SPLENECTOMY

Disclaimer

Paediatric clinical guidelines are guides to treatment for medical and surgical staff. They are not protocols. Management of each patient is at the discretion of the primary consultant.

Indications

- Haematological disorders
  - Hereditary spherocytosis
  - Thalassaemia major
  - ITP unresponsive to medical management
  - Myeloproliferative disorders
  - Sickle cell disease
- Traumatic injury to spleen
- Intra-operative splenic injury
- Splenic abscesses, cysts, malignancy/mass of spleen or adjacent organ
- Non-cirrhotic portal hypertension with GI bleeding (usually as part of a portosystemic shunt operation)

Preoperative Preparation

- Consent
- FBC, U&E, G&H (consider Xmatch)
- Platelets may be required
- Peri-operative antibiotics – usually IV cefazolin at induction, to continue for 24 hours
- Immunisations and antibiotic plan (see below)

Consent

- Laparoscopic splenectomy, where possible, is now the standard of care. Alternatively open (left subcostal incision)
- Wound infection, incisional hernia, haemorrhage, subphrenic abscess, pancreatic pseudocyst, gastric fistula/perforation
- Those with myeloproliferative disorders have higher risk of bleeding and thrombosis
- Overwhelming post splenectomy infection

Infection Risk in Splenectomised patients

- The risk of post-splenectomy sepsis is greatest in the following groups:
  - younger children

Authors: Elizabeth Wilson, Rachel Webb, Nyree Cole, Jane Skeen, James Hamill, Lochie Teague, Helen Evans, Tim Prestidge

Services: Paediatric Surgery, Infectious Diseases, Haematology-Oncology, Hepatology

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Date Reviewed: 4 July 2014

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- early in the post-operative course (up to 2 years)
- individuals with an underlying haematologic disorder
- immune suppressed children - eg following liver transplantation
- *Streptococcus pneumoniae* (pneumococcus) is the commonest pathogen

Immunisations

- No vaccines are contraindicated for splenectomised /hyposplenic patients.

- Ensure patient is up to date with routine immunisations according to National Immunisation Schedule, especially pneumococcal, *Haemophilus influenzae* type b (Hib) and MMR.

- Additional immunisations are recommended for asplenia/hyposplenism; commence immunisation programme as soon as condition is recognised.

- For elective splenectomy extra immunisations should be commenced as soon as possible and at least 2 weeks pre-operatively

- For emergency splenectomy commence immunisations 2 weeks post-operatively.

- The recommended schedule varies according to age and is complicated by which vaccines are funded which can vary over time. As at May 2014 the recommended schedule is as follows. Please discuss with the Paediatric Infectious Diseases or Haematology team to clarify immunisation plan. Funded vaccines shown below are accurate as at 1 July 2014 but are subject to change. Check latest pharmaceutical schedule for currently funded vaccines.

<table>
<thead>
<tr>
<th>Age at diagnosis</th>
<th>Vaccine (trade name)</th>
<th>Vaccine schedule</th>
</tr>
</thead>
</table>
| Infants aged under 12 months with functional asplenia or pre- or post- 
  splenectomy | PCV13 (Prevenar 13) and 23PPV (Pneumovax 23) | PCV13\(^3\) at age 6 weeks, 3, 5 and 15 months (usual childhood Schedule), or age-appropriate catch-up schedule:  
  - if commencing immunisation at ages 7–11 months, give 2 doses of PCV13 at least 4 weeks apart, followed by a booster dose at age 15 months  
  - for children aged 7–11 months who have completed the primary course with PCV10, give 1 dose of PCV13 followed by the scheduled PCV13 booster at age 15 months.  
  Following the completion of the PCV course, give 1 dose of 23PPV at age 2 years. There must be at least 8 weeks between the last PCV dose and the 23PPV dose. 
  Revaccinate once with 23PPV, 5 years after the 1st 23PPV. |
| MenCCV NeisVacC) and MCV4-D (Menactra) | Age-appropriate MenCCV schedule:  
  - if aged under 6 months at diagnosis, give 2 doses 8 weeks apart, with a booster at age 12 months  
  - if aged 6–11 months at diagnosis, give 1 dose, with a further dose at age 12 months.  
  At age 2 years, give 2 doses of MCV4-D\(^2\) 8 weeks apart, then a booster dose after 3 years, then 5-yearly. |

Influenza Annual immunisation from age 6 months.

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Splenicectomy
SPLENECTOMY

Children aged 12 months to under 18 years with functional asplenia or pre- or post-splenectomy

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Influvac or Fluarix)</td>
<td>In the first year, give 2 doses 4 weeks apart, then 1 dose in each subsequent year.</td>
</tr>
<tr>
<td>PCV13</td>
<td>PCV13, 3 age-appropriate catch-up schedule:</td>
</tr>
<tr>
<td>(Prevenar 13) and</td>
<td>- children aged &gt;12 months who have completed the primary course of</td>
</tr>
<tr>
<td>23PPV (Pneumovax 23)</td>
<td>PCV10 require 1 dose of PCV13;</td>
</tr>
<tr>
<td></td>
<td>- previously unimmunised children aged ≥12 months to under 5 years</td>
</tr>
<tr>
<td></td>
<td>require 2 doses of PCV13;</td>
</tr>
<tr>
<td></td>
<td>- children aged 5 years to under 18 years require 1 dose of PCV13.</td>
</tr>
<tr>
<td></td>
<td>Following the completion of the PCV13 course, give 1 dose of 23PPV at</td>
</tr>
<tr>
<td></td>
<td>age ≥2 years. There must be at least 8 weeks between the last PCV13 dose</td>
</tr>
<tr>
<td></td>
<td>and the 23PPV dose.</td>
</tr>
<tr>
<td>MenCCV (NeisVacC) and</td>
<td>Revaccinate once with 23PPV, 5 years after the 1st 23PPV.</td>
</tr>
<tr>
<td>MCV4-D (Menactra)</td>
<td></td>
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<tr>
<td></td>
<td>If aged 12–23 months at diagnosis, give 1 dose of MenCCV, followed by</td>
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<tr>
<td></td>
<td>MCV4-D at age 2 years, 2 doses 8 weeks apart; then a booster of MCV4-D</td>
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<tr>
<td></td>
<td>after three years, then 5-yearly.</td>
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<tr>
<td></td>
<td>If aged ≥2 years at diagnosis, give 2 doses of MCV4-D 8 weeks apart, and:</td>
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<tr>
<td></td>
<td>- if the 1st MCV4-D dose was given at age &lt;7 years, give a booster</td>
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<td></td>
<td>after 3 years, then 5-yearly, or</td>
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<tr>
<td></td>
<td>- if the 1st MCV4-D dose was given at age ≥7 years, give a booster</td>
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<tr>
<td></td>
<td>dose every 5 years.</td>
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</tbody>
</table>

Hib (Act-HIB)

If aged 12–15 months, give 1 dose at age 15 months as per the National Immunisation Schedule.
If aged 16 months to under 5 years and has not received a single Hib dose after age 12 months, give 1 dose.
If aged 5 years and older, give 1 dose, even if fully vaccinated.

Children aged 12 months to under 18 years (continued)

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza (Influvac or</td>
<td>Annual immunisation. In previously unvaccinated children aged under 9</td>
</tr>
<tr>
<td>Fluarix)</td>
<td>years, give 2 doses 4 weeks apart, then 1 dose in each subsequent year.</td>
</tr>
<tr>
<td>Varicella (Varilrix)</td>
<td>If no history of varicella disease or immunisation, give 2 doses at least</td>
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<tr>
<td></td>
<td>6 weeks apart.</td>
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<tr>
<td>PCV13</td>
<td>1 dose of PCV13.</td>
</tr>
<tr>
<td>(Prevenar 13)</td>
<td></td>
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</tbody>
</table>

Adults ≥18 years, pre- or post-splenectomy

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>23PPV (Pneumovax 23)</td>
<td>Give a maximum of 3 doses of 23PPV in a lifetime, a minimum of 5 years</td>
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<tr>
<td></td>
<td>apart. The 1st 23PPV dose is given at least 8 weeks after PCV13; the</td>
</tr>
<tr>
<td></td>
<td>2nd a minimum of 5 years later; the 3rd dose at age ≥65 years.</td>
</tr>
<tr>
<td>MCV4-D (Menactra)</td>
<td>Give 2 doses of MCV4-D, 8 weeks apart, then 1 dose every 5 years.</td>
</tr>
<tr>
<td>Hib (Act-HIB)</td>
<td>Give 1 dose regardless of previous vaccination history.</td>
</tr>
<tr>
<td>Influenza (Influvac or</td>
<td>Annual immunisation.</td>
</tr>
<tr>
<td>Fluarix)</td>
<td></td>
</tr>
<tr>
<td>Varicella (Varilrix)</td>
<td>If no history of varicella disease or immunisation, give 2 doses, at least</td>
</tr>
<tr>
<td></td>
<td>6 weeks apart.</td>
</tr>
</tbody>
</table>

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a Where possible, the vaccines should be administered at least 2 weeks before elective splenectomy. For emergency splenectomy, the vaccines should be administered 2 weeks post-operatively.
b PCV13 replaces PCV10 (Synflorix) on the Schedule.
c Give MCV4-D at least 4 weeks after PCV13.
d If 23PPV has already been given (prior to any doses of PCV13), wait at least 1 year before administering PCV13.
e There are no safety concerns, regardless of the interval between the last dose of PCV10 and the 1st dose of PCV13.

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Editor: Greg Williams

Date Reviewed: 4 July 2014
PCV13 is registered for children aged under 5 years and adults aged 50 years and older. There is emerging but limited efficacy data for PCV13 use outside of these age ranges. However, PCV13 can be used for high-risk older children and adults.

MCV4-D is registered for individuals aged 9 months to 55 years, but there are not expected to be any safety concerns when administered to adults older than 55 years.

**Antibiotic prophylaxis**

- Some children may require long term antibiotic prophylaxis against pneumococcal infection (with amoxicillin, penicillin or erythromycin if beta lactam allergy) – please discuss with child’s haematologist or the Paediatric Infectious Diseases team.

**Post Operative Care and Discharge Planning**

- Bloods FBC, U&E evening or next morning as per operation note
- Watch platelet count – may need anticoagulants if increases ++
- Antibiotics as per operation note (Usually IV cephalazolin 24hours)
- Chest physiotherapy to prevent chest infection may be required
- Discuss medical alert bracelet (www.medicalert.co.nz for more info)
- Ensure vaccination plan is clearly documented on discharge letter – and clarify who will follow this through (GP or local paediatrician)
- Antibiotics: if recommended after discussion with Haematology or Paediatric Infectious Diseases:
  1) Daily oral antibiotic prophylaxis (if recommended by child’s haematologist / ID team)
     - Amoxicillin all ages 20mg/kg once daily (max 500mg)
     - OR Penicillin VK < 5yrs 125mg bd
       > 5yrs 250mg bd
     - OR If beta lactam allergy please discuss with Paediatric Infectious Diseases. Options include roxithromycin (if able to swallow tablets) and erythromycin.
  2) Standby antibiotics to take if unwell and unable to access immediate medical care
     Usually amoxicillin PO high dose (90mg/kg/day in three divided doses)
- Discuss importance of seeking medical attention early for febrile illnesses, malaria precautions if travelling overseas, antibiotics for dog / animal bites
- Provide patient education leaflet

**References**


Splenectomy
