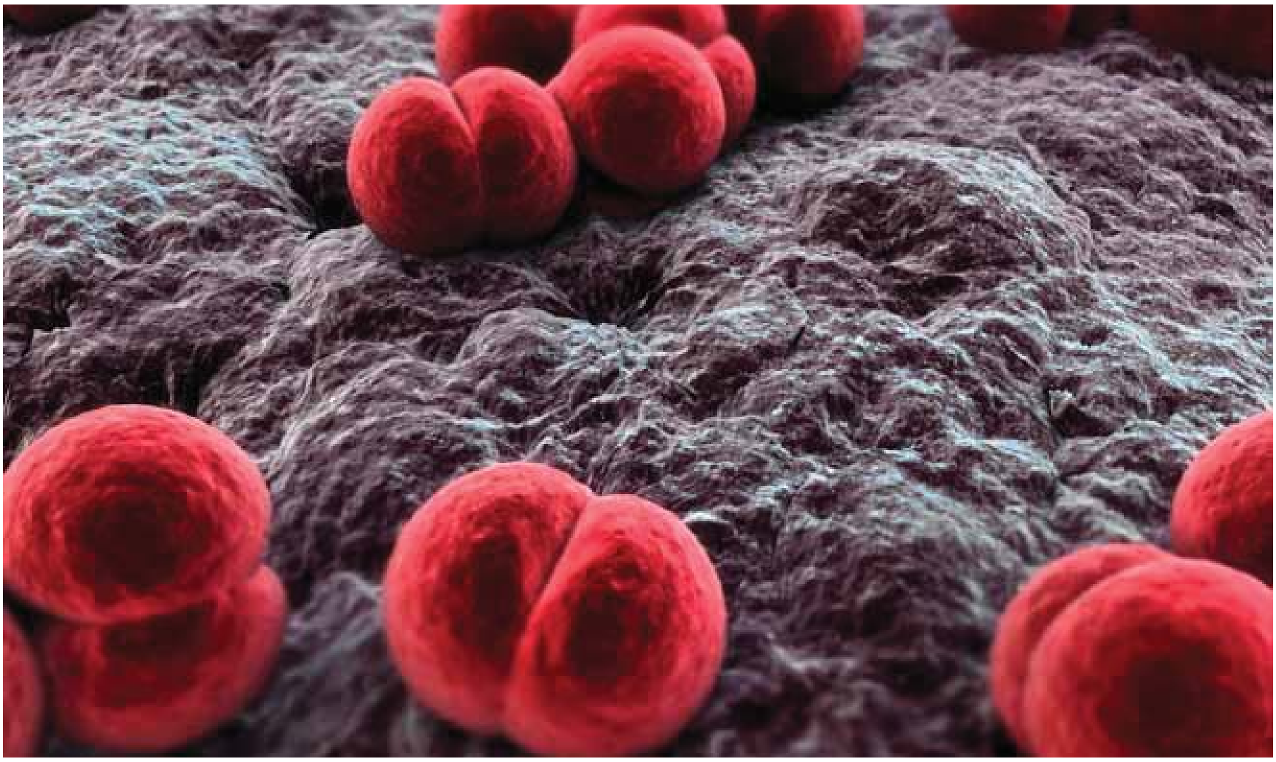

Every parent's worst nightmare: knowledge and attitudes towards meningitis and vaccination

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Childhood vaccination is an important and effective way to reduce childhood illness, disability and death. For example, there has been a steady decline in the number of cases of bacterial meningitis since the introduction of the vaccines that prevent meningococcal C disease, Haemophilus influenzae type B disease and the most common pneumococcal serotypes.[1] The number of cases of invasive meningococcal disease (IMD) caused by serogroup C has reduced from 135 in 1999 to just 2 in 2010.[1] Nevertheless, meningitis has not 'gone away', and Ireland still has the highest rates of confirmed cases of IMD in Europe for both of the age groups most at risk (under 5 years: 21 per 100, 000; 15-24 year olds: 5.7: 100,000); IMD is now predominately caused by serogroup B[2].

A vaccine uptake rate of ≥ 95% is needed to achieve herd immunity.[3] However, following the change to the immunisation schedule in July 2008, the uptake of the Men C and Hib vaccines due at 13 months fell to as low as 80% in some parts of the country. While there is some evidence of improved uptake rates[4] there is a need to understand parental attitudes towards vaccination and knowledge about meningitis to inform health promotion initiatives. This is particularly important in advance of any future changes to the vaccination schedule to accommodate new vaccines (e.g., against meningococcal serogroup B).

The Department of Health in England has been tracking parents' attitudes towards vaccination since 1991[5] but information in Ireland is still relatively limited. There has been some work to explore the decline in uptake of the 12 and 13 month vaccines. For example, a cross-sectional survey of a representative sample of parents in the North-West of Ireland indicated that some parents were choosing to both delay and split the administration of vaccines. Factors associated with poor vaccine uptake included lack of awareness of the schedule, not using the parent-held immunisation record and concerns about vaccine safety.[6]

Advocating vaccination for all has been a critical part of our work at Meningitis Research Foundation. We work with health professionals and the general public to raise awareness about meningitis, and we have funded vital research into new

Meningitis Research Foundation's vision is a world free from meningitis and septicaemia. We work towards this vision by funding research into prevention, detection and treatment of the diseases, promoting education and awareness amongst health professionals and the public as well as providing support to those affected. For more information:
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vaccines (see Box 1). We have recognised the need to gain an insight into the views of parents to guide our work. We therefore conducted a survey of parents with young children designed to assess awareness and knowledge of meningitis and prevention of the disease through vaccination. Telephone interviews were conducted using structured questionnaires of a nationally representative sample of parents with one or more children under 24 months (n = 350: 85% mothers). Nearly three quarters of the parents (73%) also had a child/children over 2 years of age. Table 1 presents further demographic details of the sample. The vaccine-related questions in the survey were focussed on the current (i.e., post 2008) vaccination schedule and therefore related primarily to the youngest child in the family.

Key Findings

Primary Childhood Schedule ***(see Table 1)***

The majority of parents were familiar with The National Immunisation Office booklet 'Your child's immunisation: a guide for parents' [7] which highlights the need for five visits to a GP to complete a child's immunisation in the first 13 months of life. However, only 30% of parents correctly stated that five visits were needed to complete the schedule. Furthermore, recall of the vaccines themselves was quite low (Figure 1), ranging from the 50% who mentioned the MMR, to only 16% who were able to recall Pneumococcal (PCV) and Hib.

Parents were asked to name any of the diseases that are prevented by the primary schedule (Figure 2), and the relative familiarity with MMR continued; over half of the

Table 1. Demographic information

Age distribution of parents						Marital status			
16-19	20-24	25-29	30-34	35-39	40+	Married	Co-habiting	Single parent	Not disclosed
1%	11%	20%	39%	27%	3%	51%	30%	15%	5%

Region				Social class		
Dublin	Rest of Leinster	Munster	Connaught	ABC1F50+	C2DEF50-	Not disclosed
27%	30%	23%	17%	46%	47%	7%

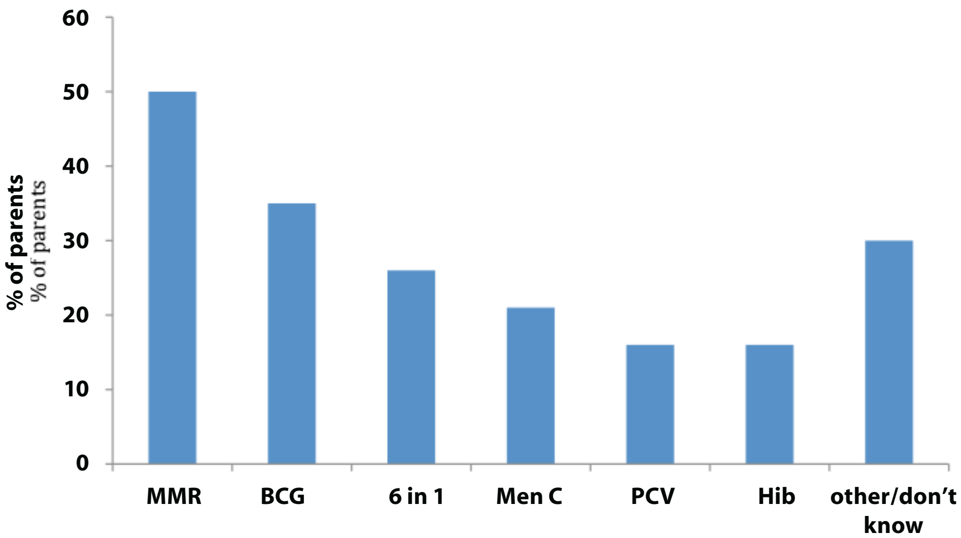

Figure 1. Parents recall of vaccines included in the Primary Childhood Schedule

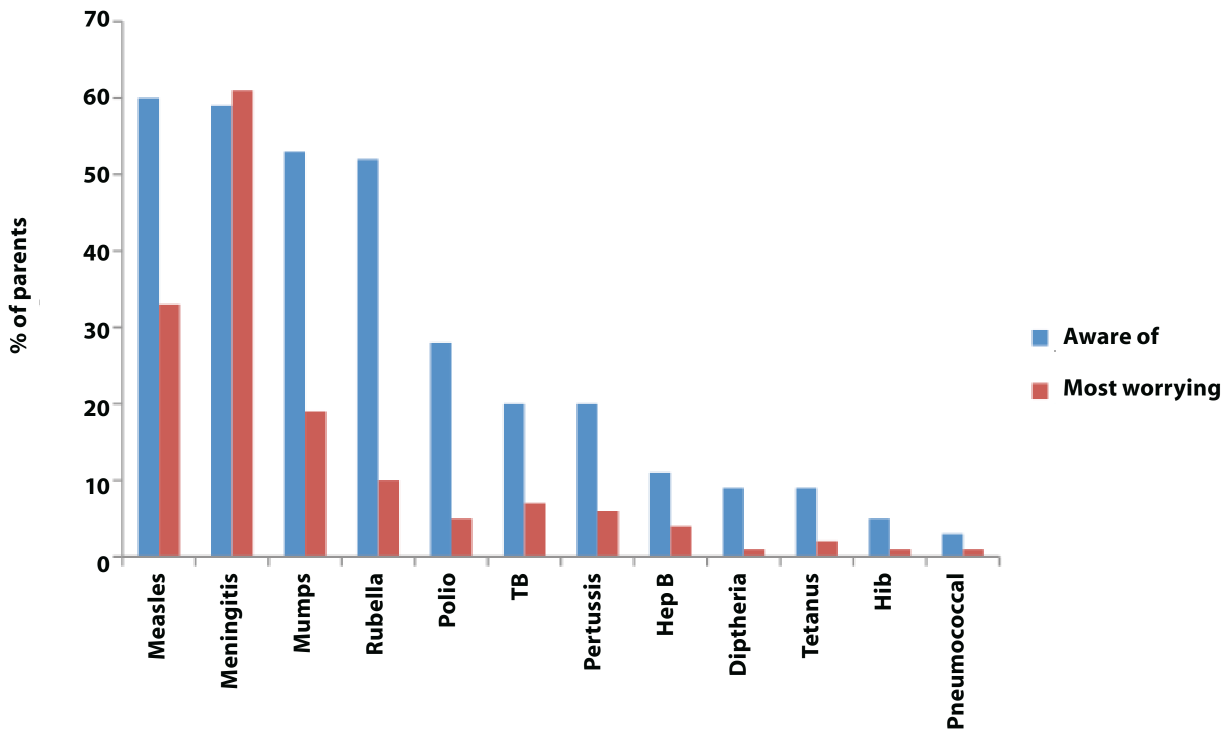

Figure 2. Parents recall of vaccine preventable disease and the most worrying

respondents mentioned measles (60%), mumps (53%) and rubella (52%). Meningitis was named by 59% (7% of whom specifically mentioned meningitis C). The follow-up question asked the parents which of the childhood infectious diseases worried them the most in relation to their own child/children. Meningitis emerged as the most worrying disease for nearly two-thirds of the parents (62%), followed by measles (33%). The justifiable concern about measles may be explained, in part, by the media coverage of the measles outbreak in England and Wales that occurred during the data collection period (March/April 2013).

Vaccine Uptake:
The majority (91%) of parents stated that their child/children were up to date with their immunisations. Of those with a child eligible for the vaccine scheduled at 12 and 13 months, only 90% (n = 216) had taken their child for the 12 month visit (MMR & PCV) and only 81% (n=203) for the vaccines scheduled at 13 months (MenC and Hib) at the time of the survey. These figures are slightly lower than the uptake rates reported by the Health Protection and Surveillance Centre (HPSC) which range from 87-96% for the vaccines due at 12 and 13 months.[4] A possible explanation for the difference is that the survey findings may take into account parents delaying, rather than defaulting, the immunisations due at 12 and 13 months. Similar to the findings in England[5], the child being unwell at the time was given as the main reason for missing the appointments. Comments from the respondents suggested that the immunisations may still be completed, but later than scheduled:

"She was sick for a while and she's missed a couple so she behind on some of them and we can catch up on them next time."

Nevertheless, the lower uptake rates for the fourth and fifth visits and delays in completing the primary schedule leave children vulnerable to life-threatening diseases including meningitis when they are most at risk.[8] In an attempt to understand this phenomenon, the respondents were presented with an additional list of possible reasons why the 12 and 13 month vaccines might be missed or delayed (Table 2), and asked to indicate how important these were as potential reasons, using a Likert-type scale. While none of the reasons emerged as a central explanatory factor, it could be that an improved reminder system and education about the need to complete the schedule on time may be worth exploring.

"I think it completely slipped my mind until I got a reminder, so I had to rearrange for another visit."

"Every time I had the appointment he always got sick and I keep forgetting to make the appointment."

Table 2. Potential reasons for missing 12 and 13 month visits

	% indicating statement is important/very important (n = 350)
No reminder received from GP	34
Parent not available to take the baby	33
Easy to forget	29
Not aware that fifth visit was needed	26
Prefer to wait until child is older	26
Inconvenient/inflexible appointment times	25
Only a booster so not really needed	21

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References:

1. Bateman ED *et al*. A one-year trial of tiotropium Respimat® plus usual therapy in COPD patients. *Respir Med* 2010;104:1460–1472.
2. SPIRIVA® Respimat® 2.5 µg Summary of Product Characteristics.
3. *Global Strategy for the Diagnosis, Management and Prevention of COPD*, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2013. Available from: http://www.goldcopd.org/. Accessed January 2014.

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*Patients were permitted to continue all usual therapy excluding other anticholinergics.

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Date of preparation: January 2014.
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Nursing IN GENERAL PRACTICE

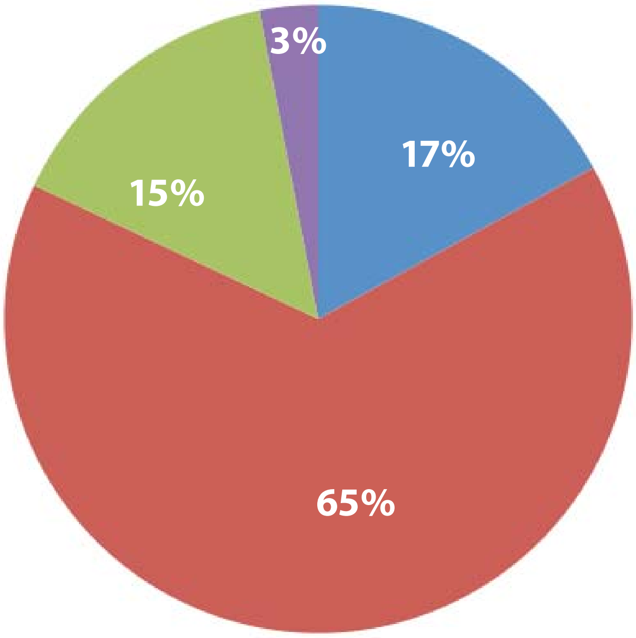

Figure 3: Acceptable number of injections per visit

The current schedule requires a baby to receive at least two separate injections at each visit (three are needed at 6 months); any changes to the schedule may mean more injections are necessary. Nearly two thirds of the parents surveyed felt that two injections were the maximum acceptable at any one time, and only 3% would accept "as many as necessary" (Figure 3). This is an important issue as parental perceptions of acceptability are likely to be important factors in uptake rates if the number of injections needed per visit is increased.

Knowledge of meningitis

The survey findings indicated that parents tend to rely on their family doctor, and, to a lesser extent, the public health nurse (Table 2) for information about both vaccination and meningitis. There does seem to be some scope in enhancing the role of the practice nurse as a source of information, as these health professionals were mentioned by very few parents. Only a small number of parents reported that they were seeking information on the internet; the website most commonly cited was 'Google' which is a little worrying as some parents may be accessing unreliable sources of information.

There does seem to be some scope in enhancing the role of the practice nurse as a source of information, as [they] were mentioned by very few parents.

Table 2. 'Best' sources of information (%) about vaccination and meningitis

	Vaccination (% n= 350)	Meningitis (% n = 350)
Family doctor	44	43
Practice nurse	7	4
Public health nurse	35	18
Midwife	6	2
HSE publications	10	9
Media	2	9
Websites	11	13
Other	15	17

NB. Parents could select more than 1 response

The majority of the parents had no direct experience of meningitis (86%), but more than half (53%) were confident that they could recognise the signs and symptoms of the disease. There was less confidence in the ability to recognise the signs and symptoms associated with septicaemia (28%). Given the relative lack of experience with both meningitis and septicaemia, it is probably unsurprising that the level of knowledge of the different causes of meningitis was quite low. More than half (58%) could not name a particular cause/organism associated with meningitis; furthermore, there did not seem to be a clear link between the vaccines and the disease they prevent. For example, only 11% mentioned 'meningitis C' as a potential cause compared to 21% who named MenC when asked to list the vaccines included in the schedule. More worryingly, over a third of parents (37%) mistakenly believed that on completion of the primary childhood immunisation schedule their child would be *fully* protected against *all* types of meningitis. This lack of knowledge contrasts with the high level of concern associated with the disease; specifically, 48% strongly agreed with the statement "I am concerned about my child contracting meningitis" and meningitis emerged as the most worrying of the childhood infectious diseases.

Conclusions

Meningitis creates a high level of concern for parents, yet some parents have 'missed' or 'delayed' completion of the immunisation schedule leaving their children unprotected at a period when they are most vulnerable. There appears to be a generally low level of knowledge amongst this sample of parents regarding the vaccines themselves and the diseases they protect against, which may, in part, explain a lack of understanding of why it is important to "get vaccines on time every time"[7]. Encouragingly more than half of parents were confident about recognising the early signs/symptoms of meningitis, but there was poor understanding of the different bacterial/viral causes of the disease; over half could not name a single type. Perhaps unsurprisingly, therefore, over a third of parents mistakenly believed that the current vaccination schedule protects their child against all forms of meningitis. Some parents may not, therefore, consider the possibility of meningitis if their child presents with the early symptoms of the disease resulting in delays in vital treatment.

The findings indicate that there is an ongoing need for information about vaccination and meningitis at a national level, for example the National Immunisation Office "Every vaccine is a little victory" campaign, and our own work including our annual Meningitis Awareness Week (15th-22nd September 2013). There is of course, also a need for more tailored individualised information. Face-to-face education sessions with parents are one strategy that may improve vaccination rates and parental knowledge. However, a recent systematic review[7] concluded that, given the limited evidence available of the effectiveness of such sessions, it may be more appropriate to incorporate communication about vaccination into a healthcare encounter, rather than conduct it as a separate activity. Nurses working in general practice, therefore, have an important health education role to play in this regard; each encounter with parents is an opportunity to discuss vaccinations, and the life-threatening illnesses they do and importantly do not, prevent.

Meningitis and septicaemia are devastating diseases; they can kill within hours and those who survive may be left with life altering after effects. Vaccination is one of the most important public health interventions for protecting the population from this and other serious diseases. The Meningitis Research Foundation working with the National Immunisation Office, other departments of the HSE and individual health professionals can and should work together to improve parental knowledge and understanding and ensure children and young people are protected from preventable diseases.

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Acknowledgements

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