Infection Prevention and Control Team (IPCT)

SECTION 16

GUIDELINES FOR THE PREVENTION OF INFECTION IN PATIENTS WITH AN ABSENT OR DYSFUNCTIONAL SPLEEN

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Title of Policy: Guidelines for the prevention of infection in patients with an absent or dysfunctional spleen

Policy Reference: Issue no 4, October 2011

Scope: Organisation wide

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Expiry Date: October 2014

Author: Sam Allen, Consultant in Infectious Diseases

Policy application / Target Audience Throughout NHS Ayrshire and Arran

RESPONSIBILITIES FOR IMPLEMENTATION

Organisation: Senior Management Team and Chief Executive

Directorate: Directors

Corporate: Senior Managers

Departmental: Heads of wards or departments

Local: All relevant staff

Policy Statement: The aim of this policy is to prevent and attenuate infections in asplenic or hyposplenic patients in whom risk of acquiring potentially overwhelming infection is more likely and to ensure that systems are in place to facilitate this.

Last reviewed: October 2011

Agreed by: Infection Prevention and Control Policy Review Group

Approved by: Professor Robert G Masterton

Executive Medical Director

Date: 31 October 2011
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1.0 INTRODUCTION

1.1 Risk of infection

People with an absent or dysfunctional spleen are at increased risk of severe infection. The risk is greater in the first 2 years following splenectomy, but persists throughout life.

1.2 Causes of infection

The most common infection is Streptococcus pneumoniae (with mortality up to 60%) but Haemophilus influenzae type b (Hib) and Neisseria meningitidis also present significant risk.

Asplenic patients are also at increased risk from malaria, babesiosis (following infected tick bite), Escherichia coli and Capnocytophaga canimorsus (DF-2 bacillus), which is associated with dog bites. Septicaemia is the main clinical manifestation of overwhelming post-splenectomy infection but meningitis and pneumonia can also occur.

Infection rates are ten times more common in asplenic children under 5 years and in infants following post-traumatic splenectomy.

Patients receiving immunosuppressive chemotherapy and/or radiotherapy are at greatest risk of serious infection after splenectomy.

1.3 Causes of asplenism

The main reasons for splenectomy are haematological conditions and accidental injuries.

Table 1: Causes of asplenism

<table>
<thead>
<tr>
<th>SURGICAL REMOVAL</th>
<th>REDUCED FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatic rupture*</td>
<td>Sickle Cell disease*</td>
</tr>
<tr>
<td>Lymphoma*</td>
<td>Thalassaemia</td>
</tr>
<tr>
<td>Idiopathic thrombocytopenia*</td>
<td>Coeliac disease</td>
</tr>
<tr>
<td>Hereditary spherocytosis*</td>
<td>Systemic lupus erythematosis</td>
</tr>
<tr>
<td>Thalassaemia*</td>
<td>Lymphoma</td>
</tr>
<tr>
<td></td>
<td>Leukemia</td>
</tr>
<tr>
<td></td>
<td>Amyloidosis</td>
</tr>
<tr>
<td></td>
<td>Dermatitis herpetiformis</td>
</tr>
<tr>
<td></td>
<td>Inflammatory bowel disease</td>
</tr>
<tr>
<td></td>
<td>Essential thrombocytethemia</td>
</tr>
<tr>
<td></td>
<td>Bone marrow transplantation*</td>
</tr>
<tr>
<td></td>
<td>Multiple myeloma</td>
</tr>
<tr>
<td>CONGENITAL ASPLENI A</td>
<td></td>
</tr>
<tr>
<td>Cardiac abnormalities*</td>
<td></td>
</tr>
<tr>
<td>Biliary atresia*</td>
<td></td>
</tr>
</tbody>
</table>

Splenectomy, congenital asplenia, sickle cell disease and bone marrow transplantation are all well recognised causes of hyposplenism. Patients with these conditions (marked * above) should receive prophylactic vaccinations and penicillin. For the other groups, vaccination and antibiotics should only be given following advice from the clinician who will assess splenic function.
2.0 AIM OF POLICY

The aim of this policy is to prevent and attenuate infections in asplenic or hyposplenic patients in whom risk of acquiring potentially overwhelming infection is more likely and to ensure that systems are in place to facilitate this.

This policy covers infection prevention and control management issues and applies to all healthcare workers (HCWs) employed by NHS Ayrshire and Arran that undertake patient care, or who may come into contact with affected patients.

Each individual member of staff, volunteer or contracted worker within NHS Ayrshire and Arran is responsible for complying with the standards set out in the policy. They need to be aware of their personal responsibilities in preventing the spread of infection. It is the responsibility of Healthcare Directors and Managers to ensure compliance with this standard.

3.0 INFORMATION TO PATIENTS

3.1 Information about their increased risk of severe infection

Patients should be informed that they are at an increased risk of serious and life-threatening infection. Patients should be advised to see a doctor immediately, if they develop any signs of infection such as fever, sore throat, malaise, severe headache, and flu-like symptoms.

A leaflet (Appendix 2) and patient card are available from the UK Department of Health (DoH) through the Scottish Government Health Directorate (SGHD). Copies are available from the Pharmacy at The Ayr and Crosshouse Hospitals.

“I have no functioning spleen” cards can also be downloaded from the DoH website (www.dh.gov.uk).

Patients are advised to carry a card or wear an identifying bracelet such as a Medic-Alert bracelet at all times to alert health care personnel and members of the public in an emergency. Available from website: www.medicalert.co.uk

3.2 Information about foreign travel and infection risks

Asplenic patients visiting countries where malaria transmission occurs should be counselled about the particular risk of severe malaria that they face and given comprehensive advice about the prevention of malaria including rigorous use of anti-mosquito measures, strict compliance with appropriate chemoprophylaxis and avoidance of unnecessary visits to malarious areas.
Meningococcal ACWY Vax should be offered to those travelling to areas with an increased risk of meningococcal infection e.g. sub-Saharan Africa, and for the annual pilgrimages to the Hajj and the Umrah. Vaccination is particularly important for those living or working with local people or visiting an area of risk during outbreaks. (see www.nathnac.org for up to date information on countries affected by outbreaks).

Patients not taking regular antibiotic prophylaxis should do so during periods of travel and also keep a therapeutic course of antibiotics with them for the duration of the holiday. The choice of antibiotic should take into account the pattern of drug resistance in the country visited e.g. the high incidence of penicillin resistant pneumococci in Spain. Asplenic patients are also at risk from babesiosis, an extremely rare condition in this country and should be advised about avoiding tick bites when involved in outdoor pursuits such as camping.

3.3 Avoiding bites that may transmit particular infections

Asplenic patients must be advised about the need for the prompt treatment of animal (especially dog) bites, as they are particularly susceptible to infection by C.canimorsus (DF-2 bacillus) and should receive a five-day course of co-amoxiclav (erythromycin in allergic patients) to prevent infection. Advice about the prevention of tick bites (wearing clothing, especially long trousers) should be given to patients regularly involved in outdoor pursuits.

4.0 VACCINATION

4.1 Timing of vaccination

The patient’s vaccine history should be carefully checked. Where vaccination is required this ideally should be given 4-6 weeks (minimum 2 weeks) before either elective splenectomy or initiation of chemotherapy to ensure an optimal antibody response. If this is not possible the patient should be immunised at 14 days post splenectomy or 3 months post chemotherapy or radiotherapy during which time prophylactic antibiotics should be given.

The General Practitioner (GP) should be notified of the splenectomy and vaccination given. If the patient has already been discharged from hospital the GP should be notified and arrangements made for vaccination at earliest opportunity.

Patients who have had their spleens removed and hyposplenic patients that have not been immunised should receive vaccines at the earliest opportunity.
4.2 Vaccination of patients with absent or dysfunctional spleen

The vaccines used for the prevention of infection in persons with an absent or dysfunctional spleen are inactivated vaccines which do not replicate. The vaccines can be administered to immunosuppressed individuals, although they may elicit a lower response than in an immunocompetent individual. There is no evidence of any increased risk from vaccination with use of inactivated vaccines or toxoids in pregnant or lactating women.

Information on vaccine presentation, schedules, adverse reactions and contra-indications can be found in the DoH Green Book "Immunisation against Infectious Diseases" accessed electronically at www.dh.gov.uk and local Patient Group Directions (PGDs).
Table 2: Vaccination of patients with absent or dysfunctional spleen

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**ACTIVE IMMUNISATION**
Suggested schedule for immunisation for immunisation with conjugate vaccines in individuals with asplenia, splenic dysfunction, immunosuppression or complement deficiency.

<table>
<thead>
<tr>
<th>Age at which asplenia or splenic dysfunction or immunodeficiency acquired or when complement deficiency diagnosed.</th>
<th>Vaccination Schedule Where possible, vaccination course should ideally be started at least two weeks before surgery or commencement of immunosuppressive treatment.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MONTH 0</strong></td>
<td><strong>MONTH 1</strong></td>
</tr>
<tr>
<td>First presenting under 2 years</td>
<td>Complete according to national routine childhood schedule inc booster doses of Hib/ menC and PCV13.</td>
</tr>
<tr>
<td>First presenting over 2 years and under 5 years (previously completed routine childhood vaccinations with PVC7).</td>
<td>Hib/MenC booster PCV13</td>
</tr>
<tr>
<td>First presenting over 2 years and under 5 years (previously completed routine childhood vaccinations with PCV13).</td>
<td>Hib/MenC booster PPV</td>
</tr>
<tr>
<td>First presenting over 2 and under 5 years (unvaccinated or previously partially vaccinated with PCV7).</td>
<td>Hib/MenC vaccine First dose of PCV13</td>
</tr>
<tr>
<td>First presenting over 5 years (regardless of vaccination history).</td>
<td>Hib/MenC vaccine PPV</td>
</tr>
</tbody>
</table>

**PASSIVE IMMUNISATION AND ANTIVIRALS**
Use of passive antibody should be considered in immunosuppressed individuals after exposure to measles or chickenpox ie. Appropriate immunoglobulin (VZIG) or normal human immunoglobulin (HNIG). Antivirals such as prophylactic acyclovir may be considered eg. After exposure to chickenpox.

**PROPHYLACTIC ANTIBIOTICS**
Adults Minimum 2 years prophylactic course
Children Continuous prophylaxis until 16 years.
4.3 Pneumococcal immunisation

There are two types of pneumococcal vaccine:

- **pneumococcal polysaccharide vaccine (PPV)**
  - contains purified capsular polysaccharide from each of 23 capsular types of pneumococcus
- **pneumococcal conjugate vaccine (PCV)**
  - contains polysaccharide from thirteen common capsular types

The PPVs and PCVs do not contain thiomersal. The vaccines are inactivated, do not contain live organisms and cannot cause the diseases against which they protect.

Children under five who have been fully immunised with PCV as part of the routine programme and who then develop splenic dysfunction more than one year after completing immunisation should be offered an additional dose of PCV. Antibody levels following PPV immunisation are likely to decline rapidly in individuals with no spleen, splenic dysfunction or chronic renal disease and therefore re-immunisation with 23-valent PPV is recommended every five years in these groups. Revaccination is well tolerated. Testing of antibody levels prior to vaccination is not required.

Ideally, pneumococcal vaccine should be given four to six weeks before elective splenectomy or initiation of treatment such as chemotherapy or radiotherapy. Where this is not possible, it can be given up to two weeks before treatment. If it is not possible to vaccinate beforehand, splenectomy, chemotherapy or radiotherapy should never be delayed.

If it is not practicable to vaccinate two weeks before splenectomy, immunisation should be delayed until at least two weeks after the operation as there is evidence that functional antibody responses may be better from this time. If it is not practicable to vaccinate two weeks before the initiation of chemotherapy and/or radiotherapy, immunisation can be delayed until at least three months after completion of therapy in order to maximise the response to the vaccine. Immunisation of these patients should not be delayed if this is likely to result in a failure to vaccinate.
Table 3: Vaccination schedule for those in a clinical risk group

<table>
<thead>
<tr>
<th>PATIENT AGE AT PRESENTATION</th>
<th>VACCINE GIVEN AND WHEN TO IMMUNISE</th>
<th>13-VALENT PCV</th>
<th>23-VALENT PPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>At risk children 2 months to under 12 months of age</td>
<td>Vaccination according to the routine immunisation schedule at 2, 4 and between 12 and 13 months of age (i.e. within a month of the first birthday)</td>
<td></td>
<td>One dose after the second birthday.</td>
</tr>
<tr>
<td>At-risk children 2 months to under 12 months of age who have asplenia or splenic dysfunction or who are immunosuppressed</td>
<td>Vaccination according to the routine immunisation schedule at 2, 4 and between 12 and 13 months of age (i.e. with a month of the first birthday)</td>
<td></td>
<td>One dose after the second birthday</td>
</tr>
<tr>
<td>At-risk children 12 months to under 5 years of age</td>
<td>One dose</td>
<td></td>
<td>One dose after the second birthday and at least 2 months after the final dose of PCV</td>
</tr>
<tr>
<td>At-risk children 12 months to under 5 years of age who have asplenia or splenic dysfunction or who are immunosuppressed</td>
<td>Two doses, with an interval of 2 months between doses</td>
<td></td>
<td>One dose after the second birthday and at least 2 months after the final dose of PCV</td>
</tr>
<tr>
<td>At-risk children aged over 5 years and at-risk adults</td>
<td>PCV is not recommended</td>
<td></td>
<td>One dose</td>
</tr>
</tbody>
</table>

Note: Testing antibody levels prior to vaccination is not required.

4.4 *Haemophilus influenzae* type b (Hib) immunisation

Vaccination against Hib disease is advised for individuals who develop asplenia or splenic dysfunction or when complement deficiency is diagnosed depending on age and vaccination history. For the full list of immunisations for these groups, see Table 2.

**Children under two years of age** should be vaccinated according to the United Kingdom (UK) routine childhood schedule, which includes a booster of Hib/MenC and PCV given at 12 months of age. A dose of MenACWY conjugate vaccine should be given at least one month after the Hib/MenC and PCV boosters.

After the second birthday, an additional dose of Hib/MenC should be given. If the individual received their routine pneumococcal booster dose as PCV7 (before April 2010) an additional dose of PCV13 should be offered at the same time, followed by a dose of PPV two months later. If the child was routinely boosted with PCV13 (after April 2010) a dose of PPV should be given with the Hib/MenC booster.
Fully vaccinated individuals over two and under five years of age should receive one additional dose of Hib/MenC and PCV13 (as they will have received PCV7). One month after this, they should receive a dose of MenACWY conjugate vaccine. PPV should be given at least two months after the last dose of PCV13.

Previously unvaccinated individuals over two and under five years of age should receive one additional dose of Hib/MenC and PCV13 (as they will have received PCV7). One month after this, they should receive a dose of MenACWY conjugate vaccine. PPV should be given at least two months after the last dose of PCV13.

Individuals over five years of age regardless of vaccination status should receive one dose of Hib/MenC vaccine with a dose of PPV. One month after this, a dose of MenACWY conjugate vaccine should be given.

4.5 Meningococcal (Neisseria meningitidis) immunisation

Children and adults with asplenia or splenic dysfunction may be at increased risk of invasive meningococcal infection. Such individuals, irrespective of age or interval from splenectomy, may have a sub-optimal response to the vaccine.

Given the increased risk, additional vaccinations against meningococcal disease are advised for individuals who develop asplenia or splenic dysfunction or when complement deficiency is diagnosed depending on age and vaccination history. For the full list of immunisations for these groups, see Table 2. An additional MenACWY conjugate vaccination could be considered for patients that only received protection against meningococcal C from earlier vaccinations.

Children under two years of age should be vaccinated according to the UK routine childhood schedule, which includes a booster of Hib/MenC and PCV given at 12 months of age. A dose of MenACWY conjugate vaccine should be given at least one month after the Hib/MenC and PCV boosters.

After the second birthday, an additional dose of Hib/MenC should be given. If the individual received their routine pneumococcal booster dose as PCV7 (before April 2010) an additional dose of PCV13 should be offered at the same time, followed by a dose of PPV two months later. If the child was routinely boosted with PCV13 (after April 2010) a dose of PPV should be given with the Hib/MenC booster.

Fully vaccinated individuals over two and under five years of age should receive one additional dose of Hib/MenC and PCV13 (as they will have received PCV7). One month after this, they should receive a dose of MenACWY conjugate vaccine. PPV should be given at least two months after the last dose of PCV13.
Previously unvaccinated individuals over two and under five years of age should receive one dose of Hib/MenC vaccine with a dose of PCV13. One month after this, a dose of MenACWY conjugate vaccine should be given, followed by PCV13 one month later. Two months after the last dose of PCV13, PPV should be given.

Individuals over five years of age regardless of vaccination status should receive one dose of Hib/MenC vaccine with a dose of PPV. One month after this, a dose of MenACWY conjugate vaccine should be given.

4.6 Influenza vaccine (including H1N1)

Influenza vaccine (incorporating H1N1 or ‘swine flu’) should be given annually to patients with an absent or dysfunctional spleen. Influenza vaccine may be given at the same time as pneumococcal vaccine, but should be administered at a different site.

5.0 ANTIBIOTIC PROPHYLAXIS

5.1 Antibiotic prophylaxis in adults and children with an absent or dysfunctional spleen

The recommended antibiotic prophylaxis for adults and children with an absent or dysfunctional spleen are shown in Table 3. Overall pneumococcal resistance to penicillin remains low in the UK. Knowledge of local resistance patterns may be used to guide the choice of chemoprophylactive agents.

The risk of infection is greatest in children and in the first two years after loss of splenic function, but the risk persists for life. Therefore all persons with an absent or dysfunctional spleen should ideally take antibiotic prophylaxis for life.

Children
- Should take antibiotics for a minimum of two years and at least until they are 16 years old but ideally for life

Adults
- Should take antibiotics for at least two years, but ideally for life
Table 4: Antibiotic prophylaxis in adults and children with an absent or dysfunctional spleen

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Oral prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenoxymethylpenicillin (Penicillin V)</td>
<td></td>
</tr>
<tr>
<td>Adult</td>
<td>500 mg 12 hourly*</td>
</tr>
<tr>
<td>Child aged 5-12 years</td>
<td>250 mg 12 hourly</td>
</tr>
<tr>
<td>Child under age 5 years</td>
<td>125 mg 12 hourly</td>
</tr>
<tr>
<td>Erythromycin (base) **</td>
<td></td>
</tr>
<tr>
<td>Adult + child over 8 years</td>
<td>500 mg daily</td>
</tr>
<tr>
<td>Child aged 2-8 years</td>
<td>250 mg daily</td>
</tr>
<tr>
<td>Child under 2 years</td>
<td>125 mg daily</td>
</tr>
<tr>
<td>Amoxicillin ***</td>
<td></td>
</tr>
<tr>
<td>Adult</td>
<td>500mg daily</td>
</tr>
<tr>
<td>Child aged 5-14 years</td>
<td>125 mg daily</td>
</tr>
<tr>
<td>Child aged 0-5 years</td>
<td>10 mg/kg/day</td>
</tr>
</tbody>
</table>

* If compliance is a problem, 500 mg once daily is acceptable  
** In the UK, resistance levels to erythromycin (10-15%) are higher than the level of resistance to penicillin (3-5%), so erythromycin should be preferred only for those who are allergic to penicillin.  
*** If cover is also needed against *Haemophilus influenzae* in children

Patients should be strongly advised to keep a supply of up to date antibiotics such as penicillin V (or erythromycin if allergic to penicillin) to take at home when they have a high temperature or feel ill. Immediate medical help should also be sought.

5.2 Antibiotic recommendations for patients travelling abroad

A number of countries, including Spain, France, Hungary, Israel, the USA and many Far Eastern countries have reported high levels of penicillin resistance in *Strep. pneumoniae* (pneumococcus), the most important pathogen in overwhelming post-splenectomy infection. In most of these countries, macrolide and tetracycline resistance in pneumococci is even more prevalent than that to penicillin, making these classes of drugs of limited use in early treatment packs. Moreover, whilst much penicillin resistance is low-level and can be overcome with increased doses of penicillin or related drugs (amoxycillin), resistance to macrolides and tetracyclines is mostly high-level and cannot be overcome in this way.

No specific guidance on antibiotic use in these circumstances has been issued, however the following should be considered:

- Make a risk assessment for each patient/trip abroad
- Patients should continue to take their regular prophylaxis when abroad
- For early treatment of infection, high dose amoxycillin (e.g. 1g stat followed by 500mg 8 hourly in adults) is better absorbed by mouth than penicillin / ampicillin, and many penicillin resistant strains will respond to high doses
• Patients should also be advised to seek medical attention if they start the treatment

5.3 Patients with true penicillin allergy

A fluoroquinolone should be recommended for early treatment of adult patients with penicillin allergy who become ill abroad. Moxifloxacin is highly active against pneumococci and is recommended. Levofloxacin is an alternative, but is less active. Ciprofloxacin should be avoided as it does not provide very good coverage for pneumococci.

There is no effective licensed oral first-line treatment for penicillin-allergic asplenic persons under the age of 14. They should be advised to seek urgent medical advice if they become unwell with failure of erythromycin prophylaxis.

A new macroline analogue, telithromycin, which is active against erythromycin resistant pneumococci, has been licensed and is available on the Continent, but not the UK. Patients who become unwell may be able to access it in Europe. The website: www.earss.rivm.nl gives details of penicillin resistance in European countries. Data for many other parts of the world e.g. the Far East, is not publicly available.

6.0 SUMMARY

People without a normal functioning spleen (due to surgical removal or disease) are at increased risk of severe infection. The risk of infection is twelve times higher in the asplenic patient than in the normal population. Children and particularly infants are even more at risk of severe infection because of their lower pre-existing immunity and their greater likelihood of exposure to infection.

The commonest pathogen affecting asplenic patients is Streptococcus pneumoniae, but Haemophilus influenza (type b) and Neisseria meningitidis also present significant risks. Pneumococcal infection carries a mortality rate of up to 60%. This increased risk of bacterial infection is highest in the first two years following splenectomy, but persists throughout life. Asplenic patients are also at increased risk from malaria and other infections associated with dog and tick bites.

All patients should receive:
• Advice sheet covering
• Their lifelong increased risk of infection
• Recommended vaccines and antibiotic prophylaxis
• Importance of seeking help immediately should infection occur
• Recommendations for travel abroad
• Advice about insect and dog bites
Patient card and information

A leaflet (Appendix 2) and patient card are available from the UK DoH through the Scottish Government Health Directorate. Copies are available from the Pharmacy at The Ayr and Crosshouse Hospital.

“I have no functioning spleen” cards can also be downloaded from the DoH website (www.dh.gov.uk).

Patients are advised to carry a card or wear an identifying bracelet such as a Medic-Alert bracelet at all times to alert health care personnel and members of the public in an emergency. Available from website: www.medicalert.co.uk

7.0 REFERENCES

1. Immunisation against Infectious Disease (2006), DoH, The Stationery Office.


4. DoH Website: http://www.dh.gov.uk
This leaflet is for patients who have had their spleen removed, whose spleen isn’t present or doesn’t work.

Splenectomy is an operation to remove the spleen. Doctors may commonly perform a splenectomy because the spleen:
- has been damaged in a serious accident
- is diseased
- contains a growth or tumour
- has become overactive

Some people are born without a spleen (this is called asplenia) or their spleen does not work properly (this is called splenic dysfunction). They will have the same problems as someone whose spleen has been removed.

What does the spleen do?
The spleen helps the body’s defence against bacterial infections. If you do not have a spleen you will still be able to cope with most infections, but in some cases serious infection may develop quickly. The risk of this happening is higher in children than in adults but it is still very small.

What should I do if I do not have a spleen?
- Remind your doctor and dentist that you do not have a spleen
- Carry a card or wear an identifying bracelet or necklace to alert other people in an emergency.
- Make sure you have received all your routine childhood immunisations (talk to your doctor or nurse, or visit www.nhs.uk). In particular, you should ensure you have received the following vaccinations to help prevent infections to which you are particularly vulnerable:
  - Pneumococcal
  - *Haemophilus influenzae* type b (Hib)
  - Meningitis C (MenC)
  - Influenza (every year)
- And, if you are travelling abroad, you may need an additional meningococcal vaccine – ACWY.

Other important information
- You may be recommended to take antibiotics every day to prevent the onset of infections. This is essential in the first few years after your operation and for children under 16 years of age. Tell your doctor if you have been unable to take the antibiotics for any reason.
- Alternatively, you may be given a course of antibiotics to keep at home in case you become ill and there is a delay in seeing your doctor.
- Contact your doctor immediately if you are ill. Most illnesses will be minor.
and can be dealt with as usual but sometimes a fever, sore throat, severe headache or abdominal pain may be the beginning of something more serious. Early diagnosis and treatment are essential and may be life saving.

- Get treatment for any bites (especially dog) urgently and take any antibiotics you are given to prevent infection.
- If you are regularly involved in outdoor pursuits such as trekking or camping, you may be at risk from a rare disease called babesiosis which is transmitted by ticks and can be mistaken for malaria. You can help protect yourself by wearing clothing to cover exposed skin, especially long trousers to cover the legs. If you become ill, seek medical advice promptly.
- Talk to your doctor before travelling abroad. Extra vaccinations and special precautions to prevent malaria may be necessary. It is also wise to carry a course of antibiotics with you, whether or not you are already taking them on a daily basis.

If you require further copies of this leaflet, please visit:
www.orderline.dh.gov.uk and quote 278572/Splenectomy Information for patients or contact:
Phone: 0300 123 1002
Minicom: 0300 123 1003 (8am-6pm, Monday to Friday)

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