may have genuine concerns about the trustworthiness of government and public

health response,[39] scepticism of the role of 'scientific experts,'[40] historical experiences of marginalisation[41] or militarised of vaccine deployment[42] and so on.

Social and cultural notions of the body, immunity and strength. Different social groups also have varying notions of immunity and strength, which influence how they relate to vaccination. This varies widely across and within countries. For instance, vaccines may be perceived as too 'strong', or to attack the body and impede natural immunity.[43] Concerns can also arise about vaccine antigens and adjuvants, which can be perceived to be toxic or too immunogenic, as happened in Canada during the H1N1 2009 pandemic.[44] There are examples of successful vaccination campaigns and trials which, have taken these notions into account and used local terms and concepts with positive outcomes for vaccine confidence and uptake.[30] For example, frontline workers used local concepts of 'soldiers in the blood' and 'strength' to explain how vaccinations work with potential trial participants in the Gambia.[30]

Community dimensions of trust. Trusted local actors shape people's perceptions of vaccines and vaccination programmes. Local healthcare providers for instance, are often best placed to deliver vaccinations in ways that build confidence. In contrast, mass vaccination campaigns led by unfamiliar, external actors have resulted in fear and reticence, as occurred for example, during polio vaccinations in Nigeria,[30] and Ebola vaccine trials in the Democratic Republic of the Congo (DRC).[45] However, people may also generally mistrust health services. In Sierra Leone, experiences of humiliation and marginalisation at health centres, coupled with worries about financial costs, led to people avoiding health centres altogether, and even hiding their children during immunisation campaigns.[46]

Especially in low- and middle-income countries (LMICs), people may trust and rely on a range of non-biomedical health providers (traditional, faith or herbal healers, drug sellers, etc.), some of whom may feel threatened by, and thus also discourage vaccination. Some religious authorities too, have discouraged vaccination among followers, sometimes advocating faith healing instead. However, where religious leaders and traditional healers have been involved in vaccination programmes from their inception, they have gone on to be positive advocates for vaccination in their communities.[47,48]

CONTEXTUAL INFLUENCES: POLITICAL ECONOMY AND TRUST

Historical and political experiences of neglect, discrimination or abuse provide fertile ground for misinformation to gain traction and become 'plausible'.[49] Vaccine hesitancy is more likely to develop in contexts with high inequality and lack of citizen participation in

government and health systems, as people may perceive the state (and its partners) to have ulterior (and harmful) motives for vaccination.[39]

Political or social divides. Vaccination has been perceived to cause intentional harm to particular groups or be a way of controlling them. In Northern Nigeria and Niger for example, Islamic leaders interpreted polio vaccination as a way of sterilising Muslims, and linked this to repression by the central government and to 'Western' attempts to stop their populations from growing.[23,50,51]

Militarisation of vaccine campaigns. Many vaccination campaigns have been militarised, mirroring or actively involving military efforts (or police) to deploy vaccines.[30,52] While this may be logistically effective, it may exacerbate fear and mistrust, particularly in settings where militaries are associated with repression and abuse.[53]

Mandatory vaccination. Populations that have experienced mandatory vaccination (or other coercive public health measures), or have felt mistreated or exploited by drug trials, are less likely to trust future vaccination programmes.[30] While the acceptability of coercive vaccination varies by context mandatory vaccination can improve overall uptake, but also entrench distrust in vaccine hesitant populations.[54,55] Stories about profit-seeking and pharmaceutical companies in cahoots with governments can magnify this distrust.

VACCINES AND VACCINATION

Accessibility. It is important to distinguish lack of access or inadequate vaccine services from vaccine hesitancy. Work or care demands on people's time, lack of physical access to vaccination posts, inadequate logistics, resource limitations, conflict or insecurity may be behind what may seem to be a lack of demand for vaccination. In contexts of extreme poverty, high burden of other diseases, or conversely, low burden of the epidemic disease, vaccination may be low on people's list of priorities.[19,56]

Perceptions of disease and vaccine risk . In conditions of uncertainty, individuals are likely to make choices based on perceived risk of a disease itself versus the risks of vaccination. The dynamics of a disease outbreak (e.g., real and perceived exposure and transmission rates) will differ across contexts, and shape people's risk assessments.

Different vaccines have different degrees of effectiveness in terms of percentage of reduction in disease incidence in the vaccinated group compared to an unvaccinated group under optimal conditions; this is never 100%. This may cause confusion over why some get infected despite being vaccinated.[57] Trust in a vaccine can also diminish if people perceive it to have low effectiveness (e.g. H1N1 vaccine in Europe and the United States).[58]

Reports of adverse events, however unusual, can generate or deepen mistrust. People may attribute other unrelated diseases or health problems which emerge around the vaccination period to the vaccine. People may also worry about whether a vaccine is unsafe for some groups (e.g. elderly, infants, children, pregnant women, different ethnic groups).

Vaccine hesitancy sometimes arises amongst healthcare workers, particularly so in the case of vaccines rapidly developed in an emergency. For example, some healthcare workers distrusted or refused the Ebola vaccine in the DRC, and European healthcare workers were unsure about the safety H1N1 2009 vaccine.[45,59]

Perceptions of vaccine roll-out. Who is eligible and prioritised to receive vaccines has led to mistrust of vaccination programmes in the past. Research during the DRC Ebola epidemic (2018-2019) found that where only healthcare workers were given vaccines, others expressed a strong desire to be vaccinated and were upset they were excluded.[60]

The mode of service delivery (mobile or fixed clinics, vaccination combined with other human or animal health services) shapes confidence and uptake, and different groups will have different preferences.[61] Vaccination services have been more successful where local gender and cultural sensitivities have been incorporated.[62] Incentives for attendance can increase uptake, but also backfire if inequitably distributed, stoking pre-existing perceptions of injustice.[51]

The coexistence of several vaccines in the same context can lead to mistrust. Two different vaccines were rolled out simultaneously in an Ebola outbreak in North Kivu, DRC; there were different requirements for vaccine transport and delivery, number of doses and eligibility, and different vaccination protocols (mass vaccination versus ring vaccination). This generated confusion and anxieties.[63,64]

VACCINATION FOR COVID-19

EVIDENCE OF COVID-19 VACCINE HESITANCY

For a COVID-19 vaccine to stem the pandemic, experts suggest 80-90% of the population require vaccination.[5] Yet, surveys emerging from diverse contexts illustrate widespread hesitancy towards COVID-19 vaccines, with large differences between and within countries.[3,5–7,9] Recent studies of 19 countries, the proportion of people reporting they would accept a 'proven, safe and effective vaccine' ranged from nearly 90% in China to 55% in Russia.[3] In another, 36% and 51% of survey respondents in the UK and US respectively reported they were 'uncertain' or unlikely to be vaccinated.[5]

The complex range of social, political, economic and cultural factors that always affect vaccine uptake will also affect COVID-19 vaccines, alongside many new challenges. While there are some key factors likely to drive hesitancy in similar ways across settings, these dynamics are also highly-context specific.

CHALLENGES FOR COVID-19 VACCINE CONFIDENCE

Expedited development and novelty of COVID-19 vaccines

- Vaccine safety and effectiveness testing. The speed of vaccine development and trials is a major driver of COVID-19 vaccine hesitancy as it undermines some people's confidence that sufficient testing for effectiveness and safety is being carried out prior to approval for use in populations.
- Novel platforms. Many COVID-19 vaccines are being manufactured using entirely new platforms,[65] potentially deepening people's reservations about their safety. DNA and mRNA platforms in particular, may trigger anxieties and concern.[66]
- Lack of safety records for approved vaccines. Once approved, COVID-19 vaccines will lack long-term safety records which may make many people nervous about taking them until they have been safely in use for some time. Adverse events resulting from a vaccine, or seeming to result from it, can also damage vaccine confidence.[67,68]
- Uncertainties around COVID-19. There remain many unknowns about the SARS-CoV-2 virus, and COVID-19. This may undermine people's confidence that it is possible to successfully manufacture safe and effective vaccines while still lacking some understanding of the virus, its transmission, and disease.
- Uncertainties about new vaccines. The duration of immunity offered by new vaccines is still unknown. Likewise as new vaccines are approved, information about the type of protection (preventing disease and/or preventing transmission, including in different demographic groups) will lag.[5,69]
- Lack of transparency on vaccine development and trials. Pharmaceutical companies do not often publish trial protocols or release results as this may compromise trial methodology (e.g. blinding) or damage their market competitiveness. A lack of transparency can undermine confidence, giving rise to conspiracy theories, and reinforcing pre-existing public mistrust towards the pharmaceutical industry.[70]
- Small and unknown developers. Although many people may mistrust large pharmaceutical companies, many of the hundreds of COVID-19 vaccines in development are being produced by smaller, lesser known manufacturers which may also undermine confidence.[71]

Information and Communication Environments and Efforts

- Social media and exposure to false information. The expansion of social media use provides opportunities for COVID-19 vaccine and misinformation to spread.[72] This occurs alongside the spread in offline channels as well, especially in contexts where internet access is limited. Researchers illustrated that exposure to misinformation can result in lower reported intent to vaccinate for COVID-19, even among people who previously reported 'definitely' intending to vaccinate in the UK and US.[8] In African settings, rumours that Africans would be experimented on or poisoned with Western vaccines spread via social media.[73,74] As suggested, different narratives may emerge and provoke particular anxieties in different contexts and groups.
- Storytelling and emotion versus facts and traditional authority. Many people are more drawn to the 'speed, emotion and memorable stories' increasingly favoured by modern media providers than to more fact-based material and appeals to traditional forms of authority.[68,75]
- Scientific authority. Misinformation that sounds scientific, or, hesitancy which is expressed by people with expert medical knowledge, such as healthcare workers, can affect vaccine confidence. For example, healthcare workers who feel hesitancy towards COVID-19 vaccines,[76,77] can be explicitly or implicitly transferred to patients (for instance, by not answering their questions sufficiently).[78]
- Challenge of communicating vaccine complexities. There are likely to be several COVID-19 vaccines available, with different levels of effectiveness, risk profiles, modes of delivery, prioritisation schemes, vaccine schedules and safety requirements. The complexities of introducing multiple vaccines in a short period can cause confusion and frustration if not communicated effectively.[5]

The Politicisation of COVID-19 Vaccine Development and Deployment

- Harmful politicisation of vaccine development. Vaccine development has become entangled with national and international politics with some governments desiring to be seen to develop and deliver the first viable COVID-19 vaccines.[75,79,80] This can undermine confidence, including by raising concerns about rushed development.
- Political attempts to control COVID-19 narratives. To keep publics calm or to maintain a perception of control, some governments have downplayed the pandemic, and repressed news or rumours about COVID-19 even when they turn out to be true (e.g. regarding the existence or extent of an outbreak and community transmission).[81] These can undermine public trust and thus vaccine confidence.
- Governments' previous handling of COVID-19 response may undermine vaccine confidence. For instance: coercive measures, the extent to which people have been

supported to meet their basic needs amidst financial losses, the conduct of government officials, the clarity of information, the success of interventions such as testing or contact tracing, or suspicions that government officials or connected private entities are profiting from response activities.

- Marginalised communities. Marginalised communities (e.g., ethnic or religious minorities and the poor) who have experienced neglect or abuse by the state or health system may have less confidence in COVID-19 vaccines and the institutions and experts who communicate and administer them. This is exacerbated when health information is not adapted to local languages or people have little access to health services, as in the case of refugees. In the US for instance, COVID-19 vaccine hesitancy is highest among Black communities.[2,7] Rumours and conspiracy theories may have more traction among marginalised groups because of prior experiences of exclusion that make these more plausible.
- Other communities. Not all communities with low vaccine confidence are marginalised. Many people of different income groups, education levels and contexts are wary of biomedicine or prefer 'natural' or 'traditional' methods and may refuse COVID-19 vaccines, as they have others.
- Worries about being experimented on. Evidence suggests people in some African settings may be worried they are being experimented on with vaccines.[6] For example, comments from a researcher earlier in the pandemic, that vaccines for COVID-19 should first be trialled on African populations, likely contributed to this.[13]

WAYS TO INCREASE COVID-19 VACCINE CONFIDENCE

To date, governments and public health actors have been more focused on vaccine development, than building up vaccine confidence. Below are strategies and approaches that can help policymakers, public health officials, vaccine developers, healthcare workers, researchers, advocates, communicators, media and others to build and sustain public confidence in – and thus future uptake of – COVID-19 vaccines. Multi-pronged approaches, tailored to socio-political contexts, specific social groups and even individuals, are likely to yield the best results.[7,8]

DEVELOPMENT AND APPROVAL

It is imperative to build up public trust while the increasing numbers of vaccines entering trial and approval stages edge closer to deployment.

- Engage a 'good politics' around vaccine development and approval (as well as deployment). It is impossible to avoid 'politicisation' as political decisions are necessary

to act. However, this should be done through transparency, accountability, and democratic and participatory engagement around vaccination, and the broader public health response.

- **Exercise transparency as far as possible in trial processes.** Clearly communicate information and data in accessible formats. Share trial protocols and results where possible (including explanations when adverse medical events occur). Share what vaccines are made of, and how they should work.
- **Pledges to vaccine safety.** Nine vaccine manufacturers recently pledged not to submit vaccines for approval in the US until proven safe in large clinical trials to assuage fears around political pressure to speed up development.[82] This could be scaled and/or adapted, including among different stakeholder groups to add an additional layer of reassurance for the public.

CREATIVE COMMUNICATION AND HONEST DIALOGUE

- **Be imaginative and compelling with communications**, including story-telling (e.g. personal stories to which people can relate), emotion, appeals to empathy and altruism, as well as memes to convey key information in engaging ways.[75,83] This requires context-specific assessment to identify communication preferences and language needs. Accessible material can help people make sense of things in the inherently uncertain and tense time
- **Use a wide range of platforms**, both off and online, including social media, for clear communication about the types of vaccines and the process of deploying them. Use all languages spoken, and visual imagery from the platforms people trust.
- **Build on local terminologies and understandings** of vitality, strength and immunity in communications about vaccination.
- **Remind the public to act responsibly and think about accuracy** prior to posting or sharing information verbally or online social media.[84]
- **Use open dialogue,** it is important to field questions and address anxieties from people and to listen to their concern and priorities. These should be responded to into other vaccination related activities.[85] Successful models have been carried out in the context of Ebola vaccine trials in Sierra Leone.[39]
- **Be honest about uncertainties**, what is known and what isn't, and do not assume publics can only deal with simple information. Communication of complex issues can be achieved using dialogue, and locally appropriate ways of designing and further disseminating messages can also emerge from these discussions.

- Patient-centred motivational techniques in patient-healthcare worker encounters (vis-à-vis more confrontational approaches) may help vaccine confidence through empathetic listening and avoiding rebuttal of 'false opinions'.[78]

ACTING TOGETHER

- Work with trusted influencers in and beyond public health – from national and international celebrities, to online 'influencers', to locally trusted alternative health providers and leaders – to convey information and facilitate dialogue in compelling ways. Remember that it is not always obvious who is locally trusted.
- Co-design and discuss vaccination strategies with citizens, including how to prioritise access once vaccines are available. Prioritisation may be done geographically (e.g. where there is higher transmission or risk), by occupational group (e.g. prioritising frontline personnel), by age or medical status (e.g. the elderly, people with pre-existing conditions). This will be important for building and maintaining public trust and confidence, especially where vaccine confidence is already low. Citizens juries are a useful model used in past epidemics.[86,87]
- Work with frontline healthcare workers, including non-biomedical health providers to address vaccine hesitancy among them, ensuring they are confident to communicate effectively about COVID-19 vaccines.[78]

MONITORING VACCINE CONFIDENCE

Different types of monitoring efforts should reinforce one another, and together should directly inform engagement with communities.

- Continue quantitative surveys to continually assess vaccine hesitancy and confidence, and monitor this for changes, including by social group (by gender, age, ethnicity, location etc.). Extra focus and resourcing are required for surveys in LMICs .
- Qualitative research of vaccine hesitancy and confidence is crucial to inform strategy and policy. Rapid, formative, and in-depth social science investigation can enable contextual understanding of the root causes, features, and trajectories of hesitancy,.
- Continuously collect and analyse feedback from communities to understand emerging and evolving misconceptions, rumours and concerns. In parallel, monitor perceptions of the vaccination campaigns and of the vaccination experience.
- Track (and address) dis- and misinformation on and offline and assess its risks to vaccine confidence, e.g. by considering whether the communities it is circulating in are marginalised. Harmonise independent efforts to do this within regions or areas.

VACCINE DEPLOYMENT

- Rapidly increase communication, dialogue and planning with communities as soon as possible about what vaccine deployment may look like, especially when there are complexities of multiple vaccines, deployed and working in different ways.
- Manage expectations of likely vaccine effectiveness, of who will be prioritised, and that life may not go 'back to normal' for some time after vaccines are deployed.[69]
- Avoid coercive strategies as this can backfire by damaging trust, inducing hesitancy and entrenching resolve against vaccination.
- Ensure vaccines are administered by trusted actors such as local healthcare providers, including non-biomedical practitioners where appropriate, and avoid deploying the military. Use existing infrastructures as far as possible (such as for routine vaccine drives), as this may inspire greater trust and confidence.[5]
- Ensure everyone that needs the vaccine is included in vaccination plans. Ensure minority and marginalised communities, refugees and migrants whose status may jeopardize their access to health services are included.
- Take vaccination to places people are comfortable such as shopping centres, workplaces, schools, religious sites etc., especially in minority communities who might be reluctant to visit health facilities.
- Ensure surveillance systems for adverse medical events which may be caused, or perceived to be caused, by vaccines are in place. Engage independent monitoring bodies at national and regional level, and establish clear communication protocols for communicating with publics about adverse events.[67]

ADDITIONAL RESOURCES

The Vaccine Confidence Project aims to monitor and build public confidence in immunisation programmes, including for COVID-19 through its CONVINCE (COVID-19 New Vaccine Information Communication and Engagement) initiative
https://www.vaccineconfidence.org/

Social Science Research for Vaccine Deployment in Epidemic Outbreaks
https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/15431/PracApproach%206.pdf?sequence=2&isAllowed=y

Sociocultural Considerations for Vaccine Introduction and Community Engagement
https://shsebola.hypotheses.org/files/2018/09/Anthrologica-key-considerations-for-vaccine-introduction-in-DRCIRDRAEE.pdf

Clinical and Vaccine Trials for COVID-19: Key Considerations from Social Science
https://www.socialscienceinaction.org/resources/clinical-and-vaccine-trials-for-covid-19-key-considerations-from-social-science/

Community Engagement and Accountability Toolkit (IFRC)
https://media.ifrc.org/ifrc/document/community-engagement-and-accountability-toolkit/

Guidance on National Deployment and Vaccination Planning (WHO)
https://www.who.int/publications/i/item/WHO-2019-nCoV-Vaccine_deployment-2020.1

COVID-10 Vaccine Introduction Readiness Assessment Tool (WHO)
https://www.who.int/publications/i/item/WHO-2019-nCoV-Vaccine-introduction-RA-Tool-2020.1

Online Information, Mis- and Disinformation in the Context of COVID-19 (SSHAP)
https://www.socialscienceinaction.org/resources/key-considerations-online-information-mis-disinformation-context-covid-19/

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