PROFESSIONAL ADVICE ON TICK PREVENTION AND SAFE REMOVAL

Q. **What is Lyme disease?**
A. The *Borrelia Burgdorferi* sensu lato group (in Europe *B. Garinii* and *B. Afezelii*) of spirochete bacteria transfer from the *Ixodes ricinus* tick to a human host and causes the red skin rash of *Erythema Migrans*. Oral antibiotic treatment cures the early stage and serology is not helpful. In some people the rash fades without treatment. The 2015 Scottish Blood Transfusion epidemiological study shows 8.6% of the donating population are seropositive in Highland without symptoms. The Scottish sero prevalence rate is 4.6% with a clear trend towards the North and West.

*Erythema migrans* is a purely clinical diagnosis. In secondary Lyme *Borelliosis* there may be no clear history of a tick bite or rash. A flu like illness is followed by joint pains, neuropathies and a wide range of symptoms. Secondary Lyme *Borelliosis* is confirmed by laboratory tests, principally serology. IV antibiotics may be required for secondary Lyme *Borelliosis* and symptoms may persist after eradication of the borrellia spirochaete.

Q. **What is the problem with ticks in Scotland?**
A. The undergrowth in the countryside from spring until autumn is covered in tiny *Ixodes ricinus* ticks which live on deer, rodents and ground nesting birds. Up to 10% of ticks may carry bacteria in the stomach of the tick which is transferred to people and animals when the tick attaches itself and feeds off our blood. If the tick is removed quickly and correctly there is no risk to health but there is a risk of developing Lyme disease if this is not done properly. March to October are the at risk months in Scotland for ticks.

Q. **Does Scotland have a particular problem with ticks or Lyme disease?**
A. Lyme *Borelliosis* is Northern Europe's most prevalent tick borne zoonosis. All rural areas of Scotland have the infected ticks including national parks, Borders, Tayside and North of Scotland areas. Scottish towns and cities where vectors like roe deer enter green spaces may be at risk of ticks. The ticks are also a problem in England in areas such as the New Forest. They are also a problem throughout the whole of Northern Europe.

Q. **Who is at risk of Lyme borelliosis?**
A. People working outdoors in the forestry, estates and outdoor tourist industries are at particular risk from prolonged exposure. People fishing on river banks or sitting on the ground at picnic sites may be at risk. People gardening in country areas where roe deer and ground nesting birds and animals are more prevalent may be at risk from kneeling on the ground and getting a tick bite in the groin or perineum. Brushing through bracken, undergrowth and moorland is a risk. Toddlers and children can pick up ticks in gardens in high risk locations.

Q. **What simple measures can prevent tick bites?**
A. Stick to paths and avoid undergrowth, wear long trousers and tuck in socks. Use a DEET based insect body spray. Be extra vigilant when wearing shorts or skirts! Inspect children after picnics and outdoor activity in country areas. City parks are normally regarded as lower risk.

Q. **Is this a new problem?**
A. We think Lyme disease has been around for hundreds of years but there has been a definite increase over the past 5-10 years. There are many theories on why
this might be including climate, changing use of land and farming practice. However there is no reliable method of predicting ‘Lyme disease hot spots’ as it seems to vary from year to year between locations and within locations.

Q. **What do the ticks look like?**
A. Many people think of ticks as being quite big but this is because they are used to seeing balloon-like ticks on a dog or cat but they are in fact very small. Unfed, the largest tick is a female who is about the size of a sesame seed (3mm) and is the same oval and flat shape. After she has fed, she swells up to many times her original size (approx. 11mm). Male ticks are a bit smaller and are about 2.5 mm. Nymph ticks are even smaller pinhead or poppy seed size (1.5mm). Newly hatched ticks (larvae) are the smallest and can be smaller than a poppy seed (approx. 0.5mm) and in fact to the naked eye the larvae look like specks of soot.

![Tick life cycle diagram]

There are 3 stages of the life-cycle: larva, nymph, and adult.

The ixodid ticks carry the bacterial spirochete parasite borrelia garinii and it takes up to 8 hours for the tick to latch on and draw blood with an anticoagulant in its salvia and thus exchange the borrelia parasite from its stomach into the human.
The bacterial transmission time is estimated to be 12-24 hours, so the longer a tick is left in place the more likely Lyme Disease becomes. Squeezing the body of the tick will only facilitate this process!

- Please recommend removal devices for humans which get underneath the tiny nymph tick and lift it off whole.
- Advise against the use of household tweezers in humans.
- The desired outcome is a live tick following removal.
- WHO style fine pointed insect removal tweezers for international travel may work but getting underneath tiny Scottish nymph ticks is difficult.
- Advise plastic tick removers in personal and home first aid kits.
- Advise local outdoor workers to carry plastic tick removal devices in van first aid kits or rucksacks.
- Traditional folk remedies of tick removal including, Vaseline, cigarettes, butter, alcohol and finger nails are best avoided.
- Patients previous “success” with finger nails in tick removal may be attributable to the low prevalence of infected ticks (2-4%) in most areas.
- Some degree of local reaction around the tick bite site is “acceptable”, say 5 pence size for 24-48 hours. The key is “erythema migrans” or “spreading redness!
- Antibiotic prophylaxis for all tick bites is not current policy in UK.
The tinny tick just visible and complete in the card bevels

The tick bite wound
Tick prevention and removal

Tick behind knee  Removing with ‘Tom O Twister’

Tick on a toddler’s thigh below nappy

Tick in neck crease of toddler
A tick behind a toddler’s ear removed with a twister

Note the anatomy of the facial nerve and the post auricular branch directly under the tick site

Any facial weakness in a child or adult needs to be urgently considered for the risk of Lyme as one of several causes of Bells Palsy
Q. What are tick removal devices and where do I get one?
A. One type looks like a clear plastic credit card with a small magnifying glass. The other type is a small plastic lever which looks a little bit like a claw hammer to remove nails. They both cost about £5 and work well. It is a good idea to have one in your first aid kit at home or in your rucksack. They are most easily sourced on-line. The evidence for and against tweezers or removal devices in humans is limited but first principals and experience favour a tool designed for the job!

http://www.tickcard.co.uk/
The O’TOM / TICK TWISTER® to remove ticks: Official Website
Q  Should I let the tick just ‘drop off’ in a difficult area e.g. child’s eyelid?
A. It is always best to attempt early tick removal to reduce borellial transmission rates. The twister devices are safe to use on an eyelid for adults and children. A light and magnification will help.

Tick on a child’s eyelid
An engorged, embedded, complete tick which needs removal with a tick removal device to get underneath the body.

A complete tick!
Q. **What about incomplete removal and ‘buried heads’?**
Digging is unlikely to help and they are best left to ‘come to the surface’ from natural skin abrasion in squamous epithelium. Antibiotics are only indicated for erythema migrans rash. Reassurance and ‘safety netting’ should be sufficient.

Q. **What is the difference between ‘Lyme Disease’ and ‘Lyme Borelliosis’?**
A. Lyme disease is still commonly used but the new preferred term ‘Lyme Borellios’ was agreed by the British Association of Infection in their 2011 clinical guideline. The change to Lyme Borelliosis will be clinically helpful, when explaining positive serology in the absence of symptoms and after ‘curative treatment’ with antibiotics when the serology remains positive. See the Read and Snomed coding document for clinical coding.

**Public Videos of Tick Removal**

- How to remove a tick: [https://www.youtube.com/watch?v=jAG2wI9EiNM&feature=youtu.be](https://www.youtube.com/watch?v=jAG2wI9EiNM&feature=youtu.be)
- How to practice removing a tick for fist aiders: [https://www.youtube.com/watch?v=n2wMbkXYpfo&feature=youtu.be](https://www.youtube.com/watch?v=n2wMbkXYpfo&feature=youtu.be)
- How to avoid Lyme Disease: [https://www.youtube.com/watch?v=oCuWVqWdWUE](https://www.youtube.com/watch?v=oCuWVqWdWUE)


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