I. Welcome and announcements

1. The Chair welcomed all to the meeting. The committee was informed about the Cabinet Office review of Non-departmental Public Bodies, which would include JCVI and would be released soon.
2. Dr. Paul Jackson has resigned from the committee due to work commitments and the chair had written to thank him for his contribution to the committee. At this time, no recruitment of new members is planned subject to the Cabinet Office review.

II. Minute of previous meeting
3. The committee agreed that the minute of the meeting for 16 June 2010 was an accurate record with the following changes:
   - Paragraph 21, line 1 – delete ‘90 per cent or above for all vaccinations’ and ‘However, there are still concerns about the number of unvaccinated children’.
   - Paragraph 23, lines 1 and 8 – change ‘South West HPU’ to ‘South West Peninsula Health Protection Unit, Devon Team’.
   - Paragraph 29, line 6 – change ‘risk factor’ to ‘cause’.
   - Paragraph 38, line 3 – change ‘asplenics’ to ‘individuals without a spleen’.

III. Matters arising
4. The action points recorded in the 16 June 2010 meeting minutes were reviewed. The chair noted that:
   - The secretariat met with representatives of GSK to discuss the JCVI request for information on Hib antigen-containing vaccines. It is anticipated that GSK will provide a submission for JCVI to consider at the committee’s February 2011 meeting.
   - The following members had volunteered to sit on the meningococcal sub-committee: Andrew Riordan (chair), Anne McGowan, Matt Keeling, Anthony Hraden and Daniel Jackson. The secretariat wrote to other potential experts about joining the sub-committee and is waiting for replies. A call for evidence for the sub-committee is planned for issue in October via the JCVI website and a notification email would be sent to interested parties (e.g. meningococcal vaccine manufacturers, meningitis charities, Royal Colleges). Future consultations would follow this approach.
   - The secretariat will develop a programme of work to discuss with the Adolescent Vaccination sub-committee chair (Anthony Harnden) and then develop and issue a call for evidence.
   - Members had initiated a discussion by email about the sharing of vials of vaccine between patients and had asked that this be discussed at the meeting. A short background paper had been included in the pack of papers for the meeting and would be discussed under agenda item four.
   - The pneumococcal sub-committee would meet on 15 December 2010.
   - The influenza sub-committee would meet on 1 December 2010.
   - New text for the Pertussis Green Book chapter has been drafted following discussion at the June JCVI meeting about the genetic origin of encephalopathy in infants that had been temporally associated with pertussis-containing vaccine.
   - The JCVI RSV prophylaxis statement and RSV Green Book chapter would be published shortly.
• The letter to the Secretary of State outlining JCVI’s recommendations would be sent following the announcement of the Cabinet Office review of advisory NDPBs.
• A letter had been sent to the South West Peninsula Health Protection Unit, Devon Team to inform it of the committee’s advice in relation to the influenza vaccination of PVL-SA patients and their close contacts.
• The travel sub-committee reviewed the evidence for rabies pre- and post-exposure prophylaxis in September and this would be discussed under agenda item four.
• The secretariat had started to plan an open meeting to possibly be held in the afternoon of JCVI’s February 2011 meeting. Comments from the committee on a draft agenda would be sought.
• Professor Salisbury briefed the committee on the circumstances surrounding the award of a Vaccine Damage Payment in a recent instance.

IV. Travel sub-committee report on rabies vaccination
5. The chair of the travel sub-committee informed JCVI about the advice on rabies pre- and post-exposure prophylaxis.

6. The sub-committee proposed that the advice recommending post-exposure prophylaxis of five doses of vaccine given intramuscularly should not be changed. There are insufficient data to conclude that four doses would provide equivalent protection. The immunogenicity of rabies vaccine given by the intradermal route was equivalent or possibly slightly superior to vaccine given intramuscularly. However, given that expertise in intradermal vaccination in general practice is not widespread, as had been demonstrated by a recent NaTHNaC survey of health professionals, use of this route should not be advised. Any person arriving back in the UK who started their vaccination course via the intradermal route should complete the course via the intramuscular route.

7. Given the lack of widespread expertise in intradermal vaccination, the sub-committee also advised that the intramuscular route be the preferred route for pre-exposure prophylaxis. It was acknowledged that unlike in general practice, specialised travel clinics may employ health care professionals with the necessary expertise to administer vaccines via the intradermal route. However, administration by this route, would be outside the license indications for the vaccine and therefore the vaccine would be given off label and be at the health care professional’s own responsibility.

8. The sub-committee agreed with the advice in the current Green Book chapter on rabies that a single booster dose should be given one year after the primary course has been completed for individuals who are at continued risk of rabies infection. However, as immunogenicity results suggest long-term persistence of antibody in the majority of vaccinated individuals, those at continued risk should have a
serological test every five years and only be vaccinated if the antibody titre is below the minimum acceptable level of 0.5IU/ml rather than, as currently advised, further doses of rabies vaccine being given at three to five year intervals with the potential for hypersensitivity to occur.

9. JCVI accepted the sub-committee’s advice on the dosage and route of administration of rabies vaccinations. However, whilst current Green Book advice for travellers regarding boosting should not remain, it would be preferable for individuals to have serological testing to establish a need for boosting, although if serological testing is not possible before travelling to areas considered to present a high risk then individuals should receive a booster vaccination. In addition, expert advice should be sought on boosting individuals who are partially vaccinated and are due to travel again to a rabies-enzootic area. JCVI asked the secretariat to revise the rabies Green Book chapter.

**ACTION:** Secretariat to redraft the rabies chapter of the Green Book and circulate to the committee and travel sub-committee for further comment.

**Vial sharing**

10. JCVI considered a paper on sharing vials of vaccine between individuals. As some products are licensed for multi-dose administration from the same vial, the committee agreed that the Green Book should contain a section in chapter four providing guidance on infection control and good practice in use of multi-dose vials. However, as multiple use of single dose vials is not licensed, advice on this use should not be included.

**ACTION:** Secretariat to draft a section on good practice for use of multi-dose vials in chapter four of the Green Book and circulate to the committee for comment.

**V. Coverage of childhood vaccinations and measles seroepidemiology**

**Coverage**


12. England reported coverage of 93 per cent for the primary immunisations (DTaP/IPV/Hib, PCV2 and MenC). Data on coverage from the MMR sentinel surveillance scheme suggests that a continued increase in coverage for England should be expected in the coming months. In England, improvement in coverage correlated with the introduction of the Vital Signs programme that had included an indicator on immunisation.


13. The committee noted the lack of coverage data on the teenage booster (Td/IPV). Whilst data were collected on Td/IPV doses given, data on coverage would be
valuable and collection of these data should be considered by the adolescent sub-committee.

14. Wales reported that long-term trends in the infant immunisation programme continue with two-thirds of local authority areas reporting coverage of over 95 per cent. However, MMR1 and Hib/MenC coverage had decreased; this is unexplained but may have been a result of the impact of the swine flu programme last year. 

15. Scotland reported high levels of vaccine coverage (96-98 per cent) for primary immunisations (DTaP/IPV/Hib) and MMR1 at five years was over 95 per cent. 

16. Northern Ireland reported high levels of vaccine coverage with uptake of all primary immunisations at 12 months at 97 per cent. At 24 months coverage of DTaP/IPV/Hib is at an all time high of 99.0 per cent. By five years, MMR coverage is 97.1 per cent and MMR2 at 92.2 per cent. 
http://www.cdscni.org.uk/surveillance/Coveragestats/default.asp

17. The committee noted the improving coverage in vaccinations was encouraging especially in relation to the first and second doses of MMR.

Measles seroepidemiology

18. JCVI was presented with an updated paper on measles seroepidemiology in England. The analysis suggested that susceptibility to measles is lower than that suggested by vaccine coverage data. In addition, there did not appear to be correlation in the data on susceptibility by age or geographical region and recent measles outbreaks.

19. The committee noted that the sensitivity of the measles immunity assay used was 150IU/ml rather than 120IU/ml (the recognised correlate of protection) therefore some test results from samples may incorrectly indicate susceptibility. In addition, as samples had been collected at different times but the results had been pooled, the results may not be closely representative of susceptibility currently. In addition, many samples had been collected before the MMR catchup campaign and therefore the results would not reflect the increase coverage from that campaign.

VI. Immunisations at 12 and 13 months of age

20. The committee considered combination of Hib/MenC, PCV and MMR vaccinations at a single visit at 12 months of age in the routine childhood immunisation schedule. The committee had considered previously that, based on evidence on the immunogenicity and safety, the three vaccines could be given at one visit. However, attitudinal research should be conducted on parents’ views before making any formal modification to the schedule.
21. The committee noted that the results of new attitudinal research indicated that simplification of the schedule would be accepted by parents. Whilst it is unclear what impact simplification would have on uptake, it might be expected to increase uptake as parents would not need to return for a further visit reducing ‘drop out’. Whilst some PCTs have already started to schedule all three vaccines in one visit, assessing the possible impact on uptake in these PCTs would be difficult and it may take time for sufficient data to accumulate to be informative.

22. The committee concluded that Hib/MenC, PCV13 and MMR should be offered at one visit at, or soon after 12 months of age. These vaccinations should not be given earlier than 12 months of age because there is a lack of evidence about the immunogenicity of these primary or booster vaccinations when given earlier than 12 months. It was important that information systems could correctly schedule and record these vaccinations given at 12 months of age. Ideally, the vaccinations should be given in separate limbs. Should some parents decline three vaccinations at one visit, it would be preferable if MMR and PCV13 were given first followed by Hib/MenC at a further visit.

VII. Poultry worker influenza immunisation programme
23. The committee was asked to provide advice on the continuation of the annual influenza vaccination programme for poultry workers. This programme was introduced in the 2006/7 influenza season and has been in place in subsequent influenza seasons, including the current season. The programme was set up to mitigate against the theoretical risk of poultry workers being co-infected with seasonal influenza virus and H5N1 avian influenza virus which could lead to reassortment into a H5N1 strain that could be transmitted between humans.

24. The committee noted that implementation of the annual influenza vaccination programme for poultry workers had proved difficult and vaccine uptake by poultry workers was low. Furthermore, avian influenza had occurred infrequently in wild and domestic birds in recent years in the UK and Europe and thus the risk of reassortment events in poultry workers was very low. There has been no confirmed H5N1 human-to-human transmission in the EU. Should an avian influenza outbreak occur in a domestic poultry flock during the influenza season, poultry workers would be offered seasonal influenza vaccine as part of outbreak control measures.

25. In view of the above, the committee advised that there is currently no benefit in continuing the routine influenza vaccination of poultry workers beyond the current 2010/11 season. Given that the recommendation to introduce the routine vaccination of poultry workers was provided by the Advisory Committee on Dangerous Pathogens (ACDP), advice from JCVI would be passed to ACDP for consideration.

**ACTION:** The secretariat to draft a letter for the Chair to the ACDP on the committee’s advice on influenza vaccination for poultry workers.
VIII. Pre-pandemic influenza vaccine

26. The committee was asked to consider the use of a stockpile of pre-pandemic H5N1 influenza vaccine. The UK will shortly receive a stockpile of a licensed pre-pandemic influenza A H5N1 vaccine produced by GlaxoSmithKline. UK Health Departments are developing a vaccination programme to allow rapid utilisation of the stockpile and have asked for advice from JCVI. It is intended that the vaccination programme would sit in hibernation until activated depending on an assessment of the risk of an influenza A H5N1 pandemic arising.

27. The committee considered: (i) the circumstances under which the stockpile might be used (ii) the population subgroups that should be prioritised for vaccination, given the size of the stockpile, and (iii) research that might be conducted to assess rapidly the potential efficacy of the pre-pandemic vaccine against a pandemic influenza A H5N1 strain.

28. The committee agreed that evidence of widespread and sustained human-to-human transmission elsewhere of H5N1 influenza could be sufficient to trigger the implementation of a vaccination programme using the stockpile. In addition, should there be a signal of a possible influenza A H5N1 pandemic emerging from international surveillance, an expert group that would include JCVI representation would be convened to provide advice about the risk of an influenza H5N1 pandemic and the appropriate UK response.

29. The committee considered an analysis of potential target groups for pre-pandemic vaccination based on modelling of influenza transmission, which assumed a two dose schedule and that the vaccine may be given to children (although the vaccine is currently not licensed for individuals under 18 years of age). Following a review of the modelling, the committee asked that further work be conducted to assess the impact of a prime-boost strategy involving administration of one dose of pre-pandemic vaccine early in a pandemic followed by one dose of pandemic-specific vaccine later. This would allow the stockpile to be used in a greater number of people. For the purposes of the further modelling, a pandemic might best be assumed to have a severity similar to the 1918 pandemic but with the pandemic shape of the 1957 pandemic. The time between first and second waves of influenza and the time between pre-pandemic and pandemic-specific vaccination could be varied. The modelling should also include the impact of vaccination on the severity of disease. It was accepted that it was difficult to model the effect of vaccinating healthcare workers on transmission between them and their patients. A wider range of risk of disease for those in clinical risk groups should also be modelled. Given vaccine coverage may be uncertain in different target groups, a range of uptakes of vaccine should be modelled. It would be useful to consult the manufacturer on whether a change to the license may be sought to widen use of the vaccine to those below 18 years of age.
**ACTION:** DH Health Protection Analytical Team to revise the analysis of target
groups to address the committee’s comments, preferably for consideration at the
next JCVI meeting in February 2011.

30. The committee concluded that, until the new analysis was completed and assessed,
the vaccine should be offered first to those in the seasonal influenza clinical risk
groups within the conditions of the license.

31. The committee noted that it would be difficult to assess rapidly the extent of
protection conferred by the pre-pandemic vaccine in the early stages of a pandemic.
Serological studies to assess the reactivity of the antibodies produced by the
vaccine to the pandemic influenza strain would provide data most quickly. However,
cohort studies and animal studies would provide valuable data later. HPA was
planning to evaluate the predictive potential of ferret studies by comparing data on
the protection provided by H1N1 vaccines in ferrets and humans.

**IX. Routine influenza vaccination of pregnant women**

32. The committee was asked to consider the routine vaccination of pregnant women
against seasonal influenza. Previously, pregnant women in the seasonal influenza
clinical risk groups have been offered routinely the trivalent seasonal influenza
vaccine as part of the annual seasonal influenza vaccination programme whilst
pregnant women not in the clinical risk groups have not. During the 2009/10 H1N1v
influenza pandemic, all pregnant women were offered the monovalent H1N1v
vaccine and for the 2010/11 flu season, pregnant women have been included, as
pregnancy is a risk factor for complications from H1N1v.

33. JCVI considered the pre-publication findings of a study by the HPA (Jit et al)\(^1\) on the
cost effectiveness of seasonal influenza vaccination of pregnant women, a recently
published study by Eick et al\(^2\) showing passive protection to infants of mothers
vaccinated against influenza and a review of the safety of influenza vaccines given
during pregnancy\(^3\).

34. The committee noted that the cost effectiveness analysis had assumed there is
reasonable matching between the vaccine-containing and circulating influenza
strains but that vaccination provided protection for only one influenza season. The
timing of vaccination and seasonality of influenza had been taken into account in the
model. The analysis indicated that the cost effectiveness estimate for influenza
vaccination of pregnant women in the second and third trimester was below but
close to £30k / QALY if it was assumed that infants receive some passive protection.
However, there is increasing evidence that influenza vaccination during pregnancy
provides passive immunity to infants in the first months of life. The confidence

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\(^1\) Jit M, Cromer D, Baguelin M, Stowe J, Andrews N, Miller E: The cost-effectiveness of vaccinating
pregnant women against seasonal influenza in England and Wales (In press)

4.

interval around the cost effectiveness estimate was wide, reflecting uncertainties in a number of parameters, particularly the cost to the NHS of influenza episodes in pregnant women and infants. In addition, the health benefits from influenza-related GP consultations are uncertain as quality of life data are limited.

35. The committee noted that the estimate was at the margins of cost effectiveness and that uncertainties in the estimate are large. Nevertheless, there are clear health gains to pregnant women from influenza vaccination as pregnancy is an established risk factor for complications from influenza, particularly from the H1N1v strain that may continue to be a major circulating strain. Other clinical risk groups are offered seasonal influenza vaccines based on clinical judgement rather than an assessment of cost effectiveness. Furthermore, there is now good evidence for a health benefit to infants in the first few months of their life as a result of passive immunity passed to them from their mothers. This could provide some protection to infants in clinical risk groups who cannot receive influenza vaccine before they are six months of age. There is good evidence that the vaccine can be given safely to pregnant women. Offering influenza vaccine routinely to all pregnant women could lead to increased uptake of the vaccine by pregnant women with additional risk factors who may be avoiding vaccination because of their pregnancy. Given these benefits, the committee advised that pregnant women should be vaccinated routinely against seasonal influenza.

X. Code of practice for Scientific Advisory Committees

36. The committee considered a consultation by the Government Chief Scientific Advisor on a draft revised Code of Practice for scientific advisory committees (CoPSAC). The committee noted that, given the breadth of advice required by the Government, the guidance in the code of practice was necessarily broad in scope but the JCVI Code of Practice is consistent with the guidance. It was suggested that section 52 of CoPSAC suggesting that ‘Scientific advisory committees should have in place systematic mechanisms for identifying the available research in a given area’ should be broadened to include the need for systematic mechanisms to assess the quality of the research identified.

ACTION: Secretariat to provide a response to the CoPSAC consultation on behalf of the committee.

XI. Polio

37. The committee was provided with a note on the wild-type polio outbreak within the WHO European region in Tajikistan and other areas. The committee noted that, in Tajikistan, multiple rounds of polio vaccination had been completed and fewer cases were now being reported. However, within the European region, there is still an ongoing vulnerability to polio outbreaks in places where coverage may be low and where there are travel connections to parts of the world where polio is still endemic.

38. The secretariat noted that it will provide JCVI with a paper for its February meeting that will ask the committee for advice on the use of polio vaccines in UK outbreaks.
**ACTION:** Secretariat to provide paper for the February meeting on the use of polio vaccines for outbreaks.

**XII. Dates of future meetings**
Wednesday 2 February 2011
Wednesday 8 June 2011
Wednesday 5 October 2011

The JCVI agenda and meeting papers are published on the meetings area of the JCVI website [http://www.dh.gov.uk/ab/jcvi/index.htm](http://www.dh.gov.uk/ab/jcvi/index.htm)
Annex 1

Declarations of interest

Agenda Item IV
The following members declared interests in companies that manufacture rabies vaccines (Sanofi-Pasteur MSD and Novartis):

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<thead>
<tr>
<th>Member</th>
<th>Interests</th>
<th>Action</th>
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<td>Judith Breuer</td>
<td>Non-personal, non-specific Sanofi-Pasteur MSD</td>
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<td>Jon Friedland</td>
<td>Non-personal, non-specific Pfizer</td>
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<td>Non-personal, non-specific Sanofi-Pasteur MSD</td>
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**Agenda Item VII, VIII, IX**

The following members declared interests in companies that manufacture seasonal and pandemic influenza vaccines (Baxter, GSK, MASTA, Novartis, Pfizer, Sanofi-Pasteur MSD, Solvay):

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<th>Member</th>
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<td>Ray Borrow</td>
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