



Clinician perspectives on pediatric COVID-19 vaccination: A qualitative study in central and western, Massachusetts

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ABSTRACT

We explored perspectives of clinicians in central and western Massachusetts about efforts to vaccinate pediatric patients against COVID-19 as well as best practices and challenges for vaccine delivery. We conducted semi-structured qualitative interviews (n = 16) with family practice and pediatric clinicians between late October and early December 2021. Our interviews addressed: process for vaccination and vaccine promotion, parental receptivity to COVID-19 vaccination, receptivity to other pediatric vaccines, resources needed to support vaccine promotion, and best practices developed to encourage hesitant parents. Using a multi-prong recruitment strategy we invited clinicians to participate in telephone interviews, which were audio-recorded and transcribed. We used rapid qualitative analysis to produce summary templates for each interview which were ultimately combined into a matrix summary. The majority of participants (n = 10) were offering the vaccine in their own clinics, while the remainder cited challenges related to staffing, logistics, and space that prevented them from offering the vaccine. Clinicians reported parents fall into three groups: vaccine-accepting, hesitant but potentially accepting, and refusers. Strategies they identified that worked to encourage hesitant parents were sharing personal vaccine stories, acknowledging parents' fears about the vaccine, and being persistent with the most hesitant parents. Yet resources are needed including educational materials and training in how to have these conversations. While challenges related to staffing and space will be difficult to overcome for clinics to be able to offer vaccination on-site, our results highlight the importance of developing effective messaging strategies and training clinicians in how to integrate them into routine practice.

1. Introduction

Vaccines against the disease caused by SARS CO-V 2 have been available to adolescents in the United States since May 2021 and to children between 5 and 11 since early November 2021. Generally, pediatric populations are less likely to experience severe outcomes from COVID-19, but hospitalization and death (Melahoy et al., 2021); as well long-term health effects can occur (Molteni et al., 2021). Additionally; as with other human coronaviruses, disease may be mild for pediatric populations, but they can spread the disease at high levels to vulnerable family and community members (Kao et al., 2021). Vaccines provide high levels of protection for younger populations (Olson et al., 2021; Walter et al., 2022) and vaccination continues to be one of the best ways to mitigate disruptions to education and social and emotional development (Leeb et al., 2020; Patrick et al., 2020). However; vaccination rates

remain low; as of late June 2022 only 60 % of adolescents and 30 % of children ages 5 to 11 were fully vaccinated (Centers for Disease Control and Prevention, 2022).

Clinicians are on the frontlines of efforts to improve vaccination rates both in terms of parental education and vaccine delivery (de St. Maurice et al., 2021) or referral to community vaccine sites. They have important perspectives to offer related to discussing COVID-19 vaccination with parents, processes of setting up clinical workflows, and best practices to address the logistics of vaccinating this population. Yet, to date, research on pediatric COVID-19 vaccination has primarily addressed parental concerns and intentions to vaccinate their children (He et al., 2022; Ruggiero et al., 2021; Scherer et al., 2021). This research finds that similar to other vaccines (Chung et al., 2017), parents rely on primary care clinicians as trusted sources for information on COVID-19 vaccination (Szilagyi et al., 2021). Not only are clinicians trusted messengers

Abbreviations: EUA, Emergency Use Authorization; RQA, Rapid Qualitative Analysis.

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for parents, but many parents would prefer to have their children vaccinated at their pediatrician's office (Scherer et al., 2021). While the critical role of clinicians in vaccine promotion is clear (He et al., 2022; Ruggiero et al., 2021; Scherer et al., 2021; Szilagyi et al., 2021), to date their voices have been relatively absent in research. This study explored the perspectives of pediatric and family medicine clinicians about efforts to vaccinate pediatric patients against COVID-19 as well as best practices and challenges for vaccine delivery.

2. Methods

2.1. Design

We conducted semi-structured interviews with clinicians working at either family practice or pediatric clinics in Central and Western, Massachusetts between October and December 2021. The University of Massachusetts Chan Medical School Institutional Review Board determined that this was not human subjects' research.

2.2. Interview guide

We designed an interview guide to capture information on efforts for vaccine promotion, vaccination processes and challenges (for vaccinating clinics), barriers to offering the vaccine (for non-vaccinating clinics), receptivity of parents to COVID-19 vaccination, general acceptance for other pediatric vaccinations, impact of COVID-19 vaccination on other routine adolescent vaccines, and resources needed to support COVID-19 vaccine promotion for pediatric patients. We began recruitment prior to Emergency Use Authorization (EUA) for the 5- to 11-year-old age group, so interviews conducted before the EUA asked hypothetically about the process of this age group, and interviews conducted after captured information on current practices.

2.3. Participant recruitment and data collection

We used a multi-prong recruitment strategy. First, we leveraged the University of Massachusetts Memorial Health network and sent recruitment emails to pediatricians practicing at either UMass Memorial or affiliated clinics (including Baystate Health) (n = 46) and followed up by email and phone. Then, we identified other pediatric and family practice clinics in Worcester County, Massachusetts (n = 34) and sent invitation letters followed by emails or phone calls. Finally, we recruited through professional networks and asked clinicians to distribute our recruitment letter to colleagues serving pediatric patients, following up with anyone who expressed interest via email or phone. From this process, we recruited an additional six clinicians. Interviews were conducted by trained researchers (GWR, MG, PM) either via Zoom or telephone and audio recorded. We used Otter.Ai, an artificial intelligence transcription service, to produce transcripts of the interviews. All

transcripts were reviewed and edited for accuracy by a member of the research team. Throughout data collection the research team met on a weekly basis to and reviewed transcripts to ensure thematic saturation (Saunders et al., 2018) was being met.

2.4. Analysis

We used rapid qualitative analysis (RQA) for this project (Vindrola-Padros and Johnson, 2020) and followed the methodology outlined by Hamilton et al (Hamilton, 2013). This methodology is gaining popularity and has been identified as a pragmatic approach to conducting research during the COVID-19 pandemic to ensure relevant findings are shared in a timely manner (Vindrola-Padros et al., 2020). As outlined in the RQA methodology, primary topics or "domains" were taken from the topics addressed in the interview guide and two team members (GWR, MG) used these domains to develop a summary template to use for analysis. Two versions of the summary templates were created based on whether or not participants worked at a clinic that was currently offering the COVID-19 vaccines to adolescent and youth patients. Following each interview, the primary interviewer used their own interview notes and transcripts to fill out the summary template. We used these summaries to create a matrix organized by domains and participants. The primary analysts (GWR, MG) completed the first template summary individually and then discussed and resolved any discrepancies. The analysis team met on a biweekly basis throughout data collection to discuss interviews and analysis and make refinements to the summary process as needed. Our last step was to engage in a member checking process (Slettebo, 2020) in which we recruited two participants to review results and provide input on the following questions: (1) How much do these results mirror your experience/the experience of your colleagues? (2) What, if anything, in these results does not match your experience?

3. Results

We completed 16 interviews ranging from 15 to 32 min (average of 22:45 min). Demographic information for participants is presented in Table 1. Participants represent 10 unique clinic sites across central and western Massachusetts. We have presented results in the following domains: vaccination process and challenges (for clinics that were vaccinating); existing vaccination efforts and challenges (for non-vaccinating clinics); parental receptivity to COVID-19 vaccination for their children; receptivity to other vaccinations; resources needed; and advice on COVID-19 vaccination. Quotes from participants are included in Table 2. All quotes are followed by an identifier that refers to the date the interview was conducted.

Table 1
Demographic characteristics of participants (n = 16).

Characteristics	n/mean(SD)
Gender	
Male	5
Female	11
Mean Age	48.7 (7.2)
Practice Specialty	
Pediatrics	9
Family Practice/Primary Care	7
Clinics Providing COVID-19 Vaccines	10
Clinics not providing COVID-19 vaccines	6
Mean % of Patients served ages 5 to 11*	28.9(12.3)
Mean % of Patients served ages 12–17*	32.5(16.5)
Type of Practice	
Academic Medical Center/Affiliated with Academic Medical Center	9
Community Health Center	3
Private practice/community medical group	4

*One participant did not respond.

Table 2
 Quotes from clinician interviews (n = 16) organized by domain.

Domain	Quotes
Vaccination process and challenges	<p>"It's mainly well child visits, but I think it depends on what the patient's being seen for in acute care. If it's an illness and they're running a fever or something like that, then no, we don't normally do any vaccines when a child is already sick, but if they came in for...you know...a laceration." (11.3)</p> <p>"So, you know, it's hard to...[we] open [a vial] and see what happens. So right now we are booking to make sure that we know how many people we can get. So then we know how many vials we can open." (11.22_2)</p>
Vaccine promotion at non-vaccinating clinics and challenges to offering the vaccine	<p>"Right now, we're offering it all the time. So when someone's in the office, and they're at an age range, I will ask them if they want the vaccine, sometimes we don't have it available....We are enrolled with the [state immunization] system, there is a time delay between when a vaccine is given at a different site, and how quickly it uploads into our system. So we don't always have the most current information, but we try." (11.24_1)</p> <p>"So the most important thing is to have a conversation with every adolescent and their parents, sort of first seeing if they are vaccinated, and we, in our electronic health record can easily see if they've been vaccinated, even if we don't give it in our practice." (11.1)</p> <p>"I would like to vaccinate them. But I think it's more of a logistics issue...more just because of space and times. And I don't have time to see my patients in that much time, let alone vaccinate them." (11.10_3)</p> <p>"I don't think I really don't think it would it would actually improve vaccination rates because the people that want the vaccination go to the pharmacy, it's easy enough, and it's acceptable." (11.23)</p>
Parental receptivity	<p>"I mean, we've had like a slew of couldn't wait to get it. And you know, couldn't get it fast enough. And then you have your people that are just a little bit more resistant...Or are just a blatant, no, but you know, we have a conversation every time they come in." (11.2)</p> <p>"Something feels qualitatively different about giving it to, like a five year old. Like yesterday, the mom was like, he's just so little. And even though there's like no medical basis, you do kind of understand that, like, it's, it's harder to imagine doing something to your kid than in some ways taking a risk for yourself?" (11.8)</p> <p>"They just I think social media news outlets, has done a disservice in magnifying the misinformation across the board. That I think, frankly, is causing the persistence of this pandemic." (11.22_1)</p> <p>"There's obviously a bit more hesitancy in [the 5 to 11] age group. I think, you know, and that stems from the fact that there's a perception that COVID-19 disease is not that severe and young children" (12.8)</p>
Parental receptivity to other vaccines	<p>"I think, very good. I mean, I think so for all the standard ones, it's, I mean, it must be near 100%. Now, if you add in HPV, I think it'd be more like 80% for HPV. And then if you added in [Hepatitis A], that would be more like 60%. Okay. And it's not for lack of recommendation, I recommend it, because I believe in those, but if it's not required by the school, or if they view it as optional" (11.23)</p> <p>"I do think that [COVID-19 vaccination is] bringing up the issue of like the flu, and whether it's a good idea to get vaccinated against the flu. And what does this like immune system activation after the vaccine really mean? That people you know, often describe it as like, my kid gets sick after they got it." (11.18)</p> <p>"There's so much misinformation that I had family that feel like they just accepted everything. And now that they've done more research, have decided that their children don't need these vaccines, any of them. And those ones are really tough visits." (11.10_2)</p>
Resources needed to support COVID-19 vaccination	<p>"[Staffing is] our biggest Achilles' heel...overall I'm doing like nine vacancies, for my medical assistants, which is putting a burden on the nurses." (11.3)</p> <p>"Healthcare in general is in a stage of burnout. And I think we're, you know, we've definitely seen staff turnover, early retirements, all sorts of things have been happening in healthcare right now." (11.9)</p> <p>"I think, especially if you're in a private practice world, where patients come in and out every 10 or 15 min. You know, that's a difficult conversation to have, and, you know, they probably will just kind of, I'm a little uncomfortable, I'm not good at this. So I think there's a big need to help providers and other health educators, to have those conversations and move that reluctant group." (10.29)</p> <p>"We had like, a fact sheet about the COVID-19 vaccine. When it like, first came out, and it was interesting, because we thought maybe we should just kind of keep handing those out. And then we were looking to see, is there. Like, a more current version, you know, because there was so many changes going on, right? When it first came out, that we weren't able to actually find like, a more current version of this sheet" (11.22_1)</p> <p>"Once they kind of hear that you're vaccinating your own children, they feel a little bit better about things." (11.10_3)</p>
Advice for successful conversations	<p>"Parents are going to be much more open to having a conversation with a physician who they trust, and they have a relationship with." (11.1)</p> <p>"[Vaccinating your kids is] much more like an emotional and qualitative decision." (11.18)</p> <p>"There's too much uncertainty in those very important questions. And that makes it hard to counsel patients, especially you know, the vaccine hesitant." (11.23)</p> <p>"It can be a conversation of several visits, not a one day visit." (11.22_2)</p>

3.1. Vaccination process and challenges

Among clinicians offering pediatric COVID-19 vaccines ($n = 10$), two primary mechanisms for vaccine delivery were discussed. Two clinicians reported their practices were offering vaccine-only clinics on specific days of the week. They reported that the decision to approach COVID-19 vaccination in this manner was primarily related to staffing and space concerns as well as the need to avoid wastage once vials are opened. All other participants reported they were offering the vaccine at all visits with eligible patients, and in some cases to parents as well. Most reported trying to take advantage of all types of visits to at least discuss COVID-19 vaccination, not just well child visits where they typically offer vaccines. Many participants used the state's immunization registry to track vaccination status of their patients and identify non-vaccinated patients. However, this came with challenges due to time delays in reporting.

3.2. Vaccine promotion at non-vaccinating clinics and barriers to offering COVID-19 vaccines

Participants working in non-vaccinating clinics reported their role in COVID-19 vaccination was to encourage and recommend the vaccine to all pediatric patients. Like those working in vaccinating clinics, they reported taking advantage of both well-child and acute-care visits to discuss the vaccine. They also reported challenges with time delays in immunization registry data to identify non-vaccinated patients. Several clinicians discussed methods for referring pediatric patients to other locations to get vaccinated. For example, one clinician said that their medical group had put together lists of nearby vaccine locations for patients. Beyond these efforts, no participants reported other formalized processes for encouraging vaccination in their patient population.

Participants reported several primary reasons that they were not currently offering the COVID-19 vaccines in their clinics. Nearly all reflected that the process for ordering a large number of doses and preventing wastage made it hard for their smaller clinics to adhere to the state's requirements. The other primary reasons were due to staffing and logistics. Several participants reported that staffing and space issues precluded them from being able to offer the vaccine. In most cases, staffing shortages were due to the widespread burnout that many healthcare providers were currently experiencing. Despite these barriers, nearly all participants said their clinics were currently trying to make plans to offer the vaccines. Only one clinician reported no plans to offer the vaccine. They offered the perspective that they felt it was more important to focus efforts on educating parents and that they did not believe offering the vaccine themselves would make a significant impact on rates.

3.3. Parental receptivity to COVID-19 vaccination

Clinicians reported varied levels of parental receptivity to pediatric COVID-19 vaccination. Nearly all participants described three groups of parents: (1) vaccine accepting or already vaccinated, (2) hesitant but may accept, and (3) non-vaccinators. Reasons for hesitancy were primarily due to concerns about side effects (both short and long term), lack of available long-term data, and feelings that development of the vaccines was rushed. Most participants reported that parents' concerns were similar for adolescents and youth (5 to 11 year-olds). However, for youth, participants reported increased questioning about necessity of the vaccine because of a lack of severe outcomes for younger children as well as heightened concerns about side effects. The challenge of misinformation on social media was discussed as well. Many participants linked high levels of hesitancy to misinformation spread via social media platforms.

3.4. Parental receptivity to other adolescent and childhood vaccines

To understand how unique hesitancy was to COVID-19 vaccination, we asked participants about overall vaccine hesitancy in their parent population. Generally, participants reported high levels of receptivity to other pediatric vaccines, particularly those required for school. Across all interviews, most participants reported parents were accepting of vaccines for the majority of child and adolescent vaccines, but that there was heightened resistance to influenza and human papillomavirus (HPV) vaccines. Several participants spoke about how because those two vaccines are often seen and presented to parents as optional their patient population has higher refusal rates. Additionally, when asked whether they had observed increased general vaccine hesitancy in recent months, a minority of participants said they believed there was a spillover effect from all the information being shared about COVID-19 vaccines. These participants noted that they were worried that as parents were questioning the COVID-19 vaccines, they would begin to question other routine vaccines.

3.5. Resources needed to support COVID-19 vaccination

Participants reported several primary resources they need to support this work: increased staff, materials to support conversations with parents of younger children, and training on communication with hesitant parents. Nearly all participants reported some degree of staffing challenges related to COVID-19 vaccination. In particular, participants working at non-vaccinating clinics cited staffing as a primary reason why they were unable to offer the vaccines. Just like adults, children and adolescents have to be monitored for 15 minutes post-vaccine for any adverse reactions, which takes space and time when vaccinating at a large scale. Additionally, many clinicians reported that they needed age-specific resources to guide conversations with parents. Several reported that while there is a lot of information about COVID-19 vaccination in general, there is less available specifically for the 5 to 11 age group. Finally, clinicians reported a need for training or guidance on how to have conversations with vaccine-hesitant parents.

3.6. Advice for successful conversations

All clinicians reported some degree of difficulty in having conversations with vaccine-hesitant parents. When we asked clinicians to share lessons learned throughout the last few months of having these conversations, and three primary strategies emerged. The first is that sharing personal experiences with COVID-19 vaccination can be effective. Many participants reported talking about their experiences vaccinating their own children and that some parents are reassured by this. Several noted that they believed parents were receptive to this type of message because of the long-standing relationships they had built with them. The second strategy that emerged was to acknowledge parents' fear while recognizing that their hesitancy may not be rational. Many participants spoke about how decisions around COVID-19 vaccination seem to be very emotional, particularly for parents of younger children. Almost all clinicians agreed it was vital to not dismiss concerns from hesitant parents but to address them individually. Clinicians reported this has been challenging because of the evolving nature of the vaccination data. Finally, persistence is critical. For hesitant but not completely resistant parents, several participants spoke about the importance of not giving up after a refusal and to bring up vaccination at every visit. While all clinicians reported some level of success using these strategies, many also spoke about how for a small group of the most adamant parents, they felt as though there was nothing that could change their mind. However, nearly all reported that they intended to continue having this conversation during future visits.

4. Discussion

In our qualitative study, pediatric clinicians reflected on their current vaccination efforts, parental receptivity to COVID-19 vaccination, and strategies they have identified to be the most effective in communicating with vaccine hesitant parents. To date, much of the research on pediatric COVID-19 vaccination has been conducted with parents about their intentions to vaccinate their children (Ruggiero et al., 2021; Szilagyi et al., 2021), and to some extent with youth themselves (Scherer et al., 2021). However, there is less qualitative information available from the perspective of clinicians about their experience in discussing COVID-19 vaccination with parents. Our study fills this critical gap in the literature by providing information on the experiences of clinicians in providing and discussing COVID-19 vaccination with parents of pediatric patients.

Results from these interviews identified challenges that vary in terms of the amount and types of resources, strategies, and changes needed to overcome them. The barriers to being able to offer the vaccine in all pediatric clinics are likely not ones that can be overcome quickly. In our study, clinicians in non-vaccinating clinics reported that their clinics' decisions to not offer the vaccine were largely related to logistical and resource constraints coupled with staffing issues driven by widespread burnout in the medical field. Many parents have reported that getting their child vaccinated in their own providers' office is strongly preferable (Scherer et al., 2021), therefore addressing the larger, system-level challenges like staffing will be necessary. At the same time however, resources need to be devoted to support clinicians in what they can do in the short term: educate and counsel vaccine hesitant parents.

Vaccine hesitancy among parents regarding their children has been and remains a significant challenge for clinicians and public health practitioners (Olson et al., 2020). In a national survey to measure hesitancy, researchers identified that about 6 % of parents were hesitant to have their children receive childhood vaccines (other than influenza) and over 25 % were hesitant about influenza specifically (Kempe et al., 2020). Recent polls have found that up to 30 % of parents report that they will definitely not get their adolescent (ages 12 to 17) vaccinated and almost 30 % will not get their child (ages 5 to 11) vaccinated for COVID-19 (Slettebo, 2020). To encourage these hesitant parents to get their children vaccinated, identifying trusted sources of information to deliver messaging is key. Overwhelmingly, surveys during the pandemic have found that parents report high levels of trust in healthcare providers (Scherer et al., 2021; Hamel et al., 2021; Alfieri et al., 2021; Purvis et al., 2021). Therefore, while multicomponent and multilevel interventions targeting the many barriers to vaccination will be needed, the role of clinicians in encouraging hesitant parents should be prioritized.

Given the long history of vaccine hesitancy in the United States, many strategies have already been identified that center the clinician as the most important messenger of vaccine information (Edwards and Hackell, 2016). Strong clinician recommendation is a known strategy to increase vaccination rates, including HPV vaccination (Gilkey et al., 2016) which is similarly plagued by high levels of hesitancy (Patel and Berenson, 2013). Clinicians in our study echoed the importance of their role in these conversations and reported that in addition to strongly recommending the vaccine there were several other strategies they have found to be effective in these conversations. This included sharing personal stories about vaccination, recognizing parents' fear about the vaccines, and being persistent with recommendations. While these are strategies that individual pediatric clinicians recognized as successful in their own experiences, many reported that there is a need for better defined best practices and training about how to have these discussions. Researchers can integrate these findings into existing strategies to reduce hesitancy (e.g. strong, presumptive recommendations and individually addressing misinformation) (Edwards and Hackell, 2016), to address the distinct challenges related to COVID-19 vaccination.

5. Strengths and limitations

The primary strength of our study was the use of rapid qualitative methods (Vindrola-Padros and Johnson, 2020) to collect and analyze data on a critically important topic in an understudied area. RQA has been found to save significant amounts of time compared to traditional methods and have high levels of concordance with results produced using traditional analytic methods (Taylor et al., 2018). In this case, using rapid methods allowed us to quickly gather data from clinicians and analyze it within weeks producing highly actionable and relevant results; something that is critically needed in the current situation. Additionally, we were able to conduct a "member-checking" exercise in which we presented our findings to two clinicians who we interviewed. This process allowed us to discuss these results and ensure that our interpretations were aligned with the situation they are currently experiencing.

However, this work is not without limitations. Given the extent of the COVID-19 outbreak that overlapped with respiratory syncytial virus season and the fact that many clinicians were struggling to get their own vaccine clinics running, recruitment was difficult. We continually reviewed transcripts for saturation (Saunders et al., 2018), however, given the rapidly changing nature of the pandemic during the six weeks of data collection, responses related to vaccination of 5-to 11-year-olds specifically varied across interviews. We used a convenience sampling approach to recruit participants and therefore our findings may not be generalizable to all clinicians working in pediatric practices. For example, over 50 % of the interviews conducted were with participants practicing in academic medical settings. Their experiences with COVID-19 vaccination may not represent the experiences of clinicians in community health settings. Moreover, as with all qualitative work, it is important to understand the context in which it was conducted. Massachusetts has higher than average vaccination rates among all populations and therefore the experience of the clinicians we interviewed may not be the experience of clinicians across the country. Despite these limitations, we believe our work offers important insights into the experience of clinicians as well as immediately actionable recommendations.

6. Conclusions

Our results shed light on the experience of clinicians, specifically around the time of EUA for youth ages 5 to 11, who have both been having conversations with parents about vaccination and offering vaccines in their clinics. Participants in these interviews identified critical ways in which clinicians can approach conversations with hesitant parents. Our next steps are to use this information to develop best practices for counseling parents and to test these strategies in pediatric clinics. Future research should continue to identify and test effective strategies to increase the rates of pediatric COVID-19 vaccination.

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8. Authorship statements

Dr. Ryan conceptualized the study, conducted data collection and analysis, drafted the initial manuscript and revised the manuscript. Ms. Goulding designed the data collection instrument, conducted data collection and analysis and revised all drafts of the manuscript. Ms. Borg supported coordination and data collection and revised the manuscript. Ms. Minkah participated in recruitment and data collection and revised

the manuscript. Drs. Hermann and Fisher participated in interpretation of the data and critically reviewed the manuscript. Drs. Rosal and Lemon participated in conceptualization of the study and critically reviewed the manuscript.

All authors approved the final manuscript and agree to be accountable for all aspects of the work.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Due to the nature of qualitative data, authors cannot make this data publicly available.

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