**Pediatric Case Discussion Tip Sheet /Handout**

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**Vaccines**

**Routine vaccine schedules 0-18**

**WHO** vaccine schedules worldwide:[**http://apps.who.int/immunization\_monitoring/globalsummary/schedules**](http://apps.who.int/immunization_monitoring/globalsummary/schedules)

**ECDC** compare the immunisation programmes in different European countries <https://vaccine-schedule.ecdc.europa.eu/>

**Disease specific recommendations**

**Cholera**

**WHO Position paper 2017**

*“In travellers from non-endemic countries, cholera is a very rare disease, with a risk of 0.01 – 0.001% per month of stay in a developing country.14”*

Vaccine may be considered in situations of increased risk, check national guidelines.

Inactivated oral vaccine is not licensed for use in infants <2 years.

Live oral vaccine Vaxchora available in some countries, in USA for adults 18-64 only <https://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM506235.pdf>

**Hepatitis A**

**WHO Position paper 2012**: <http://www.who.int/wer/2012/wer8728_29.pdf?ua=1>

“*while young children usually have asymptomatic infection, older children and adults commonly experience symptomatic disease”*

*“The estimated case-fatality ratio of hepatitis A varies with age and ranges from 0.1% among*

*children <15 years of age to 0.3% among persons 15–39 years of age, and 2.1% among adults aged ≥40 years.16*

*Fulminant hepatitis is rare, but associated with high mortality. In Argentina, 0.4% of paediatric*

*cases developed fulminant hepatitis, of which 60% were fatal.19 Recent reports from South America and the Republic of Korea have raised concern that the incidence of fulminant hepatitis A may be rising, in particular in children.5, 6, 7 Immunosuppressed patients and patients with chronic liver disease are at increased risk of developing severe or fulminant hepatitis.”*

Most countries are using inactivated hepatitis A vaccines which are licensed for use in children ≥1yr of age (check local recommendations). WHO also highlight

*“live attenuated vaccines, which are manufactured in China and available in several other countries.”*

In some countries use of the inactivated vaccine in younger infants is considered.

**Study demonstrating vaccine efficacy administered to infants from 6 months of age**: <https://www.ncbi.nlm.nih.gov/pubmed/17905486>

**USA Advisory Committee on Immunization Practices (ACIP)** voted on 22 February 2018 to recommend: *Hepatitis A vaccine should be administered to infants age 6-11 months traveling outside the United States when protection against hepatitis A is recommended.* This recommendation should be published and official by the end of May.

Rarely used but in some countries including USA, hepatitis A immunoglobulin can be can be considered for travelers: <https://www.cdc.gov/hepatitis/IG-HBIG_Sources.htm>

**Hepatitis B**

Hepatitis B may not have been administered in the childhood programme in some countries (e.g. only recently added to childhood programme in UK). If indicated, check national guidance on product to be used for children at different age groups.

**Japanese Encephalitis**

Ixiaro – known as JESPECT in some countries $400-500 for 2 shot series in US (cheaper ~£180 in the UK). Production of this vaccine was transferred by technology agreement to another manufacturer and was licensed in 2012 in India (JEEV®) and since then in other countries in Asia.

Other vaccines available in Asia including live vaccines (see WHO position paper: <http://www.who.int/wer/2015/wer9009.pdf?ua=1>).

JE Risk is low risk for most travelers <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5901a1.htm#_blank>

 *Travelers < 1 case per Million*

 *Expats and prolonged stay in rural areas: ~5-50 per 100,000*

From WHO Position paper (link above):

*‘Severe disease is rare but can be devastating with a high rate of residual disability’*

*‘about 30% of the surviving patients have serious residual neurologic, psychosocial,*

*intellectual and/or physical disabilities, with a higher rate of sequelae reported for children.*

*‘Case-fatality in clinical cases is estimated to be around 20%–30%, with young children (<10 years) having a greater risk of severe disease and a higher case-fatality rate.10’*

**Meningococcal**

Not currently recommended as a travel vaccine for India but meningococcal vaccines are provided in childhood immunization programmes, check these are up to date.

<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6324a2.htm> (USA recs from MMWR 2013)

**Rabies**

WHO position paper

<http://www.who.int/wer/2010/wer8532.pdf?ua=1>

*“Although all age groups are susceptible, rabies is most common in children aged <15 years; on average 40% of post-exposure immunizations are given to children aged 5–14 years, and the majority of those immunized are male.”*

Note that changes may be in the pipeline for national policies on rabies vaccines following SAGE meeting: SAGE proposed revision of policy on rabies vaccines and immunoglobulin Sept 2017 <http://www.who.int/immunization/sage/meetings/2017/october/1_Background_paper_WG_RABIES_final.pdf?ua=1>

Pre-exposure prophylaxis schedule 2008 – 3 doses D 0, 7, 21 or 28 $1000 (in the UK the price is cheaper ~£180 for course of 3). Check National recommendations on pre and post exposure courses.

Children are at particular risk as they are attracted to animals and they may not report a bite, scratch or lick to mucous membranes (such as the mouth, nose or eyes).

Also children are more prone to bites on the face and head due to their size; this was reported in a study from Nepal in 2002 (Pandey, P., Shlim D.R., Cave W., and Springer M.F.B. (2002) Risk of Possible Exposure to Rabies among Tourists and Foreign Residents in Nepal. J. Travel Med. 9:127–131 <https://academic.oup.com/jtm/article/9/3/127/1848535>

Study on rabies vaccine administered to infants at 2 and 4 months of age <https://www.sciencedirect.com/science/article/pii/S0140673696100854>

**Typhoid**

WHO Position paper March 2018: <http://apps.who.int/iris/bitstream/handle/10665/272272/WER9313.pdf?ua=1>

*“Children are disproportionately affected by typhoid fever, with peak incidence long known to occur in individuals aged 5 to <15 years of age.”*

*“Case fatality rates in children aged <4 years have been reported in one study to be 10 times higher than in older children (4.0% vs 0.4%).18”*

*“Antimicrobial resistance in typhoid fever leads to an increased proportion of patients experiencing clinical treatment failure and complications,”*

Newer generation Typhoid conjugate vaccines are currently licensed in some countries (some can be administered to infants from 6 months see WHO position paper – link above).

*“In infants aged 6–11 months and children aged 12–23 months, a single dose of Typbar-TCV elicited high titres of IgG anti-Vi antibody (1937.4 [95% CI: 1785.0–2102.9, N=307]) that persisted up to 5 years in approximately 84% of children. Anti-Vi antibodies elicited by the TCV also exhibited higher avidity than anti-Vi antibodies stimulated by the unconjugated ViPS.”*

Vi capsular polysaccharide – injectable 0.5ml IM (> 2yr – in USA guidelines repeat in 2yr)

In UK can be used off license in children from 1 year of age, licensed for children from 2 years of age repeat at 3 years if at continued risk. Young children may show a sub-optimal response to polysaccharide antigen vaccines. <https://www.gov.uk/government/publications/typhoid-the-green-book-chapter-33>

Oral live-attenuated Ty21a – 1 capsule (D 0, 2, 4, 6) > 6y – in USA guidelines repeat in 5yr

<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6411a4.htm> (MMWR 2015)

In Europe a 3 dose course is used for children from 6 years of age, (UK boost at 3 years if at continued risk, check national guidelines).

**Yellow Fever**

Vaccine is not recommended for India (unless a certificate requirement when travelling in from a country with YF risk). No cases reported in Asia but some useful information here on the disease and vaccine.

<https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5907a1.htm> Note the information about International Health Regulations is out of date; countries should no longer require booster doses of vaccine for certificate purposes.

**Malaria**

USA CDC guidance on antimalarial dose per body weight for children: <https://wwwnc.cdc.gov/travel/yellowbook/2018/infectious-diseases-related-to-travel/malaria#5217>

UK NaTHNaC leaflet for antimalarial dose calculation based on Public Health England Advisory Committee on Malaria Prevention 2017 <https://travelhealthpro.org.uk/admin/web/uploads/Childrens-antimalarial-dosage-tables.pdf>

**Travellers’ diarrhoea management**

# Guidelines for the prevention and treatment of travelers’ diarrhea: a graded expert panel report, 2017 <https://academic.oup.com/jtm/article/24/suppl_1/S63/3782742>

Bismuth Subsalicylate not recommended for children under 16 years of age: <https://www.medicines.org.uk/emc/search?q=%22bismuth+subsalicylate%22>

**General guidance**

USA CDC yellow book chapter on international travel with infants and children:

<https://wwwnc.cdc.gov/travel/yellowbook/2018/international-travel-with-infants-children/traveling-safely-with-infants-children>