Oxford University Hospitals NHS
NHS Trust

Immunisation guidance for patients receiving cytotoxic chemotherapy

(excluding allogeneic BMT patients—see specific guideline)

- **Influenza vaccination is recommended for patients treated with cytotoxic chemotherapy during the 'flu season (October to March)**
- **Pneumococcal vaccination is recommended for patients treated with cytotoxic chemotherapy if not previously vaccinated against pneumococcus (irrespective of season)**
- **Influenza and conjugate pneumococcal vaccines are safe during cytotoxic chemotherapy**
- **Patients frequently remain able to respond to and benefit from vaccination during chemotherapy**
- **Catch-up vaccinations to match UK immunisation schedule are recommended for patients planned for cytotoxic chemotherapy**
- **Live vaccinations should be avoided during and for 6 months following cytotoxic chemotherapy, and subsequently if immunosuppression continues. Also avoid in patients on steroids for > 1 week**
- **Close contacts of patients on chemotherapy should receive routine immunisations (including live vaccines), and varicella and influenza immunisations should also be considered (to reduce risk to patient)**

Annual Influenza vaccination

- Patients with cancer are at increased risk of contracting influenza and have higher complication and mortality rates from influenza infection (Pollyea, 2010)
- Influenza vaccination is safe, inexpensive and indicated for patients receiving chemotherapy during the 'flu season (October to March)
- If patient planned for chemotherapy during 'flu season but not within next two weeks:
  - Recommend vaccination at GP surgery (vaccination > 2 weeks pre-chemotherapy ensures maximal response)
- If patient planned for chemotherapy during 'flu season and within next two weeks:
  - Do not delay chemotherapy
  - Recommend vaccination at GP surgery at earliest opportunity before or during chemotherapy. If vaccinating during chemotherapy recommend vaccination within 72 hours following chemotherapy (days 1-3 of treatment cycle) to avoid period of predicted neutropenia (to prevent diagnostic uncertainty if fever following vaccination)
- Though not specifically recommended by the DH, vaccination of patients with advanced cancer/poor performance status who are not receiving/planned for chemotherapy may be beneficial (clinical decision)

Pneumoccocal vaccination

- Pneumococcal vaccination is recommended for patients receiving chemotherapy who have not previously been vaccinated against pneumococcus
- If patient not planned for chemotherapy within next three months, recommend*:
  - Conjugate pneumococcal vaccine (13 valent, 'Prevenar13') at GP surgery minimum ten weeks prior to chemotherapy
  - Subsequent Pneumovax vaccine (23-valent 'Pneumovax') at GP surgery eight weeks after Prevenar13, and a minimum of two weeks before chemotherapy
- If patient planned for chemotherapy within next three months, recommend*:
  - Conjugate vaccine Prevenar13 alongside influenza vaccination at GP surgery (before or during chemotherapy, with same considerations regarding timing)
  - Delay of subsequent Pneumovax vaccination until three months following completion of chemotherapy, to maximise immune response to the polysaccharide vaccine

**This is a local recommendation due to the greater immunogenicity of Prevenar than Pneumovax. National guidance recommends Pneumovax but without prior Prevenar.*

Catch-up vaccinations

- Catch-up vaccinations to align with the current UK immunisation schedule are recommended for patients:
  - http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947406156 *or*
  - http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/VaccinationImmunisation/Guidelines/
- These should preferably be complete at least two weeks prior to chemotherapy to ensure optimal immune response
- Non-live vaccinations can be given during chemotherapy if immediate protection is required (avoid period of predicted neutropenia), though these should be repeated after completion of chemotherapy to ensure effective long-term protection

Live vaccines

- Avoid live vaccines for two weeks before, during and for six months after completion of chemotherapy and indefinitely if persistent immunosuppression following treatment. Also avoid in patients treated with steroids (40mg prednisolone/day or equivalent) for >1 week
- Live vaccines include rubella, mumps, measles (usually given together as MMR), varicella zoster, BCG, oral typhoid and yellow fever

Vaccination of close contacts of patients undergoing immunosuppressive chemotherapy

- Patients should be reassured that household contacts of the patient receiving chemotherapy can receive both inactivated or live vaccines at any time, without risk to the patient; instead, these offer a protective role
- Influenza vaccine should be offered to all close family contacts from 6 months of age
- Varicella zoster vaccination for contacts should be offered depending on patient and contact history of chickenpox and, where appropriate, results of varicella zoster virus (VZV) serology as follows:
  - If the patient has a history of chickenpox no further testing of patient/contacts or varicella vaccination of contacts is required
  - Patients with no history of chickenpox should have varicella zoster virus (VZV) serology performed (>90% will be VZV IgG positive). No further testing/vaccination of contacts is required if patient VZV serology is positive. If patient VZV serology is negative (ie non-immune) then close contacts aged ≥16 with no history of chickenpox should undergo VZV serology and receive varicella vaccination if serology is negative. Close contacts aged <16 with no history of chickenpox do not require VZV serology and should be vaccinated against varicella without testing

General vaccination advice

- All vaccinations should be given via the GP surgery
- Vaccines given during chemotherapy should be discounted when considering number of doses required for long term protection
- Where possible avoid all vaccinations during the period of neutropenia (neutrophil count <1.0 x 10^9/L) to avoid triggering an acute febrile reaction which may confound detection of neutropenic sepsis
- Avoid intramuscular injections if platelet count <50
- Normal vaccinations can recommence six months after completion of chemotherapy if the disease is in remission

Healthcare professionals can receive immunisation advice from the Vaccine Advice for Clinicians Service (VACCSline) at:
E-mail: **vaccsline@ovg.ox.ac.uk**
Tel: 0845 279 9878

Further information/references:

Current HPA guidance for those with unknown or incomplete immunization status:
http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/VaccinationImmunisation/Guidelines/

Department of Health, "The Green Book" http://www.dh.gov.uk/en/Publichealth/Immunisation/Greenbook/index.htm

US/CDC immunisation recommendations: http://www.immunize.org/catg.d/p2011.pdf

Utility of Influenza Vaccine for Oncology Patients. Pollyea et al. J. Clin. Onc. 28: 2481-2490.

Vaccination of Oncology Patients: An effective Tool and an Opportunity Not to Be Missed. The Oncologist. 17:1-2.

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