Adults and Children Guidelines Summary

For patients with absent or dysfunctional spleen. **November 2008**

Guidelines will not apply to every patient. Discretion should be exerted to modify them accordingly.

When to Immunise (Page 1)

ELECTIVE SPLENECTOMY →	Immunise at least **TWO** (ideally four-six) weeks prior to surgery. Prophylactic antibiotics to start *post* surgery.
EMERGENCY SPLENECTOMY →	Immunise at least **TWO** weeks post surgery, and when sufficiently well. Prophylactic antibiotics to be started *immediately.*

Which Vaccines (pages 4-8)

Vaccine	Who?	Dosage/regimen	Re-immunisation (age denotes when first immunised)
Pneumococcal	All patients with an absent or dysfunctional spleen	**Children <5 years**: initial immunisation with Prevenar® if they have not had this already, as part of their childhood immunisation schedule, followed, when appropriate, by Pneumovax II®. see main guidance p4-5 **Adults and Children >5 years** : Pneumovax II® -Single dose (0.5ml) IM/SC irrespective of previous immunisation with Prevenar®. Leave interval of at least two months between the two vaccines	Re-immunisation with Prevenar® not established. **Children 2-10 years** : Pneumovax II every 3-5 years. **Adults and Children >10 years** : Reimmunise every 5 years or sooner if a high risk patient (lymphoproliferative disorders see p5)
HIB and Meningococcal Conjugate Group C (MenC)	All patients with an absent or dysfunctional spleen	**Children <10 years old:** **Previously unimmunised:** Give full primary immunisation as required, see main guidance **Previously fully immunised:** Offer reinforcing dose 0.5ml im of Hib/MenC (Menitorix®) **Adults and Children >10 years:** **Previously unimmunised:** Two doses 0.5ml im of Hib/MenC (Menitorix®) two months apart. **Previously fully immunised:** Offer reinforcing dose 0.5ml im of Hib/MenC (Menitorix®)	Not currently recommended
Influenza	All patients with an absent or dysfunctional spleen	**Adults and Children**: Should receive yearly immunisation via their GP. Initial immunisation is warranted if the current influenza season has not finished (generally Sept. to April).	Yearly- from Sept to Nov.
Meningococcal ACYW	**Only** if travelling to: endemic areas and travellers on pilgrimages to the Hajj or Umrah	**Children <2 years**: See main guidance p7. **Adults and Children >2years**: 0.5ml deep sc. (Allow a two week interval between administration of the meningococcal conjugate vaccine and ACWY vax®.)	**Children <5 years**: Re-immunisation after 2-3 years if still at high risk (if <2 years see main guidance p7) **Adults and Children >5 years:** Re-immunisation after 5 years if still at high risk.

Prophylactic Antibiotics- all patients with an absent or dysfunctional spleen (page 8)

		If NBM see main guidance	
	Duration (see p8)	**First Line**	**If Penicillin Allergy**
Adults	Minimum 2 year prophylactic course	Penicillin V 500mg bd	Clarithromycin 250mg bd
Children	Continued until at least 16 years old (minimum 2 years)	**1mth- 6 yrs** Penicillin V 125mg bd **6-12 years** Penicillin V 250mg bd **>12 years** Penicillin V 500mg bd	Clarithromycin, discuss with pharmacy regarding dose.

Following prophylaxis or when poor compliance is suspected; an emergency dose of amoxicillin or Clarithromycin should be given to the patient for use at the first signs of any infection whilst seeking urgent medical attention.

Nottingham University Hospitals NHS trust:

Management of Patients with an Absent or Dysfunctional Spleen

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Last updated: November 2008 Review November 2010

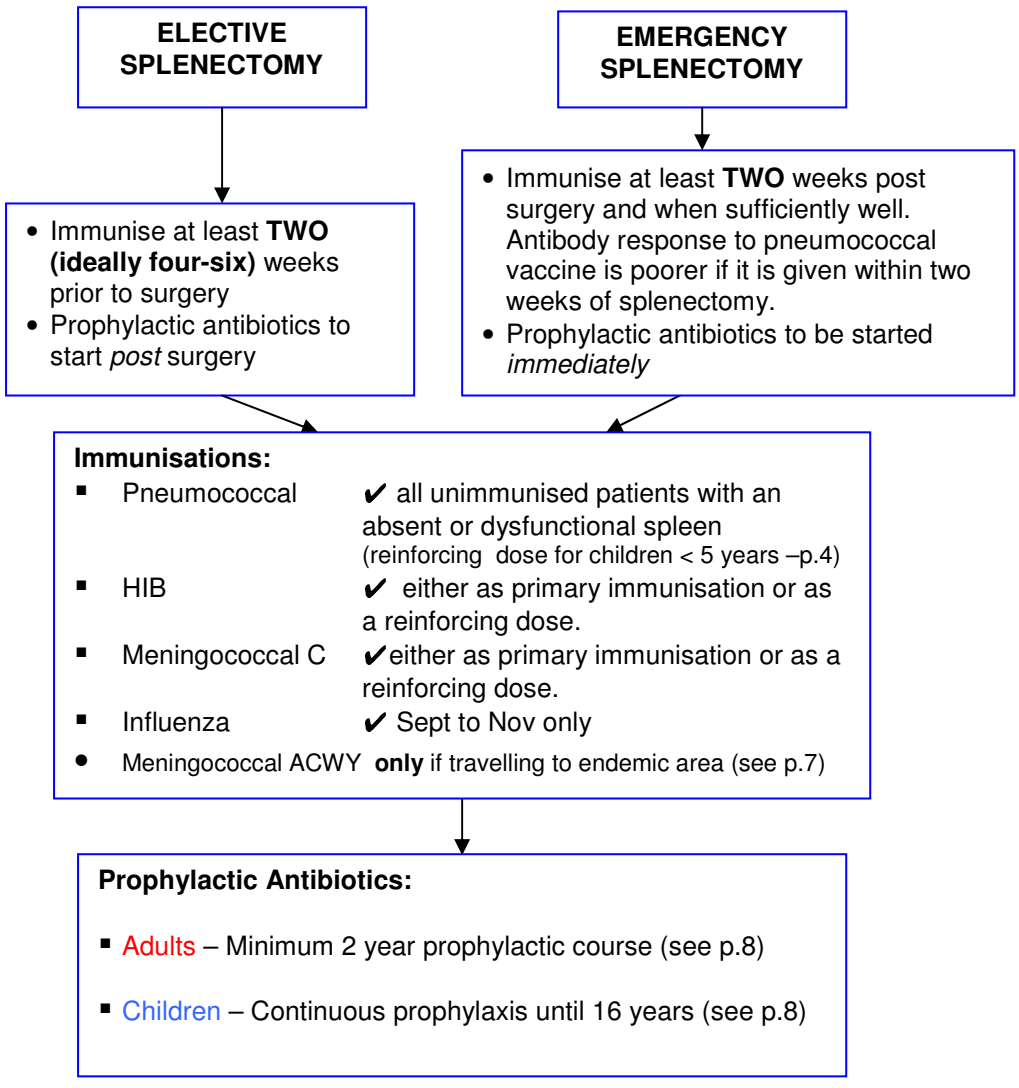
Introduction

Patients with an absent or dysfunctional spleen are at greater risk of developing fulminant, life-threatening sepsis (12.6 times more likely to develop late septicaemia than the general population).

Streptococcus pneumoniae is the most common causative organism, causing around 60% of cases. *Haemophilus influenzae* type b and *Neisseria meningitidis* are other less common causes. Other rare causes of sepsis include Gram-negative *bacilli, Staphylococcus aureus,* other *Streptococci*, babesiosis (tick bites) and *Capnocytophaga canimorsus* (animal bites).

For these reasons, it is imperative that all patients with an absent or dysfunctional spleen are appropriately immunised and receive appropriate antibiotic prophylaxis.

These guidelines will not apply to every patient. Discretion should be exerted to modify them accordingly.



Administration of Vaccines

- All of the necessary vaccines in this guideline can be given on the same day, preferably rotating the injection site.
- Vaccines are routinely given intramuscularly into the upper arm or anterolateral thigh. This is to reduce the risk of localised reactions, which are more common when the vaccine is given subcutaneously. For individuals with a bleeding disorder, however, vaccines should be given by deep subcutaneous injection to reduce the risk of bleeding.
- Nurses, who are competent in administering hand-held injections, can give the vaccines.

Identification of patients with an absent or dysfunctional spleen

- Clear identification of these patients is essential, so as to prevent fever being misdiagnosed as viral, before bacterial infection has been ruled out.
- All information concerning immunisation and antibiotic prophylaxis should be conveyed to the patient's GP, available on the antibiotic website or from pharmacy [see appendix 1].
- Patients should be given, and encouraged to carry, a DoH splenectomy-warning card.
- Patient information leaflets are also available from the antibiotic website and ward E15 QMC campus.
- Patients can also sign up for 'Medic-Alert' bracelets (http://www.medicalert.org.uk/ freephone 0800 581420).

Chemotherapy (or other immunosuppressive treatment)

- Immunisations should be delayed, whilst ensuring adequate antibiotic cover is prescribed in the interim.

Pregnancy / Breast-feeding

- Immunisations best avoided no evidence for safety.

Travel

- Patients with an absent or dysfunctional spleen are at increased risk of severe falciparum malaria. Guidance should be given on appropriate malaria prophylaxis and the need for close adherence to it.

Animal Bites

- All animal bites need to be treated quickly, to reduce the chance of infection from *Capnocytophaga canimorsus,* which can lead to fulminant sepsis. Antibiotics are usually prescribed.

Cont…

Tick Bites

- ~1/3 of cases of clinical human babesiosis have occurred in splenectomised individuals. It is a rare tick borne infection that can cause moderate to severe disease, including haemolytic anaemias. Therefore it is essential to take precautions against being bitten in endemic areas (if camping, cover exposed skin).

Infection

- Patients should be advised to see a doctor immediately if they develop any signs of infection e.g. sore throat, fever, malaise, severe headache, and flu-like symptoms.

Immunisation of Patients with an Absent or Dysfunctional Spleen

Pneumococcal Vaccine (Pneumovax® II, Prevenar®)

Why?

Pneumovax® II consists of purified pneumococcal capsular polysaccharide antigens derived from 23 serotypes. These account for ~90% of invasive pneumococcal disease types and the vaccine offers splenectomised individuals ~70% protection. Pneumovax® II fails to produce an adequate antibody response in children < 2 years.

Children are normally immunised against pneumococci, as part of their childhood immunisation programme with the 7-valent-conjugate pneumococcal vaccine (Prevenar®). This appears to offer better protection against non-bacteraemic pneumococcal infections and produces an adequate antibody response in younger children. Currently, children under 5 years should initially be immunised with the 7-valent-conjugate pneumococcal vaccine (Prevenar®). These children will also require further immunisation with Pneumovax® II at an appropriate age to cover a wider range of serotypes. A single dose should be given after the second birthday and at least two months after the final dose of Prevenar® conjugate vaccine.

All patients with an absent or dysfunctional spleen should receive a Pneumococcal vaccine with regular re-immunisation.

Dose?

Previously Unimmunised:

Age	Vaccine	Dose
Between 2-12 months	Prevenar® (conjugate)	Vaccination according to the routine immunisation schedule at two, four and 13 months of age **(Plus see additional info below)**
Between 12 months and 5 years	Prevenar® (conjugate)	Two doses (0.5ml IM) given 2 months apart. **(Plus see additional info below)**
Additional info (Under 5 years): Immunisation with the 23-valent polysaccharide vaccine (Pneumovax® II) is also required to cover a wider range of serotypes. A single dose should be given after the second birthday and at least two months after the final dose of Prevenar® conjugate vaccine.		
Over 5 years and adults	Pneumovax® II (polysaccharide)	Single dose (0.5ml SC/IM) irrespective of previous immunisation with Prevenar®. Leave interval of at least two months between the two types of vaccines.

Previously fully immunised:

Children under 5 years: Those who then develop splenic dysfunction more than one year after completing immunisation, should be offered an additional dose of Prevenar® conjugate vaccine 0.5ml IM.

Re-immunisation? Re-immunisation with Prevenar® has not yet been established. **Children between 2 and 10 years** may require re-immunisation with Pneumovax® II every 3-5 years.

For **adults** and **children over 10 years**, re-immunisation with Pneumovax® II is currently recommended every 5 years (antibody response is not as long lasting as in individuals with normal immunity). However, in some patients (particularly those with lymphoproliferative disorders) antibody levels may decline more rapidly. Suggest check pneumococcal antibodies to guide re-vaccination. If in doubt seek immunology advice.

Side Effects? Pneumovax II®: Very common (>10%); mild fever and injection site reactions including soreness, erythema, warmth, redness, swelling and local induration.

Re-immunisations are generally well tolerated, but there is a 3-fold increased risk of local reaction, which resolves within ~3 days.

Prevenar® Very common (≥ 10%) associated with injection site reactions (tenderness/pain, induration/swelling, erythema), gastrointestinal disorders (decreased appetite, vomiting and diarrhoea) and fever, irritability, drowsiness and restless sleep.

Haemophilus influenzae type b (Hib) and Meningococcal C Vaccines

Why? Patients with a dysfunctional spleen are at increased risk of invasive disease from Hib and *Neisseria meningitids*. Meningococcal Group C conjugate vaccine (MenC) provides long-term protection against serogroup C of *Neisseria meningitidis* and is highly immunogenic (compared to the plain ACWY polysaccharide vaccine detailed below) but patients irrespective of age or interval from splenectomy, may still have a sub-optimal response to the vaccine. MenC conjugate is available on it's own (as meningitec®, menjugate® or NeisVac-C®) or combined with Hib (as Menitorix®), Hib is only available as the combined vaccine. Children are normally immunised against Hib and MenC, as part of their childhood immunisation programme followed by a combined booster (Menitorix®) after the age of one. **It is recommended that all patients with an absent or dysfunctional spleen, who have not previously been immunised, should receive full immunisation against Hib and MenC. Those**

previously immunised should be offered a reinforcing booster dose of Menitorix® (Hib/MenC)

Dose?

Children <1 year:

Complete a Primary Immunisation course: Three doses (0.5ml IM) of DTaP/IPV/Hib (Pediacel®) at intervals of 1 month. The first dose should be given at 2 months of age. Plus give two doses (0.5ml IM) of Men C conjugate vaccine separated by one month, the first of which should be given at 3 months of age. A further booster dose of combined Hib/MenC vaccine (Menitorix®) should be given at twelve months of age.

Children 1-10 years:

Previously not immunised against diphtheria, tetanus, pertussis and polio (DTaP/IPV) or Hib/MenC: Give primary immunisation course with DTaP/IPV/Hib (Pediacel®) and MenC as above but booster is not required as patient over one year of age.

Immunised against DTaP/IPV but not Hib (irrespective of MenC status): Give two doses, 0.5ml IM, of combined Hib/MenC vaccine (Menitorix®) two months apart.

Previously Immunised against DTaP/IPV and Hib but not MenC: Give a dose, (0.5ml IM) of combined Hib/MenC vaccine (Menitorix®) followed by one dose (0.5ml IM) of Men C conjugate vaccine two months later.

Previously Immunised against DTaP/IPV, Hib and MenC: Offer a reinforcing dose (0.5ml IM) of combined Hib/MenC vaccine (Menitorix®).

Adults and Children >10 years:

Previously not immunised: Give two doses (0.5ml IM) of combined Hib and Meningococcal C vaccine (Menitorix®) two months apart.

Previously immunised: Offer a reinforcing dose (0.5ml IM) of combined Hib and Meningococcal C vaccine (Menitorix®).

Re-immunisation?

No evidence exists for re-immunisation at present.

Side Effects?

Local reactions, such as mild erythema, pain and mild swelling at injection site. General symptoms, such as fever, loss of appetite, vomiting and diarrhoea have occurred in first 48 hours, but usually resolve spontaneously. In children fever, irritability, drowsiness and impaired sleep may also be noticed.

Meningococcal Polysaccharide ACWY Vaccine (ACWY Vax)

Why?

This vaccine provides protection against serogroups A, C ,W135 and Y of *Neisseria meningitidis.* However, the protection conferred is only of short duration (between 3 and 5 years depending on age) and therefore, this vaccine is not routinely recommended. It is reserved for those patients travelling to high-risk areas (travellers on pilgrimages to the Hajj (Saudi Arabia) or Umrah sub Saharan Africa, and parts of the Indian sub-continent and other parts of Asia for a full country by country list see Health information for overseas travel by the Department of Health available here: http://www.archive.official-documents.co.uk/document/doh/hinfo/).

Travellers to the high-risk areas should receive the ACWY vax® immunisation, even if they have already received the Meningococcal C vaccine (Allow a two week interval between administration of the meningococcal vaccine and ACWY vax®.)

Dose?

Infants < 2 months: Not to be used

Infants 3 months: to 2 years Unlicensed (Poor response to C, unreliable/short-lived response to A, W_{135} and Y) Give two doses 0.5ml deep sc three months apart.

Adults and Children: >2 years ACWY Vax® is licensed (0.5ml deep sc)

Re-immunisation? **Children** who were aged under 5 years when first immunised should be considered for re-immunisation after 2-3 years if they remain at high risk (response possibly shorter-lived if under 2 years when first immunised-see above). **Adults** and **children** over five years of age, immunity, will persist for up to 5 years.

Side Effects? Erythema, induration and tenderness or pain at the site of injection. Very rarely headache, fatigue, fever, somnolence and allergic reactions, including anaphylactic reactions have been reported.

Influenza Vaccine

Why?

All patients (Adults and Children) should receive a yearly influenza immunisation in the absence of contra-indications from their GP. If splenectomy occurs before the current influenza season has finished (generally September to April) initial immunisation is warranted. Otherwise yearly immunisation against influenza should be given between late September and early November.

- Following splenectomy, patients are at risk of overwhelming infection. The length they remain at risk is unknown.
- Some papers report the risk to be greatest during the first few years, but Waghorn *et al,* (1997) discovered that 60% of cases of overwhelming post-splenectomy infection (OPSI) occurred 10-30 years later.
- Susceptibility to infection may be greatest in the first few years following splenectomy, but persists lifelong. However, compliance with lifelong antibiotics can be a problem.
- **All adults should therefore receive antibiotic prophylaxis for at least 2 years following splenectomy. Children should receive antibiotic cover until 16 years of age** (NB. older children should still receive at least minimum a 2 year course)**.**
- **Lifelong antibiotic prophylaxis** should be considered for patients with lymphoproliferative disease or sickle cell disease.
- If compliance is a problem, an emergency supply of amoxicillin could be given to the patient, which would be available for them to take at the first signs of any infection. Likewise following the two-year prophylaxis course an emergency dose of amoxicillin 500mg or erythromycin 500mg can be prescribed for use at home prior to seeking urgent medical attention.

Adults Without Penicillin Allergy	Adults With Penicillin Allergy
Penicillin V (oral) 500mg bd	Clarithromycin (oral) 250mg bd

Children Without Penicillin Allergy	Children With Penicillin Allergy
Penicillin V (oral) : 1mth- 6yrs 125mg bd **6-12 years 250mg bd** **>12 years 500mg bd**	Clarithromycin (oral) for dose discuss with pharmacy.

If a patient becomes nil-by-mouth following a splenectomy, IV benzylpenicillin should be given: **Adults: IV benzylpenicillin = 1.2g bd**

Children: IV benzylpenicillin = 25mg/kg bd

- Additional cover with IV benzylpenicillin is *not* required if the patient is already receiving antibiotics with appropriate activity (e.g. cephalosporins, other β-lactam agents – if unsure check with microbiology). If patient is allergic to penicillins discuss with microbiology.

Guidelines Updated/: Re-written	Tim Hills October 2008
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Other contributing groups:	Immunology (QMC) Immunisation committee (Primary care) Cross-town Antibiotic Guidelines committee Cross-town Drugs and Therapeutics committee
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