



Immunisation recommendations following treatment for cancer

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As increasing numbers of children survive childhood malignancy including those who undergo bone marrow transplantation, the importance of long term care has gained increasing prominence. Depending on the duration and intensity of treatment, immunisation status may be compromised and re-immunisation is vital. Vaccines that are effective and safe in immunocompetent individuals exist against a range of infections.

Few studies have looked at possible long term immunologic consequences of therapy. Following bone marrow transplantation, donor specific immune responses may be detected to 'recall' antigens. They may be short lived and not protective. In the first six months after transplant, there is an increased risk of graft dysfunction and high dose immunosuppressive treatment may inhibit immune response.¹

In July 2001 the Infectious Disease Society of America (ISDA)² developed guidelines for preventing opportunistic

infections among haemopoietic stem cell transplant recipients. Short term effects of chemotherapy on immune function have been documented in children treated for malignancy. In these studies, severe B+ T-cell depletion was seen and counts tended to return to normal 6–12 months after completion of treatment.^{3,4} Studies have also shown that children treated with chemotherapy have compromise of immunity against some viral diseases (either naturally acquired or acquired by vaccination) such as measles, varicella, influenza and hepatitis B.⁵

A study published recently in *Paediatrics*⁶ studied 43 children in remission following treatment for acute lymphoblastic leukaemia. All had previously been immunised (before diagnosis) against measles, mumps and rubella. Sixty percent of children were still immune to measles and 72% to rubella following completion of treatment. The authors suggest that re-immunisation of these patients is necessary following completion

of treatment and vaccination responses need further study. A small proportion of children fail to respond to revaccination.

In general, live viral or bacterial vaccines should not be given to children who are immune compromised during and immediately following treatment for malignancy.

Patients who have undergone a splenectomy are known to be at risk of infections from particular encapsulated organisms. Antibiotic prophylaxis and immunisation against pneumococcal, meningococcal, and *Haemophilus influenza* type B (HiB) infections is recommended.

Our current practice is shown in Table 1 and conforms to the Australian Immunisation Handbook (7th edition).^{7,8} Item 2 is the recommendation of ISDA guidelines after stem cell transplantation.

Any queries can be directed to the Centre for Immunisation Research (or similar) in each state or the patients' treating oncology unit.

Table 1. Immunisation following treatment for cancer – current practice

Children (up to 15 years)⁶

6–12 months after completion of treatment

DTPa	<8 years	}	3 doses
ADT	8 years		
Hib	<5 years		1 dose
Hepatitis B			3 doses
SALK			3 doses

- 1 dose of conjugated pneumococcal and meningococcal vaccine is now recommended⁸
- 12 months after completion of treatment:
give MMR then recheck status
the MMR may need to be repeated

Adults (>15 years)

- full re-immunisation is suggested 12/12 after completion of treatment, ie. ADT and SALK and hepatitis B
- one dose acellular pertussis vaccine may be given as it is available in Australia
- up to 19 years of age, meningococcal vaccine (one dose) is now recommended
- MMR should also be given (particularly to ensure rubella immunity in females of childbearing age)
- further boosters as per standard vaccination schedule

Poststem cell transplantation (SCT)

- three doses of DTP, SALK, HIB and hepatitis B at 12, 14, 24 months post-SCT
- MMR: two years after SCT (may be given from 15 months post-SCT onwards)
- influenza vaccine from six months post-SCT
- close contacts should also have flu vaccination
- pneumococcal vaccine is recommended at 12 and 24 months post-SCT

Other vaccines

- live vaccines, including travel vaccines, can be given 12 months after completion of treatment
- annual influenza vaccine is safe and encouraged for both the patient and close contacts
- varicella vaccine is recommended for all nonimmune patients (inclusion in the routine childhood immunisation schedule is still under review)
- close contacts of immunocompromised patients should not be given oral polio vaccine but may have other usual childhood vaccinations and SALK polio vaccine

Other

Oral polio vaccine (OPV) should be safe to use 12–24 months after completion of treatment

Resource

NH&MRC. The Australian Immunisation Handbook (7th edn), 2000. [http://www.health.gov.au/nhmrc/media/96 release](http://www.health.gov.au/nhmrc/media/96%20release)

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