Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Original Research

Perspectives of vaccinators on the factors affecting uptake of meningococcal ACWY vaccine amongst school leavers in London

J. Seok [a], C. Heffernan [b,c], S. Mounier-Jack [a,d], T. Chantler [a,d,*]

[a] London School of Hygiene & Tropical Medicine, London, United Kingdom
[b] NHS England (London Region), London, United Kingdom
[c] Public Health England, London, United Kingdom
[d] NIHR Health Protection Research Unit in Immunisation, London School of Hygiene and Tropical Medicine, London, United Kingdom

ARTICLE INFO

Article history:
Received 26 March 2018
Received in revised form
9 July 2018
Accepted 3 August 2018
Available online 3 October 2018

Keywords:
Men ACWY vaccine
General practice
Adolescents
Immunisation uptake

ABSTRACT

Objectives: Uptake of meningococcal ACWY (Men ACWY) vaccine amongst school leavers is suboptimal in London (9.9% compared to 17.4% nationally in 2015/16). This study explores service delivery barriers and elicits insights from general practice staff on their interaction with this cohort. The purpose was to inform the National Health Service England (London) public health commissioning team's strategy to improve Men ACWY vaccination uptake in London.

Study design: Qualitative semi-structured interviews study.

Methods: Purposive sampling of practice nurses from three general practices from each of the three London clinical commissioning group areas (Barnet, Camden and Newham) with the largest numbers of 18–20 year old registered patients. Participants were recruited through their practice managers. A thematic analysis approach was used.

Results: A total of ten interviews were conducted between June and August 2017. Five themes were identified: (1) Nurses unsupported by practice systems; (2) difficulty getting school leavers into the practice; (3) confused messaging; (4) reliance on parental responsibility for health; and (5) perception of complacency amongst adolescents.

Conclusion: Little is known about the service factors that impede uptake of adolescent vaccinations. This exploratory study suggests that existing programmatic mechanisms for delivering the Men ACWY catch-up programme were not adequate. The number of adolescent vaccinations offered has increased in the UK in the last five years and is likely to continue. Although the findings need to be further extrapolated in quantitative research, general practice staff need more systematic guidance on their role and how they can support vaccine decision-making in later adolescence.

* *Corresponding author*. LSHTM, 15-17 Tavistock Place, London, WC1H 9SH, UK.
E-mail address: Tracey.chantler@lshtm.ac.uk (T. Chantler).

https://doi.org/10.1016/j.puhe.2018.08.002

Introduction

In June 2015, a national publicly funded meningococcal ACWY (Men ACWY) immunisation programme was introduced in the United Kingdom (UK).[1] This was in response to the rapid rise of invasive meningococcal disease caused by the capsular group W (Men W) particularly amongst adolescents (10–18 years), young adults (19–25 years), and other university students.[2] The Men ACWY immunisation programme is commissioned by National Health Service England (NHSE) as part of its Section 7a immunisation programmes. It is offered as a routine vaccination to adolescents aged 14 or 15 years (UK school years 9 or 10) alongside the teenage booster in the school-based vaccination programme. Between 2015 and 2018, three cohorts of school leavers (aged 18 years) were offered vaccination in general practice. University entrants ('freshers') were also eligible to receive the vaccine and remain so up to the age of 25 years. A time limited catch-up programme was offered between 2015 and 2017 to other adolescent age groups.

School leavers (those aged 18 years) are at particular risk of acquiring meningitis, yet uptake of the Men ACWY immunisation programme was only 9.9% amongst 18-year-olds in London for 2015/16 compared to 17.4% nationally.[3] (Data on 19–25 year olds were not collected). In England, the primary providers of vaccination services are general practices, and practice nurses typically take responsibility for their administration. NHSE commissioned general practices to deliver Men ACWY programme via an invite/reminder (call/recall) system for 18-year olds and opportunistically for 19- to 25-year olds. Whilst there was marginal increase of London uptake rates to 17.7% for 2016/17 (29.4% nationally)[4] it highlighted the need to identify potential barriers in affecting the supply and demand of the Men ACWY programme.

Adolescence can be divided into three stages: early (11–14 years), middle (15–17 years) and late (18–21 years).[5] There is little published on vaccination acceptability amongst late adolescents compared to middle adolescents because other adolescent vaccinations (i.e. booster vaccine, human papillomavirus vaccine) are delivered in schools and offered at an earlier age. Younger adolescents are perceived to be more amenable to vaccines as they are guided by healthcare providers and parents.[6–8] Older adolescents are associated with diminished willingness to receive care, make preventative healthcare visits and are less satisfied with NHS care than older adults.[7,9] Since the introduction of the Men ACWY programme, a few UK-based studies have looked at the understanding of the vaccine amongst university students.[10–13] The factors associated with intention to vaccinate included knowledge about the risk of meningitis, having had all other childhood vaccinations and not being afraid of needles. International students were less likely to be aware of meningitis and to have been vaccinated at the start of their undergraduate degrees.[9,11] Less is known about the impact of service delivery factors on Men ACWY uptake, for example accessibility to vaccination services. There is some evidence that the difficulties in obtaining general practitioner (GP) appointments[8] have a negative impact, and the use of call/recall (reminder) systems have a positive effect.[14] The aim of this study was to explore general practice nurses' perspectives on offering Men ACWY vaccine to the London school leaver population. We were keen to identify service delivery barriers and elicit insights from practice staff on their interaction with this cohort. The purpose was to inform the NHSE (London) public health commissioning team's strategy to improve Men ACWY vaccination uptake in London.

Methods

We employed a qualitative methodological approach. Between 1st June and 31st August 2017, we conducted semi-structured interviews with practice nurses working in GP practices. Sampling of practice nurses was purposive. Men ACWY rates for school leavers are reported by Clinical Commissioning Groups (CCGs), and London is divided into 32 CCGs. We chose the three CCGs (Barnet, Camden and Newham) with the largest numbers of 18- to 20-year old registered patients (i.e. school leavers in 2015, 2016 and 2017) as these would have the practices that are the most likely to offer the Men ACWY vaccination. We considered sampling practices that had high and low uptake rates in 2015/16 but the range in London was small, 5–17.4%.[3] From each of these CCGs, three practices with the highest number of 18- to 20-year-old registered patients were selected. Vaccinators were recruited by contacting practice managers by email and telephone follow-up. When a practice refused to take part, the next practice with the highest number of 18- to 20-year-old patients was contacted. A total of 11 practices were contacted, and 9 agreed to participate, equating to 10 practice nurses (two in one practice), all of whom were female.

An interview topic guide was used to guide the discussion, which allowed for flexibility and elaboration around each participant's experience. The guide was developed from a review of the literature on vaccine delivery and vaccine hesitancy. The authors consulted on the topic guide and on the emerging themes with the regional NHSE/Public Health England academic group of advisors.

All interviews were conducted face-to-face, in English and lasted between 20 and 50 min. Interviews were audio-recorded, transcribed by a third party and anonymised. Field notes were also made during the interview. Thematic content analysis with some elements of grounded theory was used to analyse the data.[16] A coding list was developed from the first three interviews and was used to recode these interviews and systematically code the remaining transcripts on NVivo 11, maintaining some flexibility to add and refine codes throughout the process. The codes were initially grouped by first order categories based on the original topics, enriched by emerging themes before finalised into second order themes (Table 1). Informed consent was obtained from each participant, and pseudonyms were assigned to participants to protect identities. Ethical approval was not required from the NHS as this was service improvement work but given one of the authors was a post-graduate student, approval was obtained from the London School of Hygiene and Tropical Medicine MSc Ethics Committee (Ref: 13436).

Table 1 – Mapping of codes from original topics guide to final themes.

Guide topics	1st order themes	Emerging themes	Final themes
Awareness and understanding of Men ACWY vaccine Experiences of the organisation and delivery of the school leaver programme Interaction with school leavers about vaccine acceptability Perspectives on the facilitators and barriers to service delivery Views on improving vaccine uptake	Confusion over Men ACWY vaccine eligibility (focus on 'freshers' and university students, questions about mature students) Belief that there is a lack of co-ordinated generation of awareness (once in the practice easily to convince them) – 'Doctor will say blah needs vaccine so they come downstairs and we'll see them quickly and fit them in if we have the vaccine in stock' Delivery of vaccinations in practices—roles of administration staff, GPs, nurses (lack of) leadership and motivation Adolescent own responsibility for health—continued parental involvement, hesitancy to act without parental guidance	Practice level programme management: 'no real incentive to bring people in' 'it's not a targeted vaccine so the partners don't have to meet a certain percentage to receive funding' 'sounds awful but when someone else (in the practice) orders the vaccine and sends out the letters, you're not overly involved' 'So, we don't do any searching, or we don't go out and look for those groups of students, because we wouldn't know who would be going to university, and who wouldn't be, so it's they come to us.' Complacency: 'They feel invincible' 'They're not bothered'	Nurses unsupported by practice systems Difficulty getting school leavers into the practice Confused messaging Reliance on parental responsibility for health Perception of complacency amongst adolescents.

Results

Five main themes emerged on the factors affecting uptake. These were: (1) nurses unsupported by practice systems; (2) getting school leavers into the practice; (3) confused messaging; (4) reliance on parental responsibility for health; and (5) perception of complacency amongst adolescents. Overall, interviewees felt that compared to other immunisations, Men ACWY was not a priority for them.

Nurses unsupported by practice systems

Practice nurses stated that they were delegated responsibility for the delivery of the Men ACWY programme but felt that support and motivation from other practice staff was lacking. They were 'not sure how tuned in' their GPs were. Others mentioned stories of young adults being turned away at practices due to lack of vaccine stock or due to a receptionist not being aware of the Men ACWY programme. Many felt that the Men ACWY vaccine was not a priority for general practice partners as unlike childhood immunisations, there was no target to achieve:

> *It's not a targeted vaccine, so they don't have to meet a certain percentage to receive the funding… So, there's no real incentive to bring in those patients.*
>
> (Practice B Nurse)

Although practice nurses accepted responsibility for the programme, their interpretation of what this entailed varied. Some were 'hands on', actively checking lists of eligible patients, even linking with universities, whilst others focussed solely on clinical administration relying on reception staff to send invites and order stocks. It was clear that whilst they were happy to give Men ACWY vaccination, in the context of high workload, ensuring high uptake rates did not take precedence over other activities:

> *As nurses, we have a lot enough to do. This is a busy practice, 17,000 patients. You know, this group for us, out of 17,000 patients, over 200, it's not that great amount*
>
> (Practice E Nurse).

Getting school leavers in practices

All interviewees stated that when school leavers and parents were informed about Men ACWY, they accepted the vaccine. From their perspective, the main barrier to uptake was getting school leavers to attend as once they entered the practice, refusal was rare.

> *Once you've explained to them why they're having it done, some of them have read the leaflet, and you go through it with them again, they're fine with it.*
>
> (Practice E Nurse).

The difficulty getting them in was connected to a lack of call/recall and perception that the national campaign was not effective. Four interviewees said their practices sent letters or texts, one reminded newly registering patients, and six practices did not send invites. Interviewees thought that practices tended to offer Men ACWY opportunistically. However, there were some reservations about opportunistic vaccination. As Practice B Nurse stated, "*you can't just give a vaccine, you need time to discuss the rationale of the programme, and side effects, and whether they actually want to have it.*"

Participants were concerned that the approach adopted to sharing information about the Men ACWY school leavers

immunisation programme was not effective. Current ad hoc awareness raising, such as word of mouth, signposting at school and UCAS/University notification, was thought to lack consistency and interviewees argued for a more wide-reaching strategic approach. '*…whatever we're doing, the message is not getting across'* (Practice A Nurse 1).

> *I think, you know, because it hasn't been publicised as much as you would expect for such a horrible disease. I think it's just slipped in, and it's not really there.*
>
> (Practice A Nurse 2)

Confused messaging

Participants spoke of a lack of an effective campaign especially around eligibility for Men ACWY. They perceived the campaign focused on 'freshers'. This confused them and the school leaver cohort. Five nurses understood that the programme extended to all those aged 18–25 years regardless of their involvement in higher education. Another stated that she only promoted Men ACWY to school leavers in the context of thinking about going to university:

> *They just go, 'oh, do I need it?' and I say, well, if you're thinking of going to university and I explain why, and they're like 'okay then'.*
>
> (Practice C Nurse)

Two participants reported that parents and adolescents were unaware that the Men ACWY vaccine is different to the Men C vaccine. They explained that parents and adolescents would say that they had the 'Meningitis' vaccine without understanding that this was the previously recommended Men C vaccine that did not offer protection against different strains of meningitis. They argued that the switch to a vaccine that offered protection against more types of meningitis needed to be highlighted clearly in campaign materials.

Reliance on parental responsibility for health

Despite the Men ACWY programme being targeted at older adolescents transitioning into young adults, all school leavers defer to parents when offered the vaccine. Interviewees reported that young adults are hesitant to accept the vaccine without first discussing it with a parent or checking their vaccination record with their mothers. This can lead to them leaving the practice and not returning to get vaccinated. Parents were viewed as being more engaged in discussing the vaccine and if the parents did not agree with the vaccine, the adolescent would not have it. One participant spoke about trying to encourage hesitant patients to take responsibility for their own health:

> *So, for a few people, there's a little bit of a quandary in terms of they want to go and check with their family first. Because, when you start university, you're quite inexperienced, you're quite young… And so, we encourage them to think that they're actually young adults now, and it's for them to make that decision but, obviously, they want to discuss it with their parents.*
>
> (Practice A Nurse)

Interviewees stated that adolescents who attend for vaccination are sent at the behest of their parents, often the mothers:

> *To be fair, most of the kids come in because their parents make them, not because they want to, it's not them that book the appointments, it's the parents. And, parents usually frogmarch them in here, and they sit there looking really miserable, and not particularly interested.*
>
> (Practice C Nurse).

Perception of complacency amongst school leavers

Interviewees reported a degree of perceived complacency amongst school leavers about Men ACWY vaccination. They state that they seemed to be "*not bothered*" about being vaccinated possibly because "*they're just at that age where they think nothing is going to happen to them"* (Practice D Nurse). Practice nurses also stated that without encouragement from parents or any others, young adults had a tendency to not seek the vaccine due to the timing of the vaccine coinciding with other major life events. Adolescents were seen as being too busy to go to the GPs during summer months as they were completing examinations, finishing school and travelling.

Participants thought that when students first go to university, they are overwhelmed with all the information given in preparation to starting a new course and are undergoing a lot of changes in their life (moving away from home, starting a new course and making new friends). This means that Men ACWY is not at the forefront of their minds:

> *I suppose lots of them see things written down and think, well I'll do that. But it's such a big time in their life, leaving home, coming to university. They've so many things to contend with, and probably having an injection is the last thing that they think is more important… When I talk to the young people they say, yes there was one young person died because they didn't have … They know it, but it'ssomewhere in the recesses of their memory and it's when you bring it up to the fore then, they say 'oh yes I'll have it'.*
>
> (Practice I Nurse).

Discussion

Little is known about factors that may impede the uptake of Men ACWY vaccination amongst school leavers in the UK. The current literature primarily focuses on vaccinations delivered to younger adolescents, often in schools, and on adolescent attitudes to vaccinations. Adolescents are reported as being aware of the value of vaccines in preventing disease and likely to accept vaccination after being educated about safety, efficacy and reasons for vaccination.[8] Poor coverage of adolescent immunisations has been attributed to a lack of understanding

from service providers, adolescents and their parents of their importance.[6]

This study highlights that from the perspective of service providers, Men ACWY is generally a well-accepted vaccine once young people and their parents are informed, but that there can be difficulty in getting school leavers into GP surgeries. Practices should have been actively inviting school leavers to the practices, but this study suggests that this procedure is variable. Without other encouragement from schools or parents, school leavers are unlikely to pursue vaccination. Furthermore, the emphasis on university students may have resulted in non-students disregarding information on Men ACWY and being less inclined to seek vaccination services.

For the practices not operating call/recall systems, the success of opportunistic immunisations is reliant on the target population accessing general practice for other needs. There is some evidence that this age group access primary care less frequently than other age groups—about once a year—citing lack of confidentiality, unsympathetic staff, inconvenient appointments, unfriendly receptionists, poor communication skills in GPs and lack of knowledge about local services.[17–21] The participants also suggest that the success of opportunistic immunisations depends on how active other practice staff are in directing patients to see the nurses.

Service providers perceived that there was a level of complacency amongst the school leavers. Research conducted by Hilton et al.[22] suggests that this could be explained by teenagers' perception that meningitis is a threat to babies and not to themselves. The perceived complacency may also be associated with the perceived emphasis on 'freshers' rather than on all school leavers and with adolescents' reliance on parental guidance in vaccination decision-making. A recent USA study found that adolescents maintain that by the age of 18 years, they can decide for themselves whether or not to have a vaccine.[23] However, this study suggests that school leavers are often not ready to take responsibility for decisions around vaccines, and this causes them to delay or defer vaccination. There is clearly a need to harness parental guidance to help the young adult to make a vaccination decision, perhaps through communicating to the parents.

There are limitations with our study. Due to time constraints, this is a small-scale study with only 10 interviewees. It was devised to gather insights and therefore never intended to be generalisable. However, the consistency across interviews indicated that we achieved data saturation. Access to the practices was facilitated by one of the authors who is part of the NHSE public health commissioning team and this may explain why two practices refused to take part and may have given rise to social desirability bias. To reduce the likelihood of the latter, the interviews were conducted by JS, a researcher external to the NHS, who was able to engage objectively and non-judgementally with interviewees.

This study offers insight into the factors impacting upon Men ACWY uptake from the viewpoint of service providers. Other studies[6–22] have focused on adolescent attitudes or vaccine hesitancy, whereas this study examines what is happening at the point of service delivery or 'shop floor'. Improving vaccination rates is complex, and there is a need to further explore the practical barriers to vaccination to obtain a comprehensive understanding of the reasons for low uptake of adolescent vaccinations.

Conclusion

Adolescents are receiving more and more vaccines, mostly through schools, and it is likely that 'catch-up' programmes will become regular occurrences with the introduction of new vaccines. The perspectives of vaccinators highlighted that the existing programmatic mechanisms for delivering the Men ACWY catch-up programme were not adequate. General practice staff, particularly those working in practices close to universities and other higher education establishments, require more systematic guidance on their role in these types of catch-up campaigns and how they can support vaccine decision-making in later adolescence.

Author statements

Acknowledgements

The authors would like to extend their thanks to the participants who kindly gave up their time to be interviewed and to NHS England (London Region) Public Health Commissioning team for facilitating access to the GP practices. The authors greatly appreciate their help.

Ethical approval

Ethical approval was not required from NHS as this was service improvement work but given one of the authors was a post-graduate student, approval was obtained from the LSHTM MSc Ethics Committee (Ref: 13436).

Funding

The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Immunisation at London School of Hygiene and Tropical Medicine in partnership with Public Health England (PHE). The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR, the Department of Health or Public Health England.

Competing interests

None declared.

REFERENCES

1. Public Health England. Men ACWY vaccine introduction (bipartite letter). https://www.gov.uk/government/publications/menacwy-vaccine-introduction 2015 [Accessed 18 December 2017].
2. Public Health England. Invasive meningococcal infections by epidemiological year and capsular group, England (1998/1999 to 2015/2016). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/563521/Table_1_

Invasive_meningococcal_infections_lab_reports__England_by_capsular_group___epi_year.pdf 2017 [Accessed 18 December 2017].
3. Public Health England. Vaccine coverage for the GP based catch-up meningococcal ACWY (MenACWY) immunisation programme in England to the end of August 2016. https://www.gov.uk/government/publications/meningococcal-acwy-immunisation-programme-vaccine-coverage-estimates 2016 [Accessed 18 December 2017].
4. Public Health England. Vaccine coverage for the GP based catch-up meningococcal ACWY (MenACWY) immunisation programme in England to the end of August 2017 https://www.gov.uk/government/publications/meningococcal-acwy-immunisation-programme-vaccine-coverage-estimates 2017 [Accessed 18 December 2017].
5. https://www.healthychildren.org/English/ages-stages/teen/Pages/Stages-of-Adolescence.aspx 2018 [Accessed 20 March 2018].
6. Gowda C, Schaeffer S, Dombkowski K, Dempsey A. Understanding attitudes toward adolescent vaccination and the decision making dynamic among adolescents, parents and providers. *BMC Publ Health* 2012;**12**(1):509.
7. Oster N, McPhillips-Tangum C, Averhoff F, Howell K. Barriers to adolescent immunisation; a survey of family physicians and paediatricians. *J Am Board Fam Pract* 2005;**18**(1):13–9.
8. Brabin L, Greenberg D, Hessel L, Hyer R, Ivanoff B, Van Damme P. Current issues in adolescent immunization. *Vaccine* 2008;**26**(33):4120–34.
9. Hargreaves D, Viner R. Children's and young people's experience of the National Health Service in England: a review of national surveys 2001–2011. *Arch Dis Child* 2012;**97**:661–6.
10. Blagden S, Seddon D, Hungerford D, Stanistreet D, Windle M, Orenstein W. Uptake of a new meningitis vaccination programme amongst first-year undergraduate students in the United Kingdom: a cross sectional study. *PLoS One* 2017;**12**(8), e0181817.
11. Landowska K, Waller J, Bedford H, Rockliffe L, Forster A. Influences on university students' intention to receive recommended vaccines: a cross-sectional survey. *BMJ Open* 2017;**7**(7).
12. Moore P, Millar B, Morre J. Meningococcal ACWY vaccine uptake and awareness amongst student freshers enrolled in Northern Ireland universities. *Int J Adolesc Med Health* 2017:1–11.
13. Turner D, Oldfield N, Bayliss C. University vaccine campaign increases meningococcal ACWY vaccine coverage. *Publ Health* 2017;**145**:1–3.
14. Dempsey A, Zimet G. Interventions to improve adolescent vaccination. *Am J Prev Med* 2017;**49**(6):S445–54.
15. Robinson O. Sampling in interview-based qualitative research: a theoretical and practical guide. *Qual Res Psychol* 2013;**11**(1):25–41.
16. Birks M, Mills J. *Grounded theory: a practical guide*. Los Angeles, CA: Sage; 2011.
17. Churchill R, Allen J, Denman S, Williams D, Fielding K, von Fragstein M. Do the attitudes and beliefs of young teenagers towards general practice influence actual consultation behaviour? *Br J Gen Practice* 2000;**50**(461):953–7.
18. Davey A, Carter M, Campbell J. Priorities for young adults when accessing UK primary care: literature review. *Prim Health Care Res Dev* 2013;**14**:341–9.
19. Gleeson C, Robinson M, Neal R. A review of teenagers' perceived needs and access to primary health care: implications for health services. *Prim Health Care Res Dev* 2002;**3**:184–93.
20. Aarseth S, Dalen I, Haavet O. Encouraging adolescents to contact their GP: a community based trial. *Br J Gen Pract* 2014. https://doi.org/10.3399/bjgp14X679688.
21. Jacobson L, Richardson G, Parry-Langdon N, Donovan C. How do teenagers and primary healthcare providers view each other? An overview of key themes. *Br J Gen Pract* 2001;**51**:811–6.
22. Hilton S, Patterson C, Smith E, Bedford H, Hunt K. Teenagers' understandings of and attitudes towards vaccines and vaccine-preventable diseases: a qualitative study. *Vaccine* 2013;**31**(22):2543–50.
23. Rand C, Humiston S, Schaffer S, Albertin C, Shone L, Blumkin A, et al. Parent and adolescent perspectives about adolescent vaccine delivery: practical considerations for vaccine communication. *Vaccine* 2011;**29**(44):7651–8.