**Vaccine Discussions with parents:
The experience of Australian paediatricians**

Original Article

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Abstract

Aim

Health Care Providers (HCPs) are crucial in maintaining parental confidence in vaccination. HCPs are the most commonly accessed resource by parents for vaccine-related information, and are highly trusted. We investigated Paediatricians': i) frequency of vaccine discussions; ii) specific vaccine-related topics discussed; iii) perceived role in childhood vaccination; iv) challenges faced when having discussions; v) confidence in vaccine-related knowledge and communication skills; and vi) interest in online education and training.

Methods

We invited members of the Australian Paediatric Research Network (APRN) to complete an online REDCap survey in 2015-16.

Results

Of 383 active APRN members, 165 (43%) completed the online survey. Sixty-one percent reported 'frequently' or 'almost always' having vaccine-related discussions, with 15% 'rarely' having them. 'Lack of time' was the most commonly reported barrier to having vaccine discussions (54%). Vaccine necessity was most commonly discussed (33%), followed by vaccine safety (24%), general vaccine concerns (23%) and catch-up schedules (23%). While only 25% of paediatricians lacked confidence in their vaccine-related knowledge and 11% in their communication skills, most expressed interest in online training to address vaccine knowledge (62%) and communication skills (53%).

Conclusion

Paediatricians play a key role in maintaining public confidence in vaccination. However, opportunities to address concerns are not being maximised by Australian paediatricians. There is a need and desire for training and resources to increase vaccine knowledge and communication skills for paediatricians, to optimise the frequency and effectiveness of vaccine discussions with parents and to ensure ongoing high immunisation coverage rates in Australia.

What is already known on this topic

- 1 Vaccination coverage remains high in Australia with 93% of children fully vaccinated at one and five years of age.
- 2 Many parents have concerns about vaccinations, mainly pertaining to safety.
- 3 Health care providers play a crucial role in maintaining public confidence in vaccines and are commonly accessed by parents for information.

What this paper adds

- 1 Australian paediatricians are not maximizing opportunities to address parental vaccine concerns .
- 2 Many paediatricians reported a lack of confidence in their vaccine-related knowledge and communication skills, and most desired further education to develop these skills.
- 3 This study highlights the need for additional training for Australian paediatricians to ensure effective vaccine-related discussions in the consultation room

Introduction

Vaccine coverage in Australia is high with approximately 93% of Australian children fully vaccinated at one and five years of age [1]. However, recent data suggests that 43% of Australian parents have at least some concerns about vaccination [2] and that vaccine objection leads to incomplete vaccination or vaccine refusal in an estimated 3.3% of Australian children [3]. Of concern, significant geographical clustering of parents with greater concerns results in vaccine objection rates as high as 11% in some areas, placing these communities at particular risk of outbreaks of vaccine preventable diseases (VPDs) [4].

Determinants of vaccine hesitancy are complex, dynamic and specific to contextual influences including socio-economic factors; the communication and media environment; specific vaccine safety and efficacy issues; and individual and social group influences [5]. Generally speaking, vaccine-refusing parents consider vaccines to be unsafe and ineffective, and VPDs to be neither common nor serious enough to justify the perceived risks of vaccination [6]. They tend to mistrust Health Care Providers (HCPs) and the government, and access non-official information sources such as alternative health care providers, online anti-vaccination sites and the media [6,7]. Common parental concerns include those pertaining to certain vaccine ingredients, the risk of adverse events, vaccines overloading the immune system when a number are given at once, the number of vaccines given overall, the pain from vaccination, and vaccination causing specific conditions such as autism, allergies, or autoimmune diseases [3,8,9,10].

HCPs are the most commonly accessed resource for vaccine-related information [3,11] and are key in encouraging vaccine acceptance [2,11]. This role gives HCPs both the opportunity and a responsibility to address vaccine-related questions and concerns, but effective, evidence-based strategies to guide HCPs are lacking [12,13]. It is clear that information alone is not enough to address parental concerns and that multi-component, integrated interventions with a focus on communication-based approaches tend to achieve better results [14]. Vaccine concerns can be addressed through positive interactions with HCPs while poor interactions erode trust and can further entrench vaccine hesitancy and rejection [2]. Whilst vaccine objection rates are relatively low, there is concern that rates of under-vaccination may increase if parental concerns are not adequately heard and respectfully allayed.

Several guidelines are available for HCPs to support vaccine communication, such as the USA American Academy of Pediatrics (AAP) guidelines for paediatricians, who are the main providers of childhood vaccinations in the United States [15]. However, there are no current guidelines for Australian paediatricians to guide their role as secondary care providers for children, with general practitioners (GPs) and immunisation nurses being the primary providers of vaccines in Australia. A system and resources based on the Vaccine-Communication Framework (VCF) [2] are being developed for use in Australian primary care. In this study we sought formative information on the usefulness of the five categories described in the framework, which place vaccine hesitancy on a continuum from the unquestioning acceptor to the refuser [2].

We aimed to describe the frequency with which paediatricians had vaccine-related discussions, the specific vaccine-related topics discussed and the level of confidence paediatricians had in their own knowledge and communication skills regarding discussions with vaccine hesitant parents, as well as their personal beliefs about vaccination. Finally, we aimed to ascertain paediatricians' interest in online training and resources to support vaccine-related discussions in the Australian context.

Methods

Design, setting, participants

The Australian Paediatric Research Network (APRN) was established in 2007 to facilitate high quality, multi-site national research into common paediatric conditions in secondary care settings [16,17]. Members were recruited from the 1,006 general paediatricians registered with the Royal Australasian College of Physicians (RACP) in 2007, and newly graduated paediatricians are invited to join each year, with proportional representation from all Australian states and territories [16,17].

APRN members were invited to complete the annual Multi-Topic Survey (MTS) consisting of three topics, between September 2015 and January 2016. At this time there were 486 APRN members of whom 383 (38% of RACP registered general paediatricians), were research active (had completed an APRN survey in the previous five years). The MTS was piloted with ten general paediatricians and changes were made to optimise readability and clarity. APRN members were then emailed the survey for completion via Research Electronic Data Capture (REDCap), a secure, web-based

application supporting data capture for research studies [18]. Three reminder emails were sent between October 2015 and January 2016 to optimise response rate.

Ethics approval was obtained from the Royal Children's Hospital Melbourne Human Research Ethics Committee (35142).

Main outcome measures

The survey was designed by the study authors, including general paediatricians, an advanced paediatric trainee, a research fellow and a cognitive psychologist, and was informed by knowledge of Australian paediatric practice and previously published survey instruments [2,10,11]. Participant demographic characteristics were obtained from the APRN database. Survey questions were centred on the study objectives. The survey consisted of 10 questions, including two open-ended questions. Eight questions were measured using Likert scales, with two using a four-point scale (eg. Rarely <10%, Sometimes 10-50%, Frequently 51-90%, and Almost Always >90%) and six using a Matrix style layout with either a six-point (eg. Strongly disagree, disagree, slightly disagree, slightly agree, agree or strongly agree) or a ten-point scale (eg. from 0 = not challenging at all, to 10 = very challenging with scores of 6 and above defined as challenging for the analysis). The use of different scales allowed us to better understand the paediatricians' responses with more granularity and clarity.

The Vaccine Communication Framework (VCF) uses five categories to assist HCPs in understanding parents' degree of vaccine hesitancy: the 'unquestioning acceptor', the 'cautious acceptor', the 'hesitant', the 'late or selective vaccinator', and the 'refuser' [2]. Paediatricians were asked to indicate the extent to which these categories would be useful in tailoring their approach to vaccine-related discussions [2]. A four-point scale was used including 'very useful', 'somewhat useful', 'not very useful', and 'not at all useful'. A number of tailored communication strategies have been proposed, targeted specifically to each of the five groups, and we wanted to explore the practical applicability of these approaches for clinicians [2].

Data management and Statistical analysis

Data were exported from REDCap into Excel, and subsequently STATA version 13 (Stata, College Station, TX, USA) for analysis. Descriptive statistics were used for all

demographic variables. The six-point Likert scale responses were dichotomised into three groups in the final analysis (eg. never/rarely, sometimes/frequently, very frequently/always), with descriptive statistics used.

Results

Participants/Demographics

Of the 383 active APRN members, 165 (43%) completed the survey. Of those, the majority were female (53%), worked part-time (58%) and in public practice (62%; Table 1). Demographic characteristics of APRN members were compared to those of all Australian paediatricians, based on data from the Australian Health Practitioner Regulation Agency (AHPRA). APRN members were more likely to be younger, working part time, and based in rural or regional areas (Table 1). APRN non-responders compared to responders were less likely to be working full time (22% vs 42%). Respondents spent an average of 22 hours in consultations a week (SD 11), 20 hours in the inpatient setting (SD 20), 66 hours in the outpatient setting (SD 30) and 23 hours in 'other' settings (SD 25). Participating paediatricians reported seeing an average of 33 patients each week (SD 22).

Frequency of vaccine-related discussions and perceived role of Paediatricians

Whilst nearly two thirds of paediatricians almost always or frequently (61%) reported having vaccine discussions, 24% reported only 'sometimes' and 15% only 'rarely' having vaccine discussions (Table 2). Vaccine necessity was the most common topic almost always discussed (33%), followed by vaccine safety (24%), general vaccine concerns and catch-up schedules (both 23%; Table 3). Vaccine issues for special or high-risk patients (21%), vaccine efficacy (20%), and concerns about specific vaccines, particularly MMR causing autism (20%), were also common concerns for parents. Vaccine constituents and the number of vaccines on the National Immunisation Program (NIP) were rarely discussed with patients and families.

With regards to vaccine-related responsibilities, paediatricians indicated that answering parents' questions about vaccines and advising of vaccine-related resources were most commonly their role (Table 4). Additional themes included discussion of adverse events following immunisation (AEFI) and causality, dispelling myths about vaccination, recommending the influenza vaccine and providing travel advice.

Barriers to vaccine-related discussions and self-reported knowledge and skills

The reported greatest challenges for paediatricians in having vaccine-related discussions included having too many other issues to discuss (54%) and lack of time (45%), followed by concern about introducing conflict into the professional relationship (21%; Table 5). Approximately 10% of respondents reported that a lack of knowledge about specific vaccines and the current NIP schedule were also challenges when having discussions. Additional themes included the difficulty in alleviating concerns of strongly hesitant parents who had already made their vaccination decisions.

A quarter of paediatricians (25%) reported a lack of confidence in their vaccine-related knowledge, with a response of 5 or below on a scale from 0 (not confident at all) to 10 (extremely confident). In comparison, 11% reported a lack of confidence in their vaccine-related communication skills (i.e. comfort with having vaccine-related discussions with hesitant parents). The majority of paediatricians felt that the VCF categories were useful in tailoring their approach to vaccine-related discussions with parents, with 30% reporting that they were ‘very useful’ and 52% ‘somewhat useful’.

Interest in online training and education to assist in having vaccine-related discussions with parents

The majority of respondents were interested in online training to develop vaccine-related knowledge (62%) and communication skills (53%), based on responses of 6 and above on a scale from 0 (not interested) to 10 (would almost certainly participate). Assuming the online training was of good quality and relevant to their practice, 47% were willing to spend up to one hour on online training, 48% 2-4 hours and only 5% over four hours. In particular, paediatricians were most interested in further information about the conjugate meningococcal C vaccine combined with Hib (Menitorix) (52%), followed by the HPV vaccine (37%), the combined Diphtheria/Tetanus/Pertussis/Polio/Hepatitis B and Hib vaccine (Infanrix hexa) (37%) and the pneumococcal conjugate vaccine (Prevenar 13; 36%). There was similar interest in the combined measles, mumps, rubella and varicella vaccine (MMRV; 31%), the Diphtheria/Tetanus/Pertussis/Polio booster vaccine (Infanrix-IPV; 31%) and oral rotavirus vaccines (Rotateq; 30%; Rotarix was not asked about separately), and less in the measles, mumps, rubella vaccine alone (MMR; 23%).

Paediatricians' personal views regarding vaccination

Support for vaccination was generally high among paediatricians. Most respondents reported that they 'Strongly Agree' that vaccines are necessary (83%), effective (71%), safe (63%) and that the NIP is appropriate for children (68%). Of note, two paediatricians reported 'strongly disagreeing' with all of the above (Table 6).

Discussion

Our study reports on the experience of practicing Australian paediatricians in having vaccine-related discussions with parents. Australian Paediatricians, unlike GPs, are not primarily responsible for providing routine vaccinations or devising catch up or tailored immunisation schedules for children. Despite this, two thirds of paediatricians (66%) are engaging in vaccine discussions with parents, mostly around vaccine necessity and safety. However, paediatricians are expressing a desire for more education and training to support these discussions, with one quarter reporting a lack of confidence in their knowledge and over half wanting more vaccine education.

Opportunities exist for paediatricians to play a greater role in ensuring timely and complete vaccination for children, and addressing vaccine hesitancy in consultations. While paediatricians can provide a longer consultation of up to 45 minutes compared to a GP consultation of approximately 15 minutes, a GP referral is required and parents incur an out of pocket cost (which is usually \$150 or more depending on the practitioner). A recent survey of Australian parents attending general paediatric outpatient clinics and MCHC centers showed that 27% of parents would 'probably' or 'definitely' pay an out-of-pocket fee of \$125 fee for a 45-minute vaccine-related consultation with a paediatrician [3]. Thus, paediatricians could be better utilised for vaccine-related discussions, especially given increasing pressure placed on GPs since the introduction of new immunisation policies such as "No Jab, No Pay" in January 2016.

Whilst many studies report that safety of vaccines is of greater concern to parents than the risk of VPDs [3], paediatricians reported most commonly discussing issues around vaccine necessity with parents, followed by safety. Interestingly, paediatricians rarely discussed vaccine constituents and the number of vaccines on the NIP, both among the

most common concerns expressed by Australian parents [3]. This suggests that paediatricians may consider the issue of vaccine necessity from a public health perspective as more important, and therefore tend to focus on this when trying to convince vaccine hesitant parents. However, in doing so they may fail to adequately recognise and address the concerns that parents have about the risk of vaccines to their children. This may also reflect paediatricians' uncertainty about the NIP schedule and their vaccine knowledge.

Some resources have recently been developed by SKAI (Sharing Knowledge about Immunisation), an Australian National Collaboration, targeting the most common concerns expressed by parents [19]. Many other vaccine resources exist, such as fact sheets, decision aids and videos [20]. Greater awareness and use of such resources would assist paediatricians and other HCPs in having these often challenging and time consuming vaccine-related discussions.

The greatest reported barriers that paediatricians face in having vaccine-related discussions are having too many other issues to address and lack of time, with nearly 40% admitting only 'rarely' or 'sometimes' discussing vaccination. However, concern about introducing conflict to the doctor patient relationship (21%) and a lack of confidence in vaccine-related communication skills (11%) further highlights the need to provide paediatricians with resources specifically focused on vaccine-related communication skills, rather than facts sheets or other educational resources alone, to support them in having effective discussions without jeopardising trust and rapport.

Vaccine-related knowledge is also an area of concern for paediatricians with a quarter reporting a lack of confidence in their knowledge and more than half indicating interest in further education in both vaccine knowledge and communication skills. This is not surprising given the lack of formal vaccine education in Australian paediatric training. The expressed lack of confidence and need for vaccine-related training also reflects the complex and ever changing nature of the NIP, in addition to the current climate of vaccine uncertainty. Encouragingly nearly half the respondents were willing to spend up to 4 hours on an online education tool. The majority of paediatricians reported finding the VCF categories useful in tailoring their discussions with parents, suggesting a potential benefit in using them to tailor the use of educational tools to the degree of

hesitancy expressed by the parent.

While the overwhelming majority of paediatricians support vaccination, between 15-30% did not indicate strong agreement that vaccines are necessary, effective, safe and that the NIP schedule is appropriate for children (Table 6). Furthermore, 1% of respondents strongly disagreed with these statements. While this finding is consistent with studies of other health professionals [21], it does highlight the variation in support for vaccination among Australian paediatricians, suggesting that parents may be receiving information from paediatricians and other HCPs that is not strongly supportive of vaccination. These data suggest that paediatricians may lack confidence in having discussions with parents about vaccination, if they themselves are not strongly convinced of the efficacy, safety and necessity of vaccines. Furthermore, the Nursing and Midwifery Board of Australia released a position statement in October 2016 stating that “any published anti-vaccination material and/or advice which is false, misleading or deceptive which is being distributed by a registered nurse, enrolled nurse or midwife (including via social media) may also constitute a summary offence under the National Law and could result in prosecution by AHPRA” [22]. Thus it is clear that we need to ensure that all HCPs have access to opportunities to gain knowledge in basic vaccinology and the vaccine schedule in order to address any knowledge gaps and concerns they may hold, and that they uphold their public health responsibility to promote vaccination.

Our study has several strengths, including being the first national survey to provide information about the experience of Australian paediatricians in having vaccine-related discussions with parents. Through the APRN, we were able to access paediatricians with similar demographic characteristics to paediatricians registered with AHPRA, although APRN members were more likely to be younger, working part time, and based in rural or regional areas. In addition APRN members may be more likely to have an interest in research, and may therefore be more likely to be interested in online training. A further limitation was our response rate of 43%, despite the use of three reminders. This most likely reflects the workload of practicing paediatricians and the increasing difficulty to engage them in completing surveys, and is consistent with previous surveys of practicing paediatricians [23]. However, it is important to acknowledge the fact that currently the APRN represents the only national network to access the views of

practicing paediatricians in Australia, enabling us to inform policy development and further education and training.

Conclusion

Paediatricians play a key role in maintaining public confidence in vaccination, however, opportunities to ensure timely vaccination and to address concerns are not being maximised by Australian paediatricians. The most common barriers reported to having vaccine-related conversations were lack of time and having too many other issues to discuss. A quarter of paediatricians reported a lack of confidence in their vaccine-related knowledge and more than half were interested in further education and training in both vaccine knowledge and communication skills. This study highlights the need for additional training for Australian paediatricians to improve their self-efficacy to address parents' vaccine concerns and to ensure effective vaccine-related discussions in the consultation room.

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Table 1: Characteristics of APRN active members (survey responders and non-responders) compared to all Australian paediatricians

*Data not available for all non-responders

^Data not mutually exclusive

	APRN survey responders (n=165) n (%)	APRN survey non-responders (n=218) n (%)	All Australian paediatricians (n=1442) n (%)
Sex			
Male	78 (47.3)	103 (47.2)	701 (48.6)
Age (years)			
<44	73 (44.2)	94 (43.1)	440 (30.5)
45–54	51 (30.9)	68 (31.2)	463 (32.1)
55–64	27 (16.4)	39 (17.9)	342 (23.7)
65+	12 (7.3)	11 (5.0)	146 (10.1)
Working hours*			
Part-time	96 (58.2)	112 (51.4)	373 (25.9)
Full-time	69 (41.8)	48 (22.0)	837 (58.0)
Practice setting^			
Academic post	14 (8.5)	30 (13.8)	- -
Private practice	54 (32.7)	58 (26.6)	- -
Public Outpatients	102 (61.8)	125 (57.3)	- -
Community Health Centre	11 (6.7)	17 (7.8)	- -
Practice location*			
Metropolitan	115 (69.7)	109 (50.0)	1182 (82.0)
Regional/Rural	49 (29.7)	43 (19.7)	216 (15.0)

Table 2. Frequency of vaccine-related discussions

“How often do you have a discussion regarding vaccination with your patients, including their vaccination status?”

Frequency of discussions	Frequency (N=164)	Percentage (%)
Rarely (<10% of all referrals)	24	15
Sometimes (10-50% of all referrals)	40	24
Frequently (51-90% of all referrals)	41	25
Almost always (>90% of all referrals)	59	36

Table 3. Frequency of topics frequently or almost always discussed during vaccine-related discussions

“During vaccine-related discussions, how often do you discuss the following topics?”

Topic	N (Total)	Frequently (51-90%)	Almost always (>90%)
		N (%)	N (%)
Vaccine necessity	164	44 (27)	54 (33)
Vaccine safety	164	35 (21)	39 (24)
General vaccine concerns	163	36 (22)	38 (23)
Catch-up schedules	164	21 (13)	37 (23)
High risk or special risk patients	163	28 (17)	34 (21)
Vaccine efficacy	164	36 (22)	32 (20)
Concerns about specific vaccines	164	21 (13)	32 (20)
MMR causes autism	164	24 (15)	33 (20)
Rotavirus causes diarrhea	164	7 (4)	9 (5)
Vaccine constituents	164	11 (7)	7 (4)
Too many vaccines on the NIP*	163	6 (4)	3 (2)
Completing conscientious objector forms	163	0 (0)	2 (1)

* National Immunisation Program

Table 4. The role of the Paediatrician with regards to vaccination.

“When thinking about your clinical practice in general (inpatient and outpatient), please rate the extent to which you think each of the following vaccine-related tasks are within your role as a paediatrician”

Vaccine-related responsibilities	N	“Never” or “Rarely” my role * N (%)	“Sometimes” or “Frequently” my role N (%)	“Very frequently” or “Always” my role N (%)
Answer parents questions about vaccines	162	9 (6)	61 (38)	92 (57)
Advise parents of vaccine-related information resources	163	17 (10)	67 (41)	79 (48)
Provide tailored vaccination schedules	163	76 (47)	60 (37)	27 (17)
Provide routine vaccinations	164	113 (69)	28 (17)	23 (14)
Provide catch-up vaccinations	163	93 (57)	48 (29)	22 (13)

* Using a six-point Likert scale.

Table 5: Challenges faced by paediatricians in having vaccine discussions

“Please indicate the extent to which you find the following factors relating to vaccine discussions challenging”

Barriers to having vaccine-related discussions	Total respondents	Paediatricians who reported finding barriers challenging* N (%)
Too many other issues to discuss	161	87 (54)
Lack of time	162	73 (45)
Concern that it will introduce conflict to the consultation/relationship	162	34 (21)
Lack of knowledge about specific vaccines	161	18 (11)
Lack of knowledge about the current NIP vaccination schedule	161	15 (9)
Lack of knowledge about how vaccines work	162	7 (4)
Lack of knowledge about Vaccine Preventable Diseases	161	6 (4)

* Indicates proportion of Paediatricians who responded e 6 when asked to rate each of the challenges from 0 (Not challenging at all) to 10 (Very challenging)

Table 6. The views of paediatricians regarding vaccination

	N Total	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Vaccines are necessary	163	2 (1)	-	-	-	25 (15)	136 (83)
Vaccines are effective	164	2 (1)	-	-	-	45 (27)	117 (71)
The NIP* is appropriate for children	162	2 (1)	-	-	1 (<1)	49 (30)	110 (68)
Vaccines are safe	164	2 (1)	-	1 (<1)	2 (1)	55 (34)	104 (63)

*National Immunisation Program

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