Cuts and grazes

YOUR CHILD comes running to you crying, holding out a finger she has cut on a piece of slate in the garden, your toddler wobbles up to you in the playground with a large patch of skin grazed off his knee, your teenager, who should know better, has been sledging down a rubbish heap in the dark and has come hobbling towards you tearfully, led by a bunch of rather guilty looking friends, with a nail - very dirty, imbedded in her hand.

What do you do?
No child is going to escape cuts and grazes as they travel through childhood – indeed, there would be something wrong with them if they were cocooned to the extent that they didn't run about fast enough or climb high enough to fall over hard, or hurt their knees. As much as we want to protect our children from obvious and certain danger, the journey through childhood is an experiential one.

So how do we manage these injuries?

Step 1: Don’t panic.
Not only will panic stop you from thinking clearly, but it will also make the wound hurt more. Think about it. If you hurt yourself, what would you make you feel better? A level-headed, capable person with a low, measured voice, who calmly took control of the situation, or an hysterical, screaming person who swept you up in their arms, crying about how how awfully it must hurt and how terrible the blood looks.

Talking in a low measured voice, however much the inner turmoil, also has the effect of calming you down – you can always have a nice, safe attack of hysteria when everything has been sorted out later.

Step 2: Carefully assess the situation.
Most cuts and grazes can be dealt with at home, saving long, fruitless waits in Accident and Emergency (A&E) departments. Scalp wounds always bleed profusely, often quite out of proportion to their size or severity. Bleeding is actually very useful, it washes the cut from the inside out and floods the area with the oxygen that is carried in the blood.

Step 3: Assess the tetanus risk.
Clinical tetanus, ie tetanus with symptoms, is caused by the bacterium, Clostridium tetani. It is present in the gut of many farm animals and their faeces and is highly resistant to heat and drying so it can survive in soil and dust in spore form for many years. You can, therefore, assume that tetanus spores are present in most soils. However, it is not colonisation with the organism that produces ‘lockjaw’ and other symptoms of clinical tetanus but the toxin that the organism produces when it finds the correct conditions in which to grow.

What are these?
The tetanus bacillus is an anaerobic(non air) bacillus, that means that to produce its toxin it needs to have anaerobic or 'no oxygen' conditions. This is why clinical tetanus is classically associated with wounds from rusty nails because this combines dirt with a deep penetrating wound that it is difficult for oxygen to reach. This need for anaerobic conditions explains why clinical tetanus so rarely occurs despite undoubtedly frequent contamination of wounds.

Other injuries that promote anaerobic infections are severe burns and severe crush injuries where dead flesh is combined with no blood supply – remember blood carries oxygen. Tetanus infection has also been reported after trivial or no injury, such as tonsillitis, or after operative procedures (abortion, appendicitis).

Step 4: Reduce the tetanus risk.
It is a good idea to encourage any wound that has been exposed to dirt or rust etc, to bleed for a minute or so. A cut finger can be held under a cold tap and squeezed a little. Clotting of blood, or rather, coagulation, is a chemical process which works best at body temperature or higher, so cold water slows the process down a little. A graze, by it's very nature is so superficial that it is unlikely to be at risk of clinical tetanus as most of the wound surface is exposed to the air. Large wounds pouring with blood (oxygen) are also not high on the clinical tetanus risk list.

Step 5: See how bad the wound actually is.

CLEAN CUTS
At this stage, you need to apply pressure to the bleeding area with a clean tissue, handkerchief or gauze.
Cuts and grazes

Applying firm pressure in this way will stop the bleeding within one to five minutes. To speed up the process, a cloth with squeezed out hot water can be used. Then you can see what is really going on.

Have a look to see how big the wound actually is. Do all the fingers, toes in that area move in all the ways they are supposed to? How deep is the wound? Is there subcutaneous fat (yellow shiny globular layer) showing, can you see bone or tendons? If you can you would be advised to get it looked at in A&E

If the cut was caused by broken glass, look carefully and feel around the edges of the wound with your fingertip, feeling for lumps that might mean that there is some glass left in the wound. It is possible to have an Xray to check – but Xrays can also sometimes miss shards.

**Step 6 : Clean it up and dress it if necessary.**

If oozing is still occurring you can put a wadge of gauze, tissue or a folded clean hanky on top and then wind a crepe bandage firmly around the wound. This can be removed in 12 – 24 hours. The limb, hand or foot further on from the bandage should always have a good blood supply – the nail beds should be pink, go white when pressed and return to being pink rapidly when released (good capillary filling), if not, release or remove the bandage immediately.

If the edges of the wound are gaping and/ or oozing you can steristrip them together, often avoiding the need for stitches in even quite deep cuts. If you don’t have steristrips, you can cut thin strips, about 2cm long of micropore. Apply the micropore about 0.5cm apart applying pressure between each one.

For a long wound, don’t start at one end as by the time you get to the other end the edges will be skewed. Make sure the edges are dry, apply one across the middle, then one across the middle of each of the two halves and so on.

Do not cover the whole surface of the wound with steristrips as it needs to be able to breathe to heal well. Covering it all up will just make it soggy. Keep the wound dry for a week, then soak the strips in water and remove carefully.

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**DIRTY CUTS**

Wash thoroughly with water, dab dry, half dilute a little 3% hydrogen peroxide (H₂O₂) in a small cup, dip a piece of cotton wool in it, drip this over the cut. It will start to sizzle, this is oxygen being released just where you need it, in the area where there might be tetanus spores. Dab dry and drip again, repeating the process until the peroxide no longer bubbles.

Flooding the area with oxygen should make the conditions unfavourable for production of tetanus toxin and, indeed, a German study in 1967 found that hydrogen peroxide hindered the absorption of tetanus toxin as well as detoxifying it. The peroxide was able to penetrate even into jagged wounds. It acted by cleaning the wounds mechanically and killing harmful bacteria and funguses.

The author concluded that peroxide made valuable complement to active and passive tetanus vaccination (R Ludewig Zur Wirkung von Wasserstoffperoxid auf Tetanustoxin in Hautwund (Concerning the effect of Hydrogen Peroxide on Tetanus toxin in skin lesions) Chir 1967 ; 13:478-481).

When the wound has been thoroughly cleaned it can be properly inspected and treated as above, although deep wounds may need to be left to drain and treated with peroxide daily.

**GRAZES**

Wash with water +/- soap. If large pieces of gravel are imbedded in the skin, try to flush them off with water or remove them with tweezers. Apply peroxide as above. Leave open to the air when at all possible. If there will be rubbing against clothes or exposure to a lot of dirt, or if it is very painful initially, put a large, thick smear of vaseline, or non petroleum jelly onto a piece of gauze (or use paraffin gauze BP or ‘Jelonet’ 10cm sq folded over), cover with gauze and secure with tape – knees need tubigrip to stay on. Check it every day and redo the dressing. If any redness occurs around the margins of the graze or if there is pus, repeat the treatment with peroxide.

**What about savlon, germalone, antiseptics?**

I do not recommend any of these. They kill off nice bacteria without necessarily getting rid of the nasty ones and they can cause skin irritation. Calendula cream? Many people swear by this but I avoid creams because they make the wound wet, which is to be avoided in the healing stages, and calendula cream can sting. Using a drop of the tincture in the water used
Cuts and grazes

They are vaccinated or not, as it is still possible to get clinical tetanus when fully vaccinated with good levels of antibodies to tetanus toxin. It is said to be a rare occurrence, but then so is getting clinical tetanus when unvaccinated, or else most of the human race would not have survived to be here today.

If you are unvaccinated and wish to give yourself a boost of tetanus toxin antibodies, you can get a shot of tetanus hyperimmune globulin at any A&E department. It is, however, a human blood product with the attendant risks of known and unknown virus transmission.

So what did I do with my teenager with the dirt streaked, tear-stained face and the grubby hand with the nail stuck into the pad at the base of her thumb? I spoke in a low, measured voice, told her not to worry, gave her a dose of arnica and a squirt of rescue remedy (don't leave home without it!), which worked wonders, and calmly and purposefully got hold of the nail with a set of pliers and wrenched it out. I cleaned the wound profusely with water from a bottle (we were on a camping site) and squeezed it to make it bleed some more and then dripped dilute peroxide onto the site of the puncture wound, dabbing with dry cotton wool and dripping more on until the bubbling stopped.

This was the first wound she had had in her 14 years or her sister had had in her 16 years, including guide camps and Duke of Edinburgh hikes, that I thought was a real tetanus risk, so I crushed up a tablet each of ledum and hypericum, put the powder into a 500ml bottle of water with another squirt of rescue remedy, banged it hard twice (to potentise the water) and told her to sip it three times that evening and three times daily for the next two days. I think she took it the next day and then forgot, as did I. The wound healed up nicely without any complications. Then I told her off!

April 2008

The information in this article does not replace the need for medical advice where appropriate.