SPLENECTOMY AND DYSFUNCTIONAL SPLEEN PROPHYLAXIS
GUIDANCE

This guidance gives recommendations for the prevention of infection in patients with an absent or dysfunctional spleen. Individuals with an absent or dysfunctional spleen, such as sickle cell disease, active chronic graft-versus-host disease (GvHD) and those who have received therapeutic splenic irradiation, are at increased risk of severe infection particularly *Streptococcus pneumoniae*, and also *Haemophilus influenzae* type b (Hib) and *Neisseria meningitidis*.

The increased risk of severe infection can be reduced by vaccination, antibiotic prophylaxis and through education of patients relating to the risk and importance of prompt recognition and treatment of infections, the risks of animal bites and potential risks of ticks and mosquito-borne diseases. Travel to areas where malaria is endemic carries some risk which the patients should be made aware of, along with receiving up-to-date information on the correct chemoprophylaxis relevant to local patterns of resistance prior to travel.

Patients and their relatives should be made aware that despite immunisation and prophylactic antibiotics, that breakthrough infections may occur, including the risk of sepsis, and when unwell they should seek and follow appropriate medical advice.

Patients should be encouraged to wear an alert bracelet or equivalent and to carry a card with information about their condition, other clinical information (e.g. date of relevant immunisations) and contact telephone numbers. ‘I have no functioning spleen’ cards are available from pharmacy. In an emergency this information may be life-saving.

WHEN TO IMMUNISE

<table>
<thead>
<tr>
<th>ELECTIVE SPLENECTOMY</th>
<th>Immunise at least TWO (ideally four - six) weeks prior to surgery. Prophylactic antibiotics to start <em>post</em> surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMERGENCY SPLENECTOMY</td>
<td>Immunise at least TWO weeks post surgery, and when sufficiently well. * Prophylactic antibiotics to be started <em>immediately</em>.</td>
</tr>
</tbody>
</table>

* It is important that these patients receive their first immunisations at the appropriate time. If they are no longer an inpatient at this point then either arrange for them to come back to the hospital to be immunised or ensure on their discharge that their GP knows to give them their first immunisation and when, and that the patient has an appointment for this.

Immunization of immunosuppressed patients should occur 2 weeks BEFORE immunosuppressive therapy OR at least 3 months AFTER immunosuppressive chemotherapy or radiotherapy or until recovery of adequate immunological function. Ensure adequate antibiotic cover is prescribed in the interim.

Immunisation of patients with a non-surgical dysfunctional spleen should occur as soon as practicable after diagnosis – in the case of immunosuppressed patients refer to the above paragraph.

Medical records should prominently highlight the fact that the patient has an absent or dysfunctional spleen. Administration of vaccines should be clearly noted in the medical records. A record of the administration site of each individual vaccine (should be different sites) should be made in either the medical or nursing notes. The dates of vaccination should be recorded on the patients ‘I have no functioning spleen’ card, which they should always carry with them.

See page 2 for immunisation schedule
WHICH IMMUNISATIONS TO GIVE

Influenza vaccine should be given yearly (usually from Sept to Nov) in addition to those listed in the table below.

<table>
<thead>
<tr>
<th>Age at which patient presents with splenectomy or splenic dysfunction</th>
<th>Month 0</th>
<th>Month 1</th>
<th>Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 2 years</td>
<td>Complete according to national routine childhood immunisation schedule including booster doses of Hib/MenC and PCV13.</td>
<td>A dose of MenACWY conjugate vaccine should be given at least 1 month after the Hib/MenC and PCV13 booster doses.</td>
<td>After the second birthday, one additional dose of Hib/MenC and a dose of PPV should be given (at least 2 months after the last dose of PCV13)</td>
</tr>
<tr>
<td>Over 2 years but under 5 years (previously completed routine childhood vaccination with PCV7)</td>
<td>Hib/MenC Booster and PCV13</td>
<td>MenACWY conjugate vaccine</td>
<td>PPV (at least 2 months after PCV13)</td>
</tr>
<tr>
<td>Over 2 years but under 5 years (previously completed routine childhood vaccination with PCV13)</td>
<td>Hib/MenC Booster and PPV</td>
<td>MenACWY conjugate vaccine</td>
<td></td>
</tr>
<tr>
<td>Over 2 years but under 5 years (unvaccinated or previously partially vaccinated with PCV7)</td>
<td>Hib/MenC vaccine and First dose of PCV13</td>
<td>MenACWY conjugate vaccine</td>
<td>Second dose of PCV13 and then PPV (at least 2 months after PCV13)</td>
</tr>
<tr>
<td>Over 5 years of age and Adults (Vaccination history irrelevant)</td>
<td>Hib/MenC vaccine and PPV</td>
<td>MenACWY conjugate vaccine</td>
<td></td>
</tr>
</tbody>
</table>


The use of the vaccines in pregnancy and lactation is limited. As asplenic patients are at high risk of infection and sepsis, the benefit of vaccination is considered to outweigh the potential risk to the foetus.

When more than 1 vaccination is required on the same day, it is preferable to rotate the injection site.

Hib/MenC (Haemophilus influenzae type b plus meningococcal C vaccine) = Menitorix® 0.5ml IM
PCV13 (Pneumococcal conjugate vaccine) = Prevenar-13® 0.5ml IM
PPV (Pneumococcal polysaccharide vaccine) = Pneumovax II® 0.5ml IM
MenACWY conjugate vaccine (Meningococcal ACWY conjugate vaccine) = Menveo® 0.5ml IM or Nimenrix® 0.5ml IM

Vaccines are routinely given intramuscularly into the upper arm or anterolateral thigh. For individuals with a bleeding disorder, vaccines should be given by deep subcutaneous injection to reduce the risk of bleeding.

Medical records should prominently highlight the fact that the patient has an absent or dysfunctional spleen. Administration of vaccines should be clearly noted in the medical records. A record of the administration site of each individual vaccine (should be different sites) should be made in either the medical or nursing notes. The dates of vaccination should be recorded on the patients ‘I have no functioning spleen’ card, which they should always carry with them.

REIMMUNISATION

Influenza vaccine should be given yearly (usually from Sept to Nov).

Further doses of PPV vaccine are usually required every 5 years.

See page 3 for antibiotic prophylaxis
ANTIBIOTIC PROPHYLAXIS

Following splenectomy, patients are at risk of overwhelming infection. Susceptibility to infection may be greatest in the first few years following splenectomy, but persists lifelong, therefore antibiotic prophylaxis should be lifelong.

Some patients are considered to be at continued high risk of pneumococcal disease. It is important that these high risk patients remain on lifelong antibiotic prophylaxis. **High risk** patients include:

- Patients under 16 or over 50 years of age.
- Patients with poor or no response to pneumococcal vaccination.
- Patients who have had a previous episode of invasive pneumococcal disease.
- Patients undergoing splenectomy for haematological malignancy particularly in the context of on-going immunosuppression; those who have received splenic irradiation or who have ongoing GvHD.

All patients are at high risk of infection in the immediate post-operative period – antibiotic prophylaxis should be started immediately post-operatively.

<table>
<thead>
<tr>
<th>Age at start of prophylaxis</th>
<th>Duration</th>
<th>First Line</th>
<th>If Penicillin-allergic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults (&gt;16 years)</td>
<td>Ideally lifelong. Minimum 2 years</td>
<td>Amoxicillin 500mg BD</td>
<td>Clarithromycin 250mg BD</td>
</tr>
<tr>
<td>Children (&lt;16 years)</td>
<td>Continue until 16 years old (minimum 2 years)</td>
<td>Amoxicillin: 1 mth – 5 yrs: 125mg BD 5 – 12 yrs: 250mg BD &gt;12 yrs: 500mg BD</td>
<td>Erythromycin: 1 mth – 2 yrs: 125mg BD 2 – 8 yrs: 250mg BD &gt;8 yrs: 500mg BD</td>
</tr>
</tbody>
</table>

Patients with poor compliance who are at a lower risk, may choose to stop antibiotic prophylaxis (they should be encouraged to continue for at least 2 years, while those at high risk should be encouraged to continue lifelong). For patients who choose to stop antibiotic prophylaxis, they should carry an emergency supply of amoxicillin (or if penicillin-allergic erythromycin) to take at the first sign of any infection whilst seeking urgent medical attention.

All patients should carry a supply of appropriate antibiotics for emergency use.

At the first sign of systemic infection (high fever) all patients should have access to, and should start urgent treatment with appropriate antibiotics. In patients taking antibiotic prophylaxis treatment should be from an antibiotic class likely to be non-cross resistant. Choice of antibiotic should be made with regard to appropriate microbiological advice and local protocols.

Patients developing symptoms and/or signs of infection, must be given systemic antibiotics and admitted urgently to hospital.

ADDITIONAL INFORMATION ASPLENIC AND HYPOSPLENIC PATIENTS NEED TO KNOW

Patients should be educated as to the potential risks of overseas travel, particularly with regard to malaria and unusual infections, e.g. those resulting from animal or tick bites.

Patients with an absent or dysfunctional spleen are at increased risk of severe falciparium malaria – guidance should be given on appropriate malaria prophylaxis, along with the need for close adherence to it.

For patients travelling to areas with a high incidence of penicillin resistant pneumococci, contact the Microbiologist.

It is important that precautions are taken to avoid being bitten by ticks (risk of human babesiosis in endemic areas)

All animal bites need to be treated quickly. **Antibiotics are usually prescribed.**

Patients should be given appropriate written or electronic information and carry a card to alert health professionals to the risk of overwhelming infection. Patients may wish to invest in a “Medic-Alert” bracelet/necklace/watch (Medic-Alert have an annual charge + cost of jewellery) www.medicalert.org.uk, SOS bracelet/necklace or other makes of medical alert jewellery (some also offer a service like ‘Medic-Alert’ for an annual fee e.g. www.medibandplus.com). Other sources of medical alert jewellery include www.theidbandco.com, www.universalmedical.com, www.medinband.com, www.medicaltags.co.uk, and also at www.amazon.co.uk and at some jewellers and some pharmacies.

References