An elusive, yet deadly bacterial infection may be prevented with vaccination

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Prof Nurs Today 2021;25(1):13-14

Invasive meningococcal disease (IMD) is an aggressive bacterial infection caused by the species *Neisseria meningitidis*.[1] The bacteria are covered by a polysaccharide capsule which assists in deflecting the host's immune cells allowing the bacteria to spread rapidly within the host, undetected.[1] *N. meningitidis* consists of 13 serogroups of which serogroups A, C, Y and W have historically accounted for more than 60% of all infections in humans.[1-4] Whilst serogroup B is fast becoming dominant in some parts of the world, bacterial circulatory patterns fluctuate constantly with serogroups A, C, Y and W continuing to account for the majority of infections.[1,2,4,5] *N. meningitidis* infection rates are currently < 0.2 per 100 000 in South Africa; however, due to the elusive nature and ambiguity of early symptoms, a degree of underestimation of cases is possible.[2,4,5]

N. meningitidis are transmitted by means of respiratory droplets and saliva through such activities as coughing, kissing, sharing the same eating utensils, and other means.[1] The bacteria then enter the host's body and reproduces at an exponential rate.[1,2] The bacteria will then spread to various organ systems such as the lungs causing pneumonia, the bloodstream resulting in meningococcaemia and/or the meninges causing a severe meningitis.[1,2] A patient may die within 24 hours of onset of symptoms; hence, a timely and accurate diagnosis is critical for effective treatment.[2,5] However, the early symptoms of meningococcal disease are often ambiguous with a respiratory infection and often patients are misdiagnosed.[1,2,5] It is only when the patient presents with the more typical signs and symptoms such as photophobia, confusion, or a purpuric rash would the clinician suspect meningococcal disease; however, at this stage, it is often too late to treat.[1,5] As such, as many as 50% of patients diagnosed with IMD do not respond to treatment.[5] The elusive nature of the disease in the early period of infection as well as the ensuing challenges associated with timely, effective treatment results in 20% of patients who survive suffering with permanent sequelae such as deafness or paralysis and 40% who may not survive at all.[1,2,5] Further, the costs associated with managing an IMD case, let alone the costs associated with the long-term management of sequelae are immense.[1,2]

N. meningitidis is known to spread more prolifically within the autumn and winter months with the highest infection rates in children under two years of age since they are 'immune naïve'.[1,5] Considering the challenges of providing an accurate diagnosis and effective treatment, the only tool to secure our patients and communities is vaccination.[1,2] Fortunately, there is a broad-spectrum vaccine available in the country which protects against four of the strains that are commonly associated with IMD, i.e. A, C, Y and W.[1,2] The meningococcal conjugate vaccine 4 (MCV4) should be administered as two 0.5 ml doses in children between nine and twenty-three months of age, with the two doses administered 'at least' three months apart.[3] Individuals between two and fifty-five years of age require a single 0.5 ml dose.[3] MCV4 is a sophisticated technology. It is a conjugate vaccine providing a more immunogenic response whilst also being safely co-administered with all other vaccines on the expanded programme on immunisation (EPI)* programme.[3]

By improving the vaccination coverage rates (VCR) of the MCV4 vaccine, we would be able to prevent many cases of IMD in the country and save many of our patients from the devastation of disability and death.[4] Studies have found that patients are more likely to respond positively to healthcare advice when counselled by a healthcare professional; hence, nurses have a critical role in stemming the tide against IMD.[6]

References

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*Kindly note in cases where vaccines produced by alternate vaccine manufacturers do not allow for co-administration, such as the measles vaccine which is administered at 12 months of age, then the second dose of MCV4 recommended for toddlers under two years of age may be delayed to 15 months as per the Paediatric Management Group (PMG) vaccination schedule.[7]

Paediatric Management Group (RF) NPC
Reg No: 1997/003057/08

Vaccination Schedule 2020

More than 10 YEARS of Excellence

Disease	Vaccine	Birth	6 weeks	10 weeks	14 weeks	6 months	9 months	12 months	15 months	18 months	6 years	9 years	12 years
TB	BCG	●											
Polio	bOPV	●	●										
Diphtheria, Tetanus, Polio, Pertussis Haemophilus Influenzae, Hepatitis B	Hexaxim		●	●	●					●			
OR	Infanrix Hexa		8 weeks ●	12 weeks ●	16 weeks ●					●			
Pneumococcal	Prevenar 13		●		●		●	Nine and a half months					
OR	Synflorix		●	●	●		●						
Rotavirus	Rotarix		●		●								
OR	RotaTeq		●	●	●								
Measles	Measbio					●		●	12 months Measbio not required if giving MMR				
Measles Mumps Rubella	Priorix							●	MMR at 12 months instead of Measbio		●	Give MMR and Varilrix or Onvara separately at 6 years if not using Priorix Tetra	
OR	MSD OMZYTA							●			●		
Chickenpox	Varilrix								●		●		
OR	ONVARA								●				
Measles Mumps Rubella + Chickenpox	Priorix Tetra	Priorix Tetra can be used at 12 months instead of Measbio, MMR and Varicella. Increased risk of febrile convulsion after the first dose of Priorix Tetra						●			●		
Meningococcal Conjugate	Menactra						●		●	For individuals 2 - 55 years administer 1 dose			
Hepatitis A	AVAXIM 80							●	Hep A with MMR not with Measbio	●			
OR	Havrix Junior							●		●			
Tetanus, Diphtheria Pertussis, Polio	TETRAXIM						Tetraxim at 6 years or Boostrix Tetra at 6 years Boostrix Tetra can be given at 12 years if not given at 6 years. Adacel Quadra at 12 years				●		
OR	Boostrix Tetra										●		●
OR	ADACEL QUADRA												
Tetanus, Diphtheria	Td										●		●
Human Papilloma Virus	Cervarix	Cervarix from 9 -14 years or Gardasil from 9 -13 years as 2 doses 6 months apart State programme: Cervarix to Grade 4 girls in public schools 9 -14 years. 2 doses 6 months apart										●	
OR	GARDASIL											●	
Influenza	Influvac	From 6 months, important for children in creche, chronic illness and respiratory problems. Start before the INFLUENZA season in MAY.											
OR	VAXIGRIP												
Respiratory Syncitial Virus	SYNAGIS PALIVIZUMAB	RSV prophylaxis in high-risk infants-prevention of serious LRTI caused by RSV. Start January and end in May.											
Pneumococcal	PNEUMOVAX 23 (pneumococcal vaccine, polyvalent, MSD)	Must have at least one dose of Conjugate PCV before Pneumovax 23. Pneumovax only in children older than 2 years with Immune Compromise or high risk of Pneumococcal infection. Two doses with 2nd dose 3 - 5 years after first.											

● STATE EPI VACCINES *These vaccines are available free from Government supplied clinics*

● RECOMMENDED OPTIONAL VACCINES *Some of the vaccines in this schedule are only available from private clinics*

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