

Updated version (17/04/2015 – AVG) see: www.travelhealth.be

TUBERCULOSIS

Tuberculosis is an infectious disease caused by the *Mycobacterium tuberculosis* bacterium. Transmission occurs through inhalation of coughed up contagious drops/particles.

The number of tuberculosis cases has strongly decreased in Belgium during the second half of the twentieth century. Since 1993 this decrease has slowed down. Since 2010 1115 new cases of active tuberculosis have been reported in Belgium. The disease is strongly related to poverty and poor living conditions. Risk groups are underprivileged, homeless persons, detained persons, new migrants from high incidence countries, refugees, drug users, ... everyone living in extreme poverty.

Modern techniques (DNA-investigation of the bacillus) show that there is little transmission between newly arriving people (migrants) and the Belgian population. Migration is not considered as a threat to Public health by the European Center for Disease Control (ECDC).

In Belgium attention must be paid to prevention and treatment of general (miliary) tuberculosis and tubercular meningitis, which occur mostly in young children (the frequency diminishes significantly after the age of 14).

On the other hand the policy should also be focused on multiresistance and at the association with HIV, which can considerably complicate detection and treatment of TB.

In case of infection, the risk for healthy adults to develop **tuberculosis** is estimated to be 5-8% in the first 2 years after infection, and another 5% spread over the rest of one's life (*approximately 10% "lifetime risk" in case of normal immune response*). In 90% of the cases, nothing happens. There's only a **latent** (sleeping) infection. The risk may however increase up to 40 % in children up to 2 years old.

The risk developing active tuberculosis disease may increase up to 10 % per year in persons with immune depression.

*A study in the Netherlands of the incidence of tuberculin conversion (measure for the risk of contagiousity) in several hundred **travellers** who spent between 3 and 12 months in one or more countries of high incidence, showed a risk of 3,5 per 1000 travel months or an annual risk of approximately 4%. These travellers came into relatively close contact with the local population: 55% were travelling for work or as part of their training and almost all had used local public transport or stayed in "local guesthouses".*

*The risk of tuberculin infection was established by tuberculin conversion (CTT; Mantoux intradermal testing). For people who had worked in the healthcare sector during their stay this was **7,9/1000** travel months compared to **2,8/1000** for the others (annual risk appeared to be about 3% per year).*

The risk of infection also increased with the length of stay. For this category of travellers, the risk is comparable with the risk of TB infection among the local population, estimated at 1.0-2.5% per year. People who take organised holidays in tourist areas probably have hardly any of the types of contact necessary for infection and their TB risk is considerably lower. (Cobelens, Lancet 05/08/2000).

Vaccination

The BCG vaccine is a live, attenuated bovine tuberculosis bacillus-based vaccine. It is administered intradermally, thus producing a local infection. This induces cellular immunity (no protective antibodies), which attenuate a virulent infection (it does not prevent the actual infection).

It produces a certain degree of protection against tuberculous-induced pathology, but mainly to severe post-primary complications like general (“milair”) tuberculosis and tubercular meningitis. This protective effect has clearly been proven in children and not in adults.

It is a controversial vaccine, that does not reduce the infection risk and only offers an incomplete protection against the development of tuberculosis. The study results of BCG vaccination in children less than 2 years old, vary greatly. Currently, a mean protective effect of 50% is assumed for respiratory TB. Protection against tubercular meningitis and milairy TB is probably around 80%. The maximum protection period is estimated at 10 to 15 years; although a recent study in Alaska suspects that the (only very partial!) protection can last much longer. Vaccination or repeat vaccinations of adults are not considered to be effective. The disadvantage of the tuberculin cutaneous test (Mantoux) is that it is more difficult to interpret in the years to come and that it is less usable as a diagnostic remedy after (until ten years) vaccination. In the future the blood tests measuring the T-cell reaction on specific antigens of ‘*Mycobacterium tuberculosis*’ will be used (‘interferon-gamma release assays’ (IGRA)). These tests are not influenced by former BCG-vaccination.

The vaccine may be administered from birth, in the postero-external side of the upper arm. In case of correct intradermal administration, a skin weal of +/- 8 mm (“orange skin”) will appear and then disappear after 1-2 hours. After 3 weeks a hard nodule appears, that sometimes ulcerates and after 3 to 4 weeks heals with a permanent scar. Postvaccinal side-effects are observed in 1 to 10% of the vaccinated persons, mainly as a regional lymph node swelling (armpit or neck) that disappears automatically after 2-3 months.

The vaccination is given preferably 8 to 10 weeks before departure to a risk area. The immunity will thus have reached its maximum (the protective effect of the BCG vaccine starts after 5 to 10 weeks) and any local abscesses or inflammation of the armpit and/or neck glands resulting from vaccination can still be treated in Belgium.

The BCG vaccine may be given together with **inactivated** (“killed”) vaccines, but for the inoculation with live vaccines (measles, rubella, mumps, yellow fever) one month of interval should be taken into account.

The normal paediatric basic vaccination schedule can continue unchanged.

Contraindications include extensive dermatoses, immunosuppressive disorders, immunosuppressive medication and pregnancy. Persons with previous positive tuberculin cutaneous test, will not be vaccinated.

The vaccine is no longer commercialized in Belgium, but can be ordered by a pharmacist outside the country.

Only a few university hospitals (Pediatric Department and/or Occupational Health Department) keep the vaccine in stock and can administer it when necessary. It is wise to make a phone call first to check whether the vaccine is in stock.

Indications for vaccination as part of travel health:

- a) There is no indication for BCG-vaccination for ordinary tourists.
- b) BCG-vaccination for **migrants' children to 5 years** who travel (yearly and/or for a longer period) to relatives in the country of origin is to be considered seriously (or not to be discouraged) – at least 8 to 10 weeks before departure.
- c) The WHO advises vaccination for **children and young adults living in countries with low TB-prevalence** and who are going to live in an endemic area for a long time (at least a few months). If there is a substantial risk of exposure (prolonged stay in a third world country, regular close contact with the local population, using public transport, staying in “local guesthouses”, in an area with high TB prevalence) and the local medical infrastructure is of a very low standard. This is also recommended for aid workers (especially those working in the health sector). Vaccination is also required by some French high schools in overseas areas.
- d) For other people the following applies:
 - Tuberculin cutaneous test negative before departure + stay of a minimum of 6 months in a third-world country: **tuberculin cutaneous test 2 months after returning home.**
 - Tuberculin cutaneous test negative before departure + high risk stay in a third-world country (e.g. medical personnel, social workers, in certain cases also children under 5 years of age, etc.): consider **BCG** – at least 8 -10 weeks before departure.

The advice to vaccinate a child for an extended stay in risk areas is a complex process where one should take into account the costs, the inconveniences of vaccination and the risk of side effects in function of a very incomplete and uncertain protection. You can contact the Flemish “Respiratory Healthcare and Anti-Tuberculosis Association” (VRGT) or the French “Fonds des Affections Respiratoires” (FARES) on telephone number 02/512.54.55 or 02/512.29.36 for additional advice and information on the indications for vaccination. The dispensaries of the VRGT and FARES no longer administer vaccines and do not have them in stock.

Regular intradermal cutaneous tuberculin testing (to be replaced by interferon-gamma-test in the future) before departure, then annually or once every two years; two months after finally returning home is still an excellent alternative.

When this test appears to be positive, a radiology of the thorax is indicated; if this result is normal, a treatment with one anti-tubercular medicine during 6-9 months will be applied.

The risk of tuberculosis infection evolving into an active tuberculosis is thus reduced with 80 to 90 %. More info: see www.vrgt.be or www.fares.be.

Furthermore it is important to **diminish the risk of exposure** by avoiding dark, small and crowded rooms with poor fresh oxygen supply (**direct sunlight and good ventilation** diminish the contagion of coughed up bacilli drastically and immediately). Persons having a nasty cough with sputum for more than 3 weeks may have contagious tuberculosis. A simple **radiology of the lungs** might exclude the diagnosis immediately (for example with domestic house staff).