

## **JOINT COMMITTEE ON VACCINATION AND IMMUNISATION**

**Minute of the meeting on 3 June 2015**

**110 Rochester Row, Victoria, London**

### **Members**

Prof Andrew Pollard (Chair)  
Dr Andrew Riordan (Deputy Chair)  
Prof Anthony Harnden (Deputy Chair)  
Dr Peter Baxter  
Prof Judith Breuer  
Dr Peter Elton  
Prof Adam Finn

Prof Matt Keeling  
Dr Fiona Van der Klis  
Ms Alison Lawrence  
Mrs Anne McGowan  
Prof Anthony Scott  
Prof Claire-Anne Siegrist  
Dr Maggie Wearmouth

### **Invited contributors**

Prof Ray Borrow (PHE)  
Dr Philippe Duclos (WHO)

### **Medical advisors**

Prof John Watson (DH)  
Ms Helen Bedford (UCL)

### **Invited observers from Devolved Administrations and MHRA**

Dr Elizabeth Reaney (DHSSNI)  
Dr Andrew Riley (Welsh Assembly)  
David Vardy (Welsh Assembly)

Dr Phil Bryan (MHRA)  
Nicola Kerr (Scottish Govt)

### **Observers and presenters**

Dr Claire Cameron (HPS)  
Dr Richard Roberts (HPW)  
Dr Richard Smithson (PHA)  
Dr Sandra Anglin (NHS England)  
Ms Ruth Howlett-Shipley (MoD)  
Elaine Burgess (Guernsey)  
Dr Dipti Patel (NathNac)  
Dr Ian Feavers (NIBSC)  
Dr Darina O'Flanagan (Eire)  
Ms Joanne White (PHE)  
Dr Shamez Ladhani (PHE)  
Dr Caroline Trotter (PHE)

Dr Gayatri Amirthalingam (PHE)  
Carolyn Heaney (DH)  
Michelle Parkinson (DH)  
Dr Peter Grove (DH)  
Dr Sema Mandal (PHE)  
Joanne Yarwood (PHE)  
Dr Kishore Parmeswaran (Isle of Man)  
Dr Laura Yates (UKTIS)  
Dr Linda Diggle (Jersey)  
Dr Karen Powell (PHE)  
Louise Henaff  
Alex Adjagba

### **Secretariat**

Dr Mary Ramsay  
Mr Andrew Earnshaw  
Mrs Emma Burton-Graham

Mr Jonathan Crofts  
Dr Karen Homer

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## **Welcome**

1. The Chair welcomed all to the meeting. Apologies were received from Chris Liffen. The chair welcomed Dr Philippe Duclos, Senior Health Adviser for Immunisation, Vaccines and Biologicals at the World Health Organisations and Louise Henaff and Alex Adjagba from the Agence de Médecine Préventive, NITAG Resource Centre.

## **I. Horizon Scanning**

2. The Committee welcomed the information that had been provided in confidence by organisations involved in the development of vaccines and noted the timings and possible availability of new vaccines.
3. The Committee indicated that they would have welcomed information on the development of vaccines for Clostridium difficile and group A and B Streptococcal infections and asked the Secretariat to attempt to find out more about possible vaccines in development against these infectious agents.
4. The Committee discussed the potential for future new population based vaccine programmes that might be of public health importance in the UK and affirmed the view expressed in 2014 that the committee was especially interested in information on vaccines for Group B Streptococcus and RSV.

**Action: Secretariat to approach industry for information regarding Clostridium difficile and group A and B Streptococcal vaccines.**

## **II. Minute of the February 2015 meeting**

5. The Committee agreed the minute of the February 2015 meeting was an accurate reflection of the discussion and the minute was approved without change

## **III. Matters Arising**

6. The Chair reminded the Committee that the chair of the JCVI Travel subcommittee, Dr Peter Baxter, had been asked to collate thoughts on the proposal for NaTHNaC to take over consideration of matters relating to travel vaccination in place of the JCVI Travel sub-committee. Following discussions with NaTHNaC and representatives from the devolved administrations, it has been agreed that NaTHNaC and TRAVAX (the Scottish organisation providing travel advice) would provide secretariat support to the JCVI Travel sub-

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committee, however the sub-committee would report as usual to the main JCVI committee.

7. The subcommittee chair agreed that his committee would consider meeting in 2016 to consider various issues that had been raised recently related to travel vaccines.
8. The Committee noted that the Secretariat had been asked to amend the draft rules of engagement with industry in line with the discussion held at the meeting, with input from a specified member. A revised draft had been developed and would be published on-line shortly.
9. The Secretariat had been asked to put in place the processes to recruit a Screening and Immunisation lead, or equivalent from each of the four devolved nations onto the JCVI as co-opted members. It was noted that suitable candidates had been identified in England and similar processes were being put in place in Scotland, Wales and Northern Ireland. It was hoped that people would be in post by the October 2015 JCVI meeting.
10. Members had been asked to review the JCVI Five Year Forward Look and submit comments to the Secretariat. It was agreed that a shorter version of the JCVI Forward Look would be published on-line which would provide details of the diseases which would be considered by the JCVI at future meetings.
11. The Committee noted that the cost-effectiveness working group which was formed of a main committee and three sub-committees, was considering a wide range of issues around cost effectiveness. The working group was hoping to report to the Department of Health (DH) and the JCVI before the end of the year and the Chair suggested that Prof John Cairns, the chair of the working group be invited to present to the JCVI. The cost-effectiveness working group had agreed to consider procedures and criteria for the assessment of the cost-effectiveness of programmes where discontinuation was being considered and will provide advice on this in its report later this year.

**Action: Secretariat to invite Prof John Cairns to present the findings of the Cost-effectiveness Working Group to JCVI at an appropriate future meeting**

12. The Committee noted that the Influenza Green Book chapter had been updated, as requested, in collaboration with Dr Paul Turner and Mr Michael Erlewyn-Lajeunesse, to take into account the full findings of the SNIFFLE and SNIFFLE 2 studies as requested by the Committee.

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13. Members noted that work was still on-going to collate evidence on the need for booster doses of anthrax vaccine in order to elicit long term protection in low/moderate risk (non-military) settings and evidence of infection occurring in primed individuals, or not following exposure.
14. The Chair provided a brief overview of the work of the JCVI sub-Committees between June and October 2015 noting that:
  - revisions to the modelling of the MSM HPV vaccination had been completed and would be considered by the HPV sub-committee in June 2015,
  - the HPV sub-Committee would also be starting to consider the 9-valent vaccine and an adolescent male's vaccination programme at that time,
  - the Pneumococcal sub-Committee would also be meeting in June 2015 and it was anticipated that the sub-Committee would report back to the JCVI in October 2015, including on discussions regarding routine adult pneumococcal vaccination programmes and targeted programmes for high risk groups,
  - the varicella sub-Committee would meet for the first time in June 2015 and begin a review of the use of varicella vaccine in children, adolescents and vulnerable groups, and
  - a Norovirus working group would be held in the Autumn to identify potential vaccination strategies and data gaps required for modelling.
15. Members were asked to indicate interest in joining the Norovirus Working Group to the Secretariat.

**Action: Members to indicate interest in joining to the Norovirus Working Group to the group Secretariat.**

#### **IV. Presentation from WHO**

16. Dr Philippe Duclos, Senior Health Adviser for Immunisation, Vaccines and Biologicals at the World Health Organization provided a presentation to the Committee on National Immunization Technical Advisory Groups (NITAGs), a global perspective and contribution of the UK. The Committee noted that:
  - the Strategic Advisory Group of Experts (SAGE) on immunization is the principle advisory group to the World Health Organisation (WHO) on matters pertaining to immunisation,
  - SAGE recommendations themselves are not given a formal rating but recommendations are formed using the GRADE-DECIDE (Grading of Recommendations Assessment, Development and Evaluation Developing

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and Evaluating Communication Strategies to Support Informed Decisions and Practice Based on Evidence) process for the review of evidence.

- this process considers benefits and harms, resource use and value for money, equity, and feasibility, with the potential for differential recommendations for endemic countries and travellers,
- NITAGs are considered by WHO to be ‘technical deliberative bodies to guide/enable policy makers and to make evidence-based immunisation related policy decisions’,
- WHO recommends that NITAGs should aim to have a formal written terms of reference, a legislative or administrative basis underpinning the committee, a core membership with at least 5 main expertise areas represented, meet at least once a year, distribute agendas and background materials ahead of meetings, and record the declaration of interests of its members.
- based on provisional data, by end of 2014 59% of countries report the existence of a NITAG with an administrative or legislative basis and 43% of countries report the existence of a NITAG complying with a minimum set of basic process indicators,
- collaboration between NITAGs are important in strengthening the capability each NITAG,
- the NITAG Resource Centre has been set up to support NITAGs in the capacity to develop evidence informed decisions, and
- the JCVI is considered a front runner amongst NITAGs worldwide, and a role-model for other NITAGs.

17. The JCVI acknowledged the information provided and expressed an interest in both taking part in the development work of the NITAG Resource Centre and in supporting other countries in the establishment of a NITAG. The Committee also indicated the importance of collaboration between NITAGs, particularly with regards to evidence synthesis and development of systematic reviews, especially to prevent duplication of effort amongst NITAGs.
18. Members expressed a willingness to attend meetings of other NITAGs, and were open to allowing members of other NITAGs, and their administrative support to attend and observe future JCVI meetings. There was additionally an expression of interest in facilitation of meetings between NITAG chairs. It was agreed that the Secretariat would appoint a designated contact for communications with the NITAG Resource Centre, and staff at the NITAG Resource Centre and the head of the WHO immunisation team were extended an open invitation to attend future JCVI meetings.

**Action: Secretariat to appoint a designated contact with the NITAG Resource Centre and add WHO and NITAG resource centre to the invitations list.**

## **V. Meningococcal Disease**

### Meningococcal Epidemiology

19. The Committee noted data from PHE indicating the increase in meningococcal group W (MenW) disease observed since 2009 in England had continued into 2015. Between 1 June 2014 and 30 April 2015, 155 confirmed cases of MenW disease had been reported, with the increase in disease most marked in older adults, but with an increase also seen in adolescents and infants. MenW disease now accounted for 15% of invasive meningococcal disease (IMD) in those less than 5 years of age, and 34% in those aged 15-19 years. The committee noted that the increase in invasive MenW disease seen was almost all attributable to MenW:2a, a surrogate for MenW clonal complex 11 (cc11). Cases due to MenW:cc11 had also been seen in Wales and Northern Ireland, although no European country outside of the United Kingdom had reported an increase in MenW disease.

### Use of Bexsero® in response to an increase in MenB disease in Quebec

20. The Committee received a presentation from Professor Philippe de Wals on the use of Bexsero® as a regional Intervention in Québec and noted that:
- vaccination with Bexsero® is recommended by the Canadian National Advisory Committee on Immunization (NACI) during outbreaks of invasive meningococcal disease and where the meningococcal strain is predicted to be susceptible to Bexsero® based on MATS testing;
  - in April 2014 the Quebec Immunization Committee recommended immunisation of persons less than 20 years of age living in the Saguenay-Lac-Saint-Jean region to control a persistent MenB 'hyper-endemic' situation;
  - in the target population of 57,000 individuals, 82% received one dose of Bexsero® and 70 % received two doses;
  - prophylactic use of paracetamol was advised for all those vaccinated and uptake of this was high in infants and young children (approximately 90%) but lower in adolescents and teenagers and young adults (approximately 50%),
  - active surveillance of adverse reactions was undertaken, with 9% reporting fever within two days of vaccination after the first dose and 11% after the second dose.
  - prophylactic paracetamol had a significant impact on fever rate in infants and young children reducing fever rates by approximately 50% compared to those who did not receive paracetamol.;
  - in the passive surveillance system 56 cases of vaccine related adverse events were reported following the first dose;
  - 46 % were allergic-type reactions, 30 % were fever and 19 % a local reaction;

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- overall one case of arthralgia and two cases of febrile convulsion were reported following the first dose, with no sequelae;
  - to date no cases of meningococcal disease had been reported in those vaccinated
21. The Committee agreed with the findings of the presentation that the information was reassuring with regards to the safety profile of Bexsero®, and supported the Committee's advice that paracetamol be prophylactically administered where Bexsero® is provided concomitantly with other vaccines in infants.

#### Implementation of JCVI advice on MenACWY vaccination in adolescence

22. The Committee noted that at the February 2015 meeting, in light of the continuing rise of invasive MenW cases in England, they had advised that a programme to vaccinate all adolescents aged 14-18 years of age (school years 10-13 in England) with MenACWY conjugate vaccine be undertaken as soon as practicable, in order to generate herd protection against MenW for the rest of the population, including infants. It had also been agreed that all university freshers up to the age of 25 would also be receiving the MenACWY vaccine.
23. The Committee noted information from PHE that a programme to vaccinate all adolescents in school years 10-13 (England) would be undertaken between summer 2015 and summer 2017, starting with the vaccination of year 13 students through primary care, and replacement of the routine adolescent MenC dose provided through schools with Men ACWY vaccine. Whilst vaccination of all those eligible in as short a period as possible was considered ideal, the committee agreed that constraints on capacity in the system, vaccine supply and funding meant that this would take time, and acknowledged the significant amount of work undertaken to implement such a large programme within such a short period of time.

#### Revisions to the meningococcal chapter of the Green Book: Immunisation Against Infectious Disease

24. The Committee noted and agreed revisions to the routine and unknown immunisation status sections of the Meningococcal Chapter of the Green Book, with respect to the introduction of Bexsero® into the routine childhood schedule. It was further noted that operational information would be provided to those providing immunisations in a letter from Public Health England and NHS England in due course.

#### Removal of the infant dose of MenC vaccine

25. The Committee noted that it had formed by correspondence a position on removal of the infant (3 month) MenC dose from the routine schedule following



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introduction of Bexsero®. The position: Removal of the MenC infant dose is contingent on the introduction of Bexsero into the infant programme; and in the context of the successful implementation of the MenC programme and plans for an ACWY catch-up, the removal of the infant MenC could be undertaken from the time that Bexsero® is introduced; was formally agreed by the Committee.

26. The Committee noted a paper from PHE on operational considerations of this position, in particular the advantages and disadvantages of stopping the infant MenC vaccine immediately after Bexsero® was introduced, or at a fixed time point after introduction.

27. The Committee noted that

- there are almost no cases of invasive MenC disease in infants or young children in the UK,
- most invasive MenC disease is seen in over 25s with a history of travel outside of the UK or coming to the UK from abroad,
- Bexsero® would likely provide a degree of protection against invasive MenC disease, dependent on whether the vaccine provided protection against circulating strains
- vaccination of adolescents with MenC conjugate (or MenACWY) vaccines which began in the 2013/14 academic year should provide good herd protection to infants, although this might not be fully realised until completion of the MenACWY catch-up in 2017,
- with the current level of herd protection, there is a very small risk that removal of the infant MenC dose at this time could increase the risk of exposure to MenC amongst infants in the short term (during implementation of MenACYW catch up),
- the Netherlands and Switzerland had good control of MenC disease in infancy through herd protection and not through use of MenC conjugate vaccines in infancy,

28. On consideration of the information provided, the Committee agreed that its position remained that removal of the MenC infant dose was contingent on the introduction of Bexsero into the infant programme, the successful implementation of the adolescent MenC programme and plans for an adolescent MenACWY catch-up. These conditions would start to be fulfilled from September 2015 and the infant MenC dose could be removed from the schedule at an appropriate point after that date.

29. Removal of the infant MenC dose alongside the introduction of Bexsero® into the routine immunisation programme would not have any significant risk

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associated with it, assuming that herd protection would be sustained over the next two years by the MenACWY catch-up programme.

30. The Committee agreed that, if this was a new programme under consideration, they would not be able to sanction the introduction of an infant MenC programme at this time given the minimal impact it would likely have on invasive MenC disease incidence in infants. Continuation of the current programme while stocks were available and provision of the vaccine was cost-neutral, however, might prevent some cases of serious disease, and was therefore preferable to an immediate discontinuation in September 2015.
31. The Committee concluded that whilst it might be preferable to continue infant MenC vaccination until herd protection from the MenACWY catch-up campaign had solidified, given the limited number of infant MenC cases prevented by continuing the infant MenC vaccine dose, the decision on the timing of removal of the infant MenC dose should be made primarily from an operational, rather than scientific viewpoint.

#### Meningococcal carriage study

32. The Committee noted that following JCVI's deliberations on the potential impact of introducing Bexsero® in adolescents on meningococcal carriage (and associated herd protection), PHE had made a proposal to investigate existing datasets which would allow design of future studies to investigate the impact of meningococcal B vaccination on carriage. As part of this work, PHE had also considered the potential for examination of existing studies, stored samples and longitudinal studies on carriage and carriage density.
33. The Committee agreed that the data from the work PHE were undertaking should assist in the design of a new carriage study to evaluate the impact of an adolescent programme and were keen for this to be undertaken as soon as possible, because of the potential for this to have a greater health benefit than an infant-only programme.

#### Parents' attitudes to MenB vaccination

34. The Committee received a presentation from researchers at UCL on parental attitudes to the use of Bexsero® in the routine immunisation schedule. The study aimed to explore existing knowledge and attitudes of parents of young children and to survey the views of health professionals about aspects of the introduction of Bexsero®.
35. The Committee noted that:
  - there were 12 focus groups and 7 interviews with 60 parents (children <2 years) in Yorkshire and London,

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- 133 (response rate 74%) health professionals completed a short questionnaire,
  - Parents were generally positive about immunisation and understood its importance and trusted the NHS,
  - concerns were raised about what impact vaccination would have on the immune system and potential side effects,
  - first-time mothers in particular find the immunisation event upsetting,
  - 61% of health professionals thought the increase of injections at 2, 4 and 12 months would be very acceptable or acceptable to parents,
  - 75% of health professionals thought the increase of injections at 2, 4 and 12 months would be very acceptable or acceptable to health professionals,
  - Parents felt that providing one sachet of paracetamol of the wrong size requiring half of the contents to be thrown away was risky and wasteful,
  - 50% of health professionals the provision of paracetamol sachets was not at all practical
  - most parents want information about MenB vaccine and associated fever prior to the appointment
36. The Committee welcomed the findings, and agreed that proper communication with both parents and health professionals was vital in ensuring effective implementation of the introduction of Bexsero® into the routine schedule. The Committee agreed that post implementation attitudinal work would also be very useful and appreciated the considerable amount of work being undertaken by PHE in this regard.

## **VI. Pneumococcal Disease**

37. The Chair agreed with the Committee that consideration of the findings of the Pneumococcal Sub-committee would be undertaken at the October meeting of the JCVI.

## **VII. 2014/15 Influenza Season Review**

38. Public Health England (PHE) provided the Committee with an overview of the 2014/15 influenza season.

### **Burden**

39. The Committee noted that the 2014/15 season was initially and largely dominated by influenza AH3N2 with laboratory detections peaking around Christmas and most of the clinical burden seen in the elderly. Later in the season from February there was an increase in influenza B as AH3N2 detections declined. In England reports of influenza like illness from the RCGP surveillance

scheme showed the season had long periods above the pre-epidemic threshold but lacked intensity and could be described as a moderate season. Of samples referred and genetically typed only 25% were similar to the vaccine strain haemagglutinin (HA). Over 90% of the Flu B isolates antigenically typed also showed reduced antigenicity to the B/Yamagata strain used for the vaccine.

40. Most flu hospitalizations were due to AH3N2 and the rate of hospitalization was higher than recorded in the last few seasons but not as high as that during the first post pandemic season 2010/11. A similar picture was observed for intensive care admissions. Excess all-cause mortality was above expected levels for several weeks from week 49 and the cumulative total was the most estimated since before 2008/09 which was the last major AH3N2 season. Most of the excess mortality occurred in the elderly and the vast majority was estimated to be due to flu and not the winter weather, which was relatively mild.

#### Vaccine uptake

41. Uptake of flu vaccination for groups that received the inactivated influenza vaccine (IIV) was similar to last year in the UK with the rate in England for the over 65 year olds at 73.2%, at risk groups less than 65 years old at 50% and pregnant women at 44% (compared to 40% in 2013/14). Uptake among healthcare workers was similar to 2013/14 at 55%. Within the clinical risk groups there was a wide variation by specific condition and age with lower uptake rates in younger ages. Despite uptake remaining relatively stable the number of doses administered had increased year on year due to an aging population with an additional 100,000 doses administered in those over 65 year of age.
42. Uptake for the childhood vaccination programme in England in what was the second year of the rollout of the programme was around 40% in 2 and 3 year olds and 33% in 4 year olds but with wide geographic variation. London had the lowest levels of uptake but also had wide variation by GP practice. Uptake was higher for younger ages and statistically significant lower uptake rates were recorded for children in more deprived areas and Black and Minority Ethnic groups. In the areas with school age pilots (mostly primary schools but some secondary schools) the overall uptake was similar to last year at 53%. School based delivery achieved higher uptake compared to programmes using pharmacies or GPs to vaccinate school age children.

#### Vaccine effectiveness

43. Mid-season estimates of vaccine effectiveness (VE) showed a lower than hoped for effectiveness which was partly due to small numbers and lower statistical power but also because of vaccine drifted strains in circulation. A similar picture

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was also observed in the USA and Canada. End of season estimates, however, showed an improvement with a low but statistically significant overall VE against all flu types and VE by type of flu was higher for flu B than flu A.

44. Comparison of the impact of vaccination in school age pilot areas with non-pilot areas showed lower rates for a range of indicators.
45. Scotland and Northern Ireland, which vaccinated all primary school aged children achieved high uptake rates, and experienced a shorter period of flu activity above the threshold level compared to England, which only had pilots, and Wales which did not vaccinate in primary schools.
46. Scotland experienced a similar moderate flu season to England with AH3N2 dominating and drifted Flu AH3 and B Yamagata strains. Overall VE estimates were also low.

#### Comments on the season

47. The Committee was encouraged by the evidence emerging from the UK childhood influenza programmes which indicated that LAIV appeared to offer protection with some herd protection in primary school pilots in England, despite moderate levels of uptake.
48. The Committee noted with concern that egg adaptation of the strains used in the vaccines was thought to be impacting on the effectiveness of influenza vaccines. According to PHE there had been a steady reduction in effectiveness against AH3N2 viruses. The Committee asked for more information on this issue for consideration at a future meeting. The Committee requested that the Department of Health contact flu vaccine manufacturers to find out what steps are being taken to deal with this issue.

**Action: Secretariat to gather information on egg adaptation and how this could be impacting on the effectiveness of influenza vaccines**

**Action: Department of Health to consider contacting influenza vaccine manufacturers regarding egg adaptation and effectiveness**

#### Implementation

49. The Committee received an update from PHE and NHS England on the implementation and commissioning assurances for the roll out of the childhood programme. The Committee noted that for the 2015/16 season the priority was the childhood programme. Immunisation teams would have to work harder to maintain the same level of uptake as more childhood cohorts were being added

and numbers would increase year-on-year. The focus remained on widening the roll out to all primary schools and to achieve an uptake between 40% and 60%.

50. The Committee noted that in 2014/15 LAIV arrived very close to the start of season and it would probably not arrive any earlier for the 2015/16 season, which would give GPs the opportunity to first concentrate on vaccinating the groups which receive the IIV and then switch their focus to children when the LAIV arrives. The Committee further noted that testing on the impact of advertising indicated it does not alter behaviour in getting vaccinated (uptake) but it did increase awareness. NHS England remains mandated to provide vaccination to children aged 2, 3 and 4 years next season and pilots would continue in primary schools but not in secondary schools. All areas would offer LAIV to children of school year 1 and 2 age (5-6 and 6-7 years old).
51. The Committee noted that NHS England had reorganised into 12 commissioning teams plus a London team. After 2 years of the childhood programme people were more familiar with the work, however, not all areas had experience of delivery in primary schools. The committee were concerned to hear that not all contracts had been issued for delivery in 2015/16 and some areas were struggling to find school based provision. Therefore it would be a mixed model of delivery mainly through schools but also through GPs and pharmacies. Given the excellent performance of schools programmes, the committee hoped that this situation would be addressed. NHS England indicated it was confident of meeting the delivery target.
52. The Committee noted a statement in February 2015 by the Advisory Committee on Immunization Practices (ACIP) which rescinded its preference for LAIV over IIV for Children aged 2 to 8 years old. The Committee noted that the reason for doing so was based on new data from the USA which did not support previous findings about the superior effectiveness of LAIV over IIV. The new VE data from the USA showed that in 2013/14 the LAIV showed no measurable effectiveness against the AH1N1 influenza virus while the IIV did. Interim data for 2014/15 showed that both LAIV and IIV were not effective against the H3N2 virus when it was expected that the LAIV would offer broader protection against drifted strains.
53. The Committee agreed that the evidence from the UK programme did not support the ACIP view and that LAIV remained the preferred vaccine for the UK childhood programme. The Committee noted that the manufacturer had conducted an investigation into the reason for no measurable effectiveness against H1N1 in 2013/14 in the USA and had attributed this to thermal instability of the H1N1 strain used in the vaccine at that time, which had now been rectified.

Modelling the impact of primary school vaccination and the incremental impact of vaccination in secondary school age children

54. The committee received an update from PHE on modelling work looking at three questions for the flu programme:

- 1 ) What would be the impact (in cost-effective terms) of increasing the coverage in high risk groups under 65 years old from 50% to 75% which is the level achieved for the over 65 year olds.
- 2) Should the childhood programme prioritise vaccination in primary or secondary schools and what is the optimal strategy?
- 3) Once the childhood programme is in place how will this affect the cost-effectiveness of the other components of the programme?

55. The Committee noted that under the assumption of 50% coverage for the childhood programme, increasing coverage to 75% in the at-risk under 65 year olds would still be very cost effective.

56. The Committee noted that modelling work by PHE also indicated that, compared to a baseline of no vaccination, vaccinating all children aged 2-16 and risk groups under 65 years of age was incrementally cost effective. Vaccinating the over 65 year olds was also incrementally cost effective, however the benefits were smaller and the results were more uncertain.

57. The Committee considered the results of modelling work and when looking at whether to prioritise vaccination in primary or secondary schools or in combination they noted that:

- the results showed that vaccinating alone in primary schools would interrupt transmission more and be much more efficient and cost-effective than vaccinating in secondary schools alone,
- the results were largely influenced by the contact matrix used in the model which showed children of primary school aged 4-10 have a higher number of contacts than those in secondary school,
- the model had some limitations including using only one season's influenza data and caveats around assumptions on the proportion susceptible for each age group, which seemed high in the elderly,
- there was also wide uncertainty around contact patterns for the age group stratifications used, and

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- more data including contact data was being collected to look at this and reduce some of the uncertainty.
58. The Committee agreed that due to the current limitations the modelling work was not sufficiently certain to be sure that vaccinating in primary school was the most efficient option. However, current understanding of the biology of influenza in early childhood and transmission of the virus made prioritisation of vaccination in primary schools the most favourable option. Alongside evidence from the pilots, it was agreed that it would make sense to build up capacity for vaccinating young children and those in primary schools, and to evaluate the impact of this, before deciding whether to pursue vaccination in secondary schools.
59. JCVI supported the view to consolidate roll out into primary schools first and then evaluate the programme before considering the potential incremental impact of vaccinating older children. JCVI agreed it would wish to see evidence from several years of a consolidated programme in primary schools, and therefore given the estimated timing of full rollout in primary schools across England, it would wish to review the data as part of its annual review of the childhood programme after the 2019/20 influenza season.
60. JCVI agreed that the other components of the programme would also be re-evaluated along with the childhood programme. JCVI agreed that it was important not to hold back on the childhood programme at the expense of increasing uptake in other groups and that the former should remain the priority. While the primary school programme is being implemented, JCVI were keen to see the level of protection maintained in the programme for the elderly and at risk groups.

#### JCVI advice on inactivated vaccine preference

61. The Committee noted a letter from GlaxoSmithKline (GSK) requesting: 'the JCVI consider its scientific stance regarding quadrivalent influenza vaccine (QIV) and reflect it in their annual communication to HCPs [healthcare professionals], in the annual flu letter for the 2015/16 influenza season and also in the Green Book, as the full value of QIV is currently not indicated in these publications'. The Committee noted that:
- in June 2013 JCVI had agreed that the QIV be prioritised for the children's programme for those who had contraindication for LAIV.
  - at the June 2014 JCVI meeting the Committee considered a dossier provided by GSK on the cost-effectiveness of QIV. After consideration of the data the



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Committee concluded that, all other factors being equal, QIV was preferable to trivalent inactivated influenza vaccine (TIV).

- JCVI advice was reflected in the Green Book which states: The quadrivalent inactivated influenza vaccine (Fluarix™ Tetra) is authorised for children aged three and four years and is preferred because of the additional protection offered; The quadrivalent vaccine has both influenza B strains and may be better matched and therefore may provide better protection against the circulating B strain(s) than trivalent inactivated influenza vaccines.

62. The Committee agreed that it had not changed its stance and that the current view was that all other factors being equal, QIV was preferable to trivalent inactivated influenza vaccine (TIV). However the Committee agreed to look at the wording in the Green Book and decide if this appropriately conveyed the Committee's view.

**Action: PHE to consider whether Committee's views were appropriately conveyed in the wording of the Green Book**

#### **VIII. Coverage**

63. The Committee was informed about the routine childhood vaccination coverage rates for the previous quarter for England, Scotland, Wales and Northern Ireland. These data were considered very positive. The Committee agreed to consider coverage at an earlier point at the October meeting, allowing more time for discussion.

#### **IX. AOB**

64. The Committee was advised that a number of press reports in the UK had cited concerns about the safety of the HPV vaccine. The Committee noted that in October 2014 they had considered evidence on vaccine safety as part of the annual review process and had no concerns about the safety profile of the HPV vaccine. The committee additionally noted that this issue would be considered by the HPV subcommittee, which routinely considers information on vaccine safety, at its upcoming June meeting.

### JCVI - Declarations of Interest – June 2015

<b>Prof Andrew Pollard (Chair)</b>
<p>Professor Pollard receives no personal payments from the manufacturers of vaccines</p> <p>Since taking up his role with JCVI he no longer takes on research grants from industry sources. Grants already set up prior to appointment were from Pfizer (epidemiological studies of meningitis in children and nasopharyngeal carriage of pneumococci, MenB vaccine study in adolescents) and Okairos (RSV vaccine), and these past projects will end in 2015 or have already done so.</p> <p>He is Director of the Oxford Vaccine Group in the Department of Paediatrics and has current research funding from the Wellcome Trust, The Bill and Melinda Gates Foundation, The Medical Research Council, the World Health Organisation, the National Institute for Health Research, the European Commission and the Global Alliance for Vaccines and Immunisation. He chairs the scientific advisory group on vaccines for the European Medicines Agency. Other investigators in the Department conduct research funded by vaccine manufacturers, currently GSK (RSV and Ebola vaccines), Novartis (MenB vaccine, study now ended), and the Department has received unrestricted educational grant funding from Novartis, GSK and Astra Zeneca.</p>
<b>Prof Anthony Harnden</b>
<p>Professor Harnden has no registered conflicts of interest.</p>
<b>Dr Andrew Riordan (Deputy Chair)</b>
<p>Dr Riordan receives no payments from the manufacturers of vaccines.</p> <p>Dr Riordan has contributed to the development of an e-learning package on bacterial meningitis (supported by Novartis) for which he received no remuneration.</p>
<b>Dr Peter Baxter</b>
<p>Dr Peter Baxter has no registered conflicts of interest</p>

<b>Prof Judith Breuer</b>
Professor Breuer has no registered conflicts of interest
<b>Dr Peter Elton</b>
Dr Peter Elton has no registered conflicts of interest
<b>Prof Adam Finn</b>
<p>Prof Finn receives no personal payments from the manufacturers of vaccines.</p> <p>He has undertaken consultancy/advisory work on behalf of the University of Bristol for Takeda (August 2014, Norovirus vaccine), GSK (October 2014, Rotavirus vaccine), SPMSD (October 2014, acellular pertussis containing vaccines).</p> <p>He was principal/chief investigator for a vaccine research study sponsored by Pfizer (meningococcal group B vaccine, until January 2015).</p> <p>All funding is paid to the University of Bristol and/or University Hospitals Bristol NHS Foundation Trust.</p>
<b>Prof Matt Keeling</b>
<p>Professor Matt Keeling has no registered conflicts of interest.</p> <p>His team at the University of Warwick undertakes modelling on the impact and cost-effectiveness of HPV vaccination in adolescents.</p>
<b>Dr Fiona Van der Klis</b>
Dr Fiona van der Klis has no registered conflicts of interest
<b>Ms Alison Lawrence</b>
Ms Alison Lawrence has no registered conflicts of interest
<b>Mr Chris Liffen</b>

Mr Chris Liffen has no registered conflicts of interest
<b>Mrs Anne McGowan</b>
<p>Anne McGowan has no registered conflicts of interest.</p> <p>Mrs McGowan's employer Public Health Wales develop educational materials with funding from Pfizer, Sanofi Pasteur MSD, Novartis, Astra Zeneca and Wyeth.</p>
<b>Prof Robert Read</b>
Professor Read has no registered conflicts of interest
<b>Prof Anthony Scott</b>
<p>Professor Scott receives no payments from the manufacturers of vaccines.</p> <p>Professor Scott is Director of the Vaccine Centre and the Director of the Health Protection Research Unit at the London school of Hygiene and Tropical Medicine, which receives funding from PATH for research into whole cell pneumococcal vaccines. Professor Scott is also a scientific advisor to PATH on whole cell pneumococcal vaccination.</p>
<b>Prof Claire-Anne Siegrist</b>
<p>Professor Siegrist receives no payments from the manufacturers of vaccines.</p> <p>Professor Siegrist is the Head of the Vaccinology and Immunology Unit at the University Hospitals of Geneva, which receives funding from Sanofi Pasteur MSD for research into vaccine adjuvants, and independently undertakes research into the use of Prevenar 13®</p>
<b>Dr Maggie Wearmouth</b>
Dr Wearmouth has no registered conflicts of interest