Evidence for the provision of three vaccines in one visit

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Centre for Disease Prevention and Control recommendations

Giving multiple vaccination at once is:

- Safe
- As effective giving in combination as singly
- Advantages
  - Giving vaccines as early as possible
  - Fewer vaccine visits which is less traumatic for the child
  - Saves time
  - Saves money
  - Maximises vaccine opportunity
  - Improved vaccination rates
  - Allows time for catch-up visits by freeing up resources that would have been used for the second visit

There is no upper limit for the number of vaccines administered during one visit

The majority of vaccines can be given at the same visit, with a few rare exceptions

PROTECT PREVENT IMMUNISE

Co-administration in Adolescents

Safety, immunogenicity and reactogenicity

- The co-administration of the MenACWY, Tdap and HPV vaccines have been studied and shown that these vaccines can be safely co-administered including in adolescents.
- In 2019, a review of 22 studies of Concomitant administration of MenB with MenACWY, Td or Tdap and HPV showed that:
  - *Immunogenicity* was not affected.
  - Local *reactogenicity* was increased but no definitive safety concerns were identified.
- Another review of 10 studies looking at co-administration of MenACWY with routine vaccines, did not affect safety or *reactogenicity*, supporting concomitant administration.

It is recommended, when giving several IM injections at a single visit, to separate IM injections by 2.5cm to reduce chance of local reactions

Cohorts where co-administration is well established

Cohorts

- Primary Childhood Immunisation
- School vaccinations
- Travel vaccination
- Routine adult vaccines
  - Co-administration of Covid-19 and Flu vaccines, during the Covid-19 pandemic
  - For those aged 65 years, flu, COVID-19 and PPV vaccines could be safely given together to maximise uptake
  - Increasing awareness of the safety of co-administration among healthcare workers, will likely lead to improved coverage for adult vaccination.
  - Increasing acceptability of concomitant vaccination over time and providers become more comfortable recommending concomitant vaccination.

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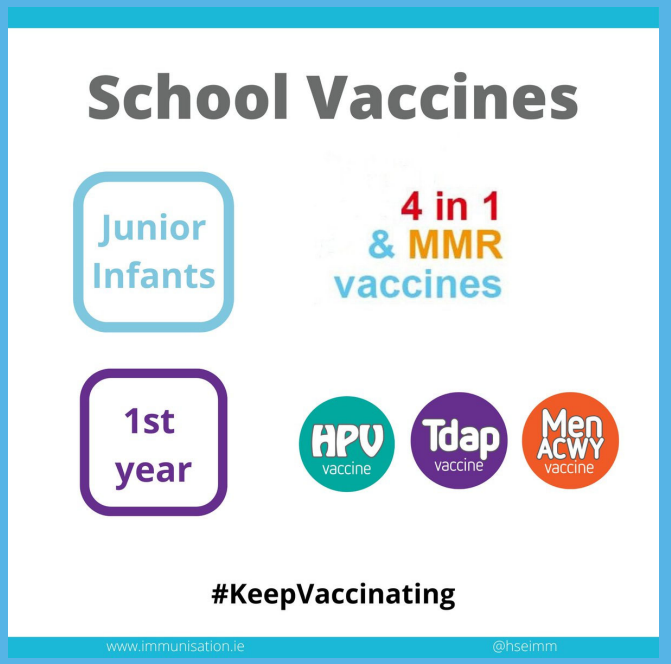
Research involving Adolescents

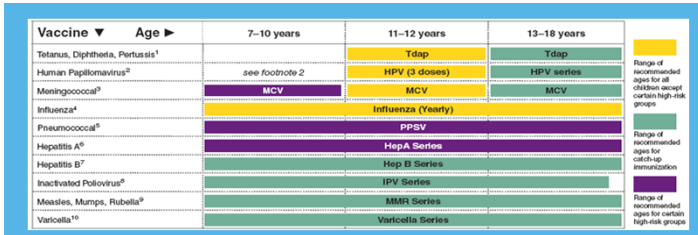
European

- All European countries offer the HPV vaccines to adolescents and all European countries offer vaccination against tetanus, diphtheria, pertussis and polio.
- MenACWY is also offered to adolescents in Ireland, UK, Italy, Malta, Andorra, and San Marino.
- Usually, these vaccines are scheduled with 2 vaccines given concomitantly.
- In Northern Ireland, where a child is not up to date with their MMR vaccine- Td/IPV, Men ACWY and MMR are given at the same visit to adolescents by the school vaccine teams



Research involving Adolescents

USA

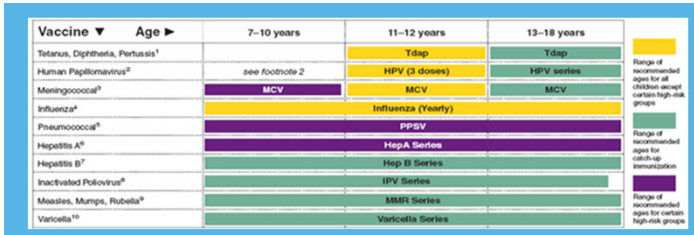


- The Advisory Committee on Immunization Practices recommends adolescents aged 11-12 years receive:
  - Tdap vaccine
  - HPV vaccines
  - Annual influenza vaccination
  - Catch up vaccinations missed when they were younger, if required.
- However, number of injections given per visit varies among different US States.
- Vaccination is usually provided in primary care clinics, with peaks during the summer months due to a school requirement for mandatory vaccination in some states.
- Tdap is commonly a mandatory requirement in most US states and to a lesser extent MenACWY, while the HPV vaccine is usually non-compulsory.

Research involving Adolescents

USA

- US Study in Oregan, which looked at teen vaccination (age 13-17) at a clinic for mandatory Tdap vaccination, showed that:
  - 39% received all 3 vaccines in one visit. (TDap, MenACWY and HPV)
  - This was positively correlated to completion of multi-dose HPV vaccination schedule.
- Although, uptake is lower for accepting 3 vaccines and there are contextual differences to the Irish setting, this is an example of adolescents receiving all 3 vaccines at one visit.



Vaccine ▼ Age ►	7–10 years	11–12 years	13–18 years
Tetanus, Diphtheria, Pertussis[1]		Tdap	Tdap
Human Papillomavirus[2]	see footnote 2	HPV (3 doses)	HPV series
Meningococcal[3]	MCV	MCV	MCV
Influenza[4]	Influenza (Yearly)		
Pneumococcal[5]	PPSV		
Hepatitis A[6]	HepA Series		
Hepatitis B[7]	Hep B Series		
Inactivated Poliovirus[8]	IPV Series		
Measles, Mumps, Rubella[9]	MMR Series		
Varicella[10]	Varicella Series		

Range of recommended ages for all children except certain high-risk groups

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

PROTECT PREVENT IMMUNISE

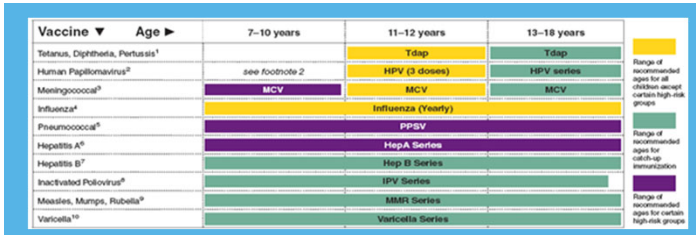
Research involving Adolescents

Canada

- Each Province in Canada has its own School Immunisation Programme, with clinics run in schools during school hours, with varying schedules in each province.
- Ontario School Immunisation Programme
  - Grade 7/8 (Age 12-14 years approximately) and catch up clinics up to grade 12.
  - 3 vaccines
    - MenACWY (Nimenrix®, Menactra®, Menveo™) – mandatory
    - HPV (Gardasil®-9) - voluntary
    - HepB (Recombivax HB® or Engerix®-B.) – voluntary
  - Message to parents and students:

    FAQ document: Is it safe for my child to receive all three vaccines?

    Yes, it is safe for your child to receive all three vaccines on the same day. The vaccines are safe, effective and well tolerated.



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Vaccine Coverage for Ontario School Immunisation Programme 2020-2021 (for 17 year olds)

MenACWY 93%
HepB 77%
HPV 63%

PROTECT PREVENT IMMUNISE

Acceptability to adolescents and parents

- In a US Study, looking at views of 430 parents of adolescence age 11-17 years and older adolescents, age 15-17 years towards concomitant vaccination with Tdap, meningococcal and influenza vaccines showed:
  - The majority of parents (64%) and adolescents (62%) would accept up to four vaccines in one time in a primary care setting.

Improving uptake

- There is international evidence that giving the HPV vaccine concomitantly with the Tdap and MenACWY, is a strategy to improve HPV vaccination coverage and could increase HPV vaccine coverage for the first dose to 90%.
- Administering the HPV vaccine with other recommended adolescent vaccines may also increase uptake among adolescent boys.
- According to HPSC figures, 2021/2022, national coverage of vaccine uptake to first year students
  - 81% for Tdap (given at the first visit)
  - 78% for HPV dose 1 and 69.4% for HPV dose 2
  - 76% for MenACWY (given at the second visit)
  - The vaccine given with the second HPV vaccine had a lower uptake each year than the vaccine given at the first visit

In the 2023/2023 academic year, for the School Immunisation Programme, it is hoped that there will be improved uptake across all vaccines with the 1 dose schedule for HPV in addition to the concomitant administration of HPV, Tdap and MenACWY vaccines.

The power of healthcare-worker recommendations

- In a UK Study, which was carried out prior to the addition of Varicella to the routine childhood immunisation schedule, 596 parents were asked in a survey, their preferences for giving multiple injections at one visit. Of those surveyed:
  - 40% were happy to go with whatever the NHS recommended.
  - 30% indicated that 2 injections would be the maximum accepted.
  - 30% would accept between 3-5 injections at one visit.
- The authors concluded that although the parent's preference was for fewer injections, the majority would consider addition of the varicella vaccine given at the same time as the MMR vaccine, showing a willingness to follow healthcare recommendations and trust in health care professionals opinions.
- A systematic review looking at infant vaccination, showed that HCWs tend to over-estimate parental concerns.

Multiple studies reported that a positive healthcare worker recommendation, to the parent, was significantly associated with parental acceptance of all injections.

For adolescent vaccination, is has been shown that, health care provider's recommendation is the strongest and most consistent correlate to adolescent vaccination.

Key Message

- Concomitant vaccination is
  - safe
  - improves update
  - reduces costs

- Health care workers recommendations are important for acceptance of concomitant vaccination.

Thank you

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