

Children

Careful pre-trip preparation can reduce the travel-associated health risks to children and infants

Key messages

- With careful pre-travel preparation most families can enjoy a fun and exciting trip.
- Advice from a travel health professional should be sought 4-6 weeks prior to travel (although last-minute advice is still useful if time is short).
- Families should research the destination and health facilities as well as ensure they have comprehensive travel insurance to cover planned activities and medical conditions.
- Infants and children are at risk of deteriorating quickly if they become ill while travelling; infants and young children are more likely to develop severe malaria.
- Safety standards may not be the same around the world; accidents and drowning are the most common causes of injury or death in children while travelling.
- A pre-travel consultation offers an opportunity to ensure routine vaccinations are up to date as well as to offer age-appropriate vaccinations and antimalarial medication (chemoprophylaxis) for travel.

Overview

Evidence suggests that the travel health needs of children differ from those of adults. A review conducted in a network of clinics around the world identified diarrhoea, skin conditions (such as animal and insect bites), febrile (fever) illnesses and respiratory disorders as the main reasons children accessed medical care when returning from overseas travel [1]. Children were more likely to need hospitalisation and were less likely to have received pre-travel medical advice compared to

adults [1]. Accidents and injuries are the greatest cause of serious illness and death in children abroad [2].

Families should discuss specific health issues for the destination and risks/benefits of interventions such as vaccination, with a health professional ideally 4-6 weeks prior to departure. Health professionals providing pre-travel advice need to consider destination, age-specific susceptibility to travel-related illness, planned activities and any pre-existing medical conditions in their risk assessment before advising on prevention strategies. A pre-travel appointment should support the family to plan carefully and have realistic expectations from a trip with children [3]. Destination-specific health advice can be found on our <u>Country Information pages</u>.

Children and families visiting friends and relatives (VFR) abroad are more likely to present for health advice close to the date of travel compared to those who are travelling for leisure [4]. VFR travellers may be at increased risk of infection when travelling [5]. A US study indicated that children who were VFR were more likely to travel at younger ages, for longer periods and more frequently to destinations where there is a risk of diseases such as malaria, yellow fever and typhoid [5]. It is important to identify these travellers as early as possible [5] to assess risk and advise appropriately [6].

Pre-travel preparation

Good pre-travel preparation can reduce the risk of travel-associated illness. It is important to research the destination before travel. Medical facilities in some locations may be limited [3]. If the planned trip is remote, it is essential to know how to use available medication, self-treat minor illness and when to seek medical advice. It may be sensible to pack items that could be unavailable, such as formula feed or nappies [3] as well as clothing appropriate for the climate, for example beach shoes, sunhat, sunglasses with UV protection and long-sleeved tops.

Comprehensive <u>medical insurance</u>, covering repatriation, pre-existing medical conditions and all planned activities, is recommended for each child travelling.

All travellers should pack a <u>first aid kit</u> that is appropriate for the destination, the children travelling and the activities to be undertaken. Useful items when travelling with children include sun cream, oral rehydration solution, age-appropriate painkillers, antiseptic and basic wound dressings, tweezers, motion sickness medication, thermometer and barrier cream for those using nappies.

If medication is required for pre-existing medical conditions, sufficient supplies, in original packaging, should be taken in the hand luggage. It may be necessary to carry the prescription and a covering letter from the doctor. Travellers should check if the medication can be taken in to the destination country, see our <u>medicines and travel</u> factsheet for further details.

Accidents, especially road traffic accidents, are a significant cause of death in younger travellers [6]. Travellers should consider taking appropriate safety equipment including car seats as they may be unavailable or of poor quality at some destinations.



The <u>rules relating to parental responsibility</u> should be considered if taking a child abroad [7]. It may also be a good idea to carry evidence, such as a birth certificate, to demonstrate the relationship to the child [7].

It is helpful to consider potential problems with the journey, for example delays, changes to usual routine or boredom. Involve children in planning for the trip, ensure hand luggage contains snacks and a familiar toy and be prepared to entertain in a small space [8].

Journey risks

Due to pressure changes on plane take-off and landing, approximately 15 percent of children will get ear pain; making it more common in children than adults [9]. To help equalize pressure, infants/children can, for example, feed from a bottle or drink from a sports bottle, as this encourages the sucking and swallowing actions [10].

Motion sickness is very common in children; particularly between 3 and 12 years old [6]. Over-the-counter medications are available for those over 2 years of age. It is important to read the patient information leaflet provided to ensure the medication is suitable and administered at the correct time prior to travel for best effect. Pharmacists can also provide advice and recommendations.

The effects of jet lag usually increase with age [9]. It is advised that travellers aim to adjust sleep and meal patterns during travel and immediately on arrival to the new time zone [6]. It can be beneficial to start outdoor activities in daylight on arrival. Sun exposure in the morning with travel east or afternoon with travel west, can also help [8].

Safety standards in some countries may be quite different from the UK. Travellers should consider the following:

- If hiring a vehicle ensure it is roadworthy, rent cars with seatbelts where possible and consider bringing car seats from home.
- Avoid taking overcrowded buses and unmarked taxis [11].
- Check where possible the safety record and registration of boats as well as personnel on board. Listen to the full safety briefing before joining a ship and consider safety standards on boarding and the location of lifejackets [12].

Food and water risks

A number of different infectious diseases can be transmitted through contaminated food and water, and it is advisable for travellers to seek information regarding the risk at the destination before travel.

It is difficult to eliminate all risk but precautions for safe <u>food and water hygiene</u> should be observed and are the same for all travellers [9]. Hands should be washed often, for example after using the toilet or nappy changing and before eating or preparing food. Hand sanitizers can be used



where hand washing is unavailable; however, they are not so effective against some infections [13]. Food should be cooked, peeled or cleaned and water must be disinfected in some destinations through boiling or chemicals [8]. Milk should be pasteurised or boiled; powdered milk made up with safe water i.e. freshly boiled and cooled to the appropriate temperature is another option [6].

Generally bottled water is not recommended to make up formula feeds for infants as it may contain too much salt, or sodium (also written as Na) sulphate (also written as SO or SO4) and is usually not sterile. When travelling, however, bottled water may be safer to drink than tap water, see our <u>food</u> and water hygiene factsheet 'during travel' section.

Despite the most scrupulous care with hand washing and food/water preparation, travellers' diarrhoea remains a common travel-related illness and travellers should be prepared to manage the symptoms [14]. Preschool children are more likely to have a longer illness and become dehydrated more quickly [9]; the main aim of treatment is to prevent dehydration [15]. Offering oral rehydration solution and little and often fluid even if the child is vomiting is the mainstay of treatment [6]. Small amounts of easily digestible food such as rice, potato, breads, vegetables and fruit, aids recovery and breastfeeding should continue throughout [16].

Some medication, for example loperamide and bismuth subsalicylate are unsuitable for younger children and packaging should be checked.

Caregivers should be familiar with the signs of dehydration and know when to seek medical advice, for example continuing nausea, vomiting, fever, blood in stool or an ill-looking child [6].

A small number of food and water-borne illnesses are vaccine preventable. Check the <u>Country</u> <u>Information pages</u> for further details of vaccine recommendations at specific destinations.

Vector-borne risks

Insect and tick bites are a relatively common problem for travellers [17]. Insect/tick bites usually cause mild skin irritation; a red swollen lump that may be itchy. The main aim of treatment is to reduce pain, swelling and itching [18]. Bites can usually be self-managed through removing the sting or tick if still present in the skin; washing the area; applying a cold compress; elevating the area to reduce swelling if necessary; and avoiding scratching to reduce infection risk. If symptoms do not improve, or worsen, medical advice should be sought [19].

Occasionally insect/tick bites may cause more significant problems, for example if they become infected or cause an allergic reaction. Prompt medical help should be sought in these situations [18].

There are a number of infectious diseases that can be transmitted by insects/ticks. Check our <u>Country Information pages</u> for details of the more common infections; some of these may be preventable with vaccines or tablets. However, for many insect/tick-borne infections such as West Nile virus or Zika, bite avoidance is the only way to reduce the risk of disease.



In risk areas, bite avoidance methods should be used day and night. Children/infants should cover up with loose clothing, long sleeves/trousers, wear shoes outdoors and sleep under appropriately sized mosquito nets, impregnated with insecticide and kept in good condition [20].

Repellent, containing N, N-diethylmetatoluamide (DEET) at 50 percent concentration, is recommended for all travellers over 2 months of age. The United States Environmental Protection Agency states that <u>DEET is approved for use on children with no age restriction</u> [20].

Insect repellent should be applied to exposed skin and may also be applied to clothing made of natural fibres such as cotton [20]. However, DEET may melt synthetic fibres. Repellent should still be applied to exposed skin even if the clothing has been treated [20].

If DEET is not tolerated or is not available, another effective repellent should be used. Preparations containing one of the following three active ingredients may be considered, at the highest strength available: Icaridin (Picaridin), Eucalyptus citriodora oil (previously known as p-menthane 3,8 diol or PMD) or 3-ethlyaminopropionate (IR3535).

Sweat-off time varies with activity; the interval between applications depends on this as well as the formulation and concentration used. In practice, travellers apply around half of the amount at which a product has been tested, therefore more frequent application will be required. As a guide, repellents should be reapplied when insects begin to 'take an interest', to ensure that they do not bite. Repellents should also be reapplied after swimming and any vigorous exercise [20].

DEET reduces the effectiveness of sunscreen. To compensate for this; sunscreen should be a minimum of 30-50 SPF and applied before the repellent. If sunscreen is reapplied, repellent should also be reapplied [20]. Further information is available on <u>insect and tick bite avoidance</u>.

Malaria

<u>Malaria</u> is a serious, sometimes fatal infection spread by a bite from a mosquito carrying malaria parasites. It is a risk in many tropical regions worldwide, including parts of Africa, Asia, Central and South America, the Caribbean, the Middle East and islands in the Pacific Ocean between Asia and the Americas (Oceania).

Children are at greater risk of severe malaria and its complications [20, 21]; therefore, parents are advised against taking babies and young children to areas where malaria transmission is known to occur without adequate precautions [20].

If travel is unavoidable then the 'ABCD' of malaria prevention should be discussed. Families should be made **A**ware of malaria risk in the area they are travelling; practice good **B**ite prevention, as this is the first defence against malaria [20]; use appropriate **C**hemoprophylaxis (antimalarial medication) where recommended; and recognise the importance of responding quickly to potential signs/symptoms of malaria to ensure prompt **D**iagnosis [20].



Children visiting friends and relatives are at particularly high risk for catching malaria, especially if they do not take the appropriate antimalarial medication recommended for areas they are visiting [22].

Malaria is spread by *Anopheles* mosquitoes that mainly bite at dawn and dusk, and throughout the night. However, bites can occur at other times; daytime biting in forests or on overcast days for example. Both indoor and outdoor biting can occur, including inside vehicles or airports [20].

It is important that the antimalarial medication chosen is appropriate for the destination and the child. Parents need to supervise children taking antimalarials to ensure the entire course is taken [20]. Medication must be stored carefully out of children's reach, as some of these medicines are toxic if too much is taken (overdose) [21].

The amount of antimalarial medication in breast milk will not protect the breastfed infant or child and they will need their own chemoprophylaxis regardless of the mother's dose [20]. The correct antimalarial dose for children is based on the child's weight; see our <u>children's antimalarial dosage</u> table for further details.

Chloroquine tablets are bitter, so it is important to ensure that children swallow them; chloroquine syrup is available. Chloroquine is not effective in many destinations, it is important to use recommended antimalarial according to the <u>Country Information pages</u>.

Doxycycline is not suitable for children under 12 years old, as this antimalarial can cause discolouration of teeth and damage bones in young children. For children 12 years of age or older (and body weight 25kg and above) in the UK a 100mg dispersible tablet is available for those who find swallowing tablets/capsules difficult.

Atovaquone and proguanil paediatric tablets are licensed in the United Kingdom (UK) for those weighing 11kg or more. However, they can be used off-license from 5kg, according to the UK Health Security Agency Advisory Committee on Malaria Prevention [20] whose information may be different from the manufacturer.

Mefloquine is licensed in the UK for those weighing more than 5kg (see our table for further details on antimalarial medication doses for children based on their body weight).

Administering antimalarial tablets to children

One of the main challenges in giving malaria tablets to babies and young children will be the practical aspects of administration [20]. It is preferable to avoid breaking tablets. However, they may be broken if only part of a tablet is required. If the prescribed dose requires a tablet to be cut, tablet-cutters can be purchased from some pharmacies or travel clinics.

Tablets may also be crushed and added to a small amount of food, for example, jam or pasteurised yoghurt, to make the tablets easier for children to take [20].



When tablets are cut, the dose may vary. To reduce dose differences when quarter tablets are required, each quarter from the same tablet should be taken on the following days.*

When half tablets are needed, each half from the same tablet should be taken on the next days.*

If the dose is three quarters of a tablet, cutting three tablets into quarters in advance (i.e. providing a total of 12 pieces) and then giving three of the quarter tablets a day can provide four days' doses*.

This helps makes sure that the correct dose is given as smoothly as possible over that time period.

*Important Note: chloroquine and mefloquine are taken weekly rather than daily.

It is important to be aware that the same tablets abroad may not be the equivalent strength to those available in the UK. Additionally, there is a risk of medication being counterfeit (fake) abroad. Therefore, it is advised that antimalarials are purchased in the UK before travel [20].

The first symptoms of malaria in children may be non-specific, for example fever, headache and muscle weakness. These symptoms are similar to many other childhood illnesses, which may result in delayed diagnosis and treatment [21].

Children with malaria may deteriorate very rapidly and become seriously ill. If a child becomes unwell, particularly with a high fever in an area with malaria, it is important that urgent medical attention is sought and a blood test for malaria is taken without delay.

Anyone looking after children on their return from malaria affected areas (including family members, friends, professional carers, or school nursing and medical staff) must be made aware that these children need urgent medical attention. Symptoms of malaria can appear for up to a year after the child has left a malarial area, even if antimalarial medication was taken [20].

Vaccination

The travel consultation is a good opportunity to ensure children are up to date with the <u>routine UK schedule</u>.

The following table details recommended ages for travel vaccinations in the UK but practitioners should always refer to the 'Green Book' for more detailed information. Note that the manufacturers' information may differ from that in the 'Green Book', in these situations the 'Green book' should be followed. The use of these vaccines in some infant age groups is off-license.

Disease	Recommended age of
	administration for vaccines
	currently available in the UK
Cholera	2 - 6 years (3 dose schedule)

	6 years and older (2 dose schedule)
Dengue	4 years and older, only for those who
	have already experienced dengue
	infection in the past, see <u>dengue green</u>
	book chapter.
Hepatitis A	1 year and older
Hepatitis B	Can be given from birth
	Children born on or after the 1 August
	2017 are vaccinated as part of the
	routine UK schedule
Japanese encephalitis	2 months to less than 3 years ½ dose
	(0.25ml)
	3 years and older full dose (0.5ml)
Measles/mumps/rubella (MMR)	From 6 months for travel to risk areas*
	Children from 12 months are vaccinated
	as part of the routine UK schedule*
Meningococcal ACWY	Birth - less than 1 year (2 doses)
	1 year and older (1 dose)
Rabies	No minimum age stated**
Tick-borne encephalitis	1 year and older
Tuberculosis (BCG)	From birth if at risk (see 'Green Book'
	criteria)
Typhoid injectable	2 years and older, but can be given off-
	license from 1 year for those at high risk
Typhoid (live) oral	5 years and older (capsules have to be
	swallowed whole)
Yellow fever	9 months and older (6 months in
	exceptional circumstances, seek expert
	advice)

^{*}As the response to MMR in infants is sub-optimal where the vaccine has been given before one year of age, immunisation with two further doses of MMR should be given at the recommended ages. See measles chapter of the 'Green book' for timing of this vaccine for other travellers.

^{**}Although the rabies vaccine can be given at any age, the risk of animal bites may be higher once the child is



independently mobile.

Although adjusting the usual immunisation schedule within the UK should be avoided, in some instances the practitioner may consider bringing forward doses, for example the first primary immunisations may be given from six weeks of age in certain circumstances [23]. Similarly, the MMR may be considered from 6 months of age for travel [24]. However, as maternal antibodies may interfere with vaccine response before the age of 12 months, any doses given between 6 and 12 months of age should be discounted, and the routine two dose schedule given at the recommended ages. See the 'Green Book' for more detailed information.

Ideally a four-week gap should be left between administering yellow fever and MMR vaccinations. If given together there may be a sub-optimal antibody response to the yellow fever, rubella and mumps components of these vaccines. Where time before travel does not allow for a four-week gap, the vaccines should be given at any interval and an additional dose of MMR should be considered [24]. A further yellow fever vaccine could also be considered after risk assessment if the traveller returns to a yellow fever endemic area.

Breastfed infants and children require their own age/weight appropriate immunisations regardless of whether the mother is receiving vaccines [25].

All infants and children should be up to date with their routine polio vaccination schedule. In an effort to reduce the international spread of poliovirus, travellers staying for more than 4 weeks in certain polio affected countries may be asked to show proof of polio vaccination recorded on an International Certificate of Vaccination or Prophylaxis as they leave the affected country. The situation is reviewed regularly by the World Health Organization and further information can be found on our website. Additional advice for certain risk groups may be found on the Country Information pages for the affected countries.

Age-appropriate vaccines should be offered to ensure an optimum response [23].

Vaccinations only protect against a limited number of diseases. It is important for all travellers to practice universal precautions, for example hand washing, food and water hygiene and insect biteavoidance [9].

Other health risks

Rabies

Rabies is a vaccine-preventable viral disease [26]. It is transmitted to humans by a bite or scratch, or when saliva from an infected animal comes into contact with broken skin or mucous membranes (eyes, nose, or mouth) [26]. It is estimated that 40 percent of people bitten by suspected rabid animals are children [26]. Children are more likely to be bitten around the face and head which may lead to the illness progressing more quickly [27].



Children should understand the importance of avoiding contact with wild and domestic animals. Rabies vaccination before travel may be appropriate for some countries, see <u>Country Information pages</u>. Travellers at higher risk include those away for longer periods of time or undertaking activities likely to attract animals, including running and cycling. The traveller should carry details of any rabies vaccination course given in case treatment is required following an animal bite.

Children should be reassured they will not be in trouble and encouraged to tell an adult if they are bitten, scratched or licked by an animal. Following a bite, lick or scratch from any animal in an area where rabies is known or presumed to occur, the wound should be washed for at least 15 minutes with soap or detergent and running water and saliva exposure to the eyes, mouth and nose should be washed thoroughly with water [26]. Prompt medical advice must then be sought. The disease is preventable if the correct post-exposure prophylaxis is provided quickly.

Heat / cold and sun

Children are at greater risk than adults from environmental extremes such as heat and cold. There are many reasons for this, for example children have an increased surface area to weight ratio, decreased capacity to sweat and a higher metabolic rate [3, 9]. Caregivers should ensure infants and children are always hydrated and dressed appropriately for the climate [8, 9].

Children and young people are more susceptible to skin damage from the sun [28] and overexposure should be avoided, especially when the sun is at its strongest (11am-3pm). Children should be encouraged to play in the shade and use protective clothing including a wide brimmed hat, sunglasses with UV protection and tightly woven loose clothing. Liberally apply sunscreen with a high protection factor (SPF 30+) and 4/5 stars to protect against UVB and UVA, ensuring it is reapplied regularly [9, 29, 30]. Infants under 6 months should be kept out of direct sun.

Accidents and injuries

Accidents and drowning are the most common causes of injury or death in children while travelling [2]. Safety standards may not be the same around the world. Travellers should check that accommodation is 'childproof' for example that balconies and windows are secure, and the child cannot access swimming pools without supervision. Adults should supervise children near busy roads and be vigilant by water where there may be dangerous currents or marine hazards [3, 6, 9]. Further advice and recommendations are available from the Royal Society for the Prevention of Accidents.

COVID-19

Most children are asymptomatic (without symptoms) or exhibit mild symptoms from COVID-19 infection [31].

All individuals, should follow <u>current UK recommendations</u> to reduce their risk of catching COVID-19 and passing it on to others.



General guidance regarding COVID-19 <u>risk assessment for travel</u> and information about the <u>COVID-19 vaccination programme</u> is available.

Safety and security

Travellers should have a plan for what to do in the event of being separated from children. Labelling the clothes of small children and providing older children with details of accommodation and a contact number for a responsible adult can be helpful [8, 9].

High altitude

There is limited information around children travelling to areas of high altitude but they are not thought to be at any greater risk of developing altitude illness compared with adults [32]. However, symptoms of acute mountain sickness are not always obvious, and may be difficult to diagnose in infants unable to communicate. Families should look for unexplained fussiness, alterations in appetite, activity or sleep [9]. If these are worse than usual, altitude illness should be assumed, and appropriate action taken.

FGM

Health professionals have a mandatory reporting duty if female genital mutilation (FGM) is identified, or a child is thought to be at risk. Failure to do so, may result in disciplinary procedures through the health professional regulatory body under "Fitness to Practise" proceedings (see resources below).

General advice and advice for those who get sick abroad

Compared with adults, children/infants are more likely to receive inpatient care for travel-related ailments [33]. Caregivers should know how to deal with minor issues and importantly when and where to seek prompt medical attention with early signs and symptoms of disease [8].

Resources

- Altitude illness
- NHS: Sunscreen and sun safety
- Personal safety
- Rabies
- Royal College of Nursing: Female Genital Mutilation. RCN resource for travel health services
- Royal College of Nursing: Safeguarding Children and Young People Every Nurse's Responsibility
- <u>US Centers for Disease Control (CDC): 'Yellow book' chapter International Travel with Infants and Children</u>



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