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## **Vaccinations – how they work, when they work...**

Many people believe that a vaccination gives instant protection against certain diseases, as included in the vaccine. This is absolutely *not* the case - and it can be outright dangerous to administer vaccines under that assumption, as even many veterinarians unfortunately do on a routine basis....

### **How vaccines are manufactured**

There are, in principle, two types of vaccines:

1. killed vaccines
2. modified live vaccines.

Vaccines are manufactured by growing the virus that causes the disease on some tissue that will allow it to nourish and grow. Once the culture has reached a sufficient size for production, the manufacturing can start.

For a killed vaccine, the virus is simply killed, often by adding poisonous chemicals to the culture. The culture is then "formulated" – which simply means diluted with solvents and having reagents added to it so it can stay preserved and can be divided into individual probes that can be sold, ready for injection through a needle.

For a modified live vaccine, the culture is not killed, but crippled instead. This is accomplished by changing its living conditions, so it will temporarily lose its ability to multiply at its normal rate. This can be done either through a change to a substance for it to live from that is not optimal for it (tissue from a different species it normally would not attack), or it can be accomplished by adding chemicals that will cripple it, but not totally kill it. Sometimes both methods are used, as some preservation chemicals always are added later on to preserve the vaccine in the containers it gets sold in.

### **What a vaccine is supposed to do**

A vaccine is supposed to *challenge the body's immune system* – make it believe that it got infected with the real disease, but because the disease is either dead or crippled, the body's immune system should have an easy job generating a response that ends up being "overkill" because the vaccine really wasn't that dangerous at all. The entire range of processes and action that constitute such as response is very complex, but there are two important components that should be understood:

- The body produces a series of antibodies to encapsulate the virus and its poisonous discharges.

- The body establishes a filing system that records the main characteristics of the disease and will enable it to get an earlier warning next time an invasion of this disease should occur.

This is just about the same it would do when fighting aback an attack of the real disease.

In case of a vaccine, however, the antibodies will be produced in great excess – because the body overestimated the need for them. Those antibodies can be measured (often called “titers”), and when they are present, you have confirmation that the dog’s immune system is prepared for an attack of this disease. Because of this preparedness and the early warning the immune system will get because the disease next time will be recognized almost momentarily, chances of a successful battle against the disease are so vastly increased that a new infection generally will be defeated before it ever gets to harm the body.

The same thing happens if the body successfully fought the real disease. The body won’t be taken “off-guard” one more time by that disease, so, next time an infection arrives, it will be defeated fast and completely. The body is thus immune to the disease. This is called auto-immunization.

So, what happens in either case is that preparedness gets established through a *challenge* to the immune system – by the immune system successfully defeating the challenge.

### **Some important consequences...**

As you can understand from the way vaccines work, they do not give instant protection. The protection they cause the body to develop will take time to establish – typically about the same time as a successful fight against the real disease. In most cases, for our dogs, this means 2-3 weeks. So, in that meantime, the dog has no protection! It is actually fighting a fake disease, as if it was sick – and, seriously, sometimes the dog truly does get sick from a vaccination! Generally not quite as bad as from the real disease, but bad enough to notice on its behavior.

Vaccines do differ from the real disease. For some, the different is so significant that the body does not establish an effective protection against the disease – the vaccine did not work... This is often the case for killed vaccines. The body quickly figures out that somebody “cried wolf” for no good reason, and all the mobilized defense gets dismissed, and no preparedness established. The vaccination is considered a false alarm – which it actually also truly was! When the disease arrives, the body will taken off guard... We got a false protection.

Vaccines also differ from the real disease by the fact of the virus being contained in a liquid that gets injected into the body in a location that *never* would be a first entrance for a naturally contracted infection. This surprise for the immune system will normally result in exactly that over-reaction that is desired, but it can also sometimes go too far: this happens when the body directs the preparedness towards

another attack from the same location in the body – and will thus not be timely alerted when the real disease arrives through the natural entrances....

Finally, there is another important thing too take into account when administering a vaccine. The virus comes in a liquid that contains some poisonous preservation chemicals. On top of that, this “soup” also contains remains of the foreign tissue the virus was cultivated on – it is impossible to physically take the virus off that tissue, so the manufacturer simply takes the tissue with the virus – and dilutes it in the poisonous soup that now is called “vaccine”. There are two important effects of this:

- The poisons will cause another challenge to the immune system. On top of fighting the disease, it must also clean up after a serious “chemical spill”.
- Also the foreign tissue will challenge the immune system! It might actually cause all kinds of allergic reactions, as foreign protein entered undigested, directly into the blood should do!

Those two additional challenges to the immune system will cause the body to experience the stress of three challenges at one time! This will, generally, take just about all its capacity. Some research shows that we talk about 60-75% of that capacity when we use a killed vaccine, and some 75-90% when we used a modified live vaccine.

### **What if the dog is sick at the time of vaccination?**

As you can understand from the way a vaccine uses the immune system’s capacity, there will be a problem if the dog gets vaccinated at a time when it is already using the immune system to fight another real disease. It could be something fairly harmless that easily can be defeated, but when the vaccine gets added to the picture, that picture changes dramatically....

We now have a competitive situation. The immune system has its limited capacity. Here is one on-going battle that typically takes about half its capacity – and now another challenge is introduced that demands way more attention than what it has left of its capabilities! The result is that it must prioritize and concentrate on fighting the most dangerous threat first. This will often be the current disease. But the effect of that is that no immunity will be established against the vaccine – because, at the time the immune system comes around to fighting it, it is very obvious that this threat is fake – so it won’t be taken seriously. That means: the vaccine did not work...

A very dangerous alternative to this is that some modified live vaccines “wake up” when they got time to nourish themselves a regain their strength – and the dog will not experience a full-fledged attack by the disease you were trying to protect it from!

Another possibility is that the immune system will concentrate on the *vaccine* – and leave the other disease to rampage the body and possibly do much more harm than otherwise. The dog might actually get so sick from something fairly simple that it can die from it.

Finally, those remains of the foreign tissue will, in both cases, probably be left to float around in the blood – and do a lot of damage. Once the immune system finally gets around to dealing with this problem, the damage can be significant. This will result in the body now perceiving a very serious threat from these protein molecules from the foreign tissue – so it will over-react in its defense against them. And that is exactly what happens when an allergy reaction is created. The net result is that the dog developed some serious allergies to certain proteins that are similar to those that were in the virus tissue – and those will very often be from animals that are used for dog food. Voila – we now have a serious food allergy!

### **What about multiple vaccinations?**

Let's assume we let the vet administer a "combi-shot", i.e. a mix of several vaccines in the same injection.

When we consider the capacity of the immune system, we can easily see that this is not a smart move.... Each vaccine will need at least 60% of the body's capacity for immune defense in order to create an effective protection against this disease. We will get the same situation as we had when we discussed vaccinating a sick dog. Maximum one of the vaccines will work – and maybe none – and we won't know until it is too late... Mixing more than two vaccines just makes it even worse.

This has been confirmed by practical research. The famous Swiss Distemper epidemic in 1984 is a prime example that clearly showed that dogs that had been vaccinated with combined Distemper-Parvo vaccines contracted Distemper as easily as dogs that had not been vaccinated at all!

In human medicine, this is well known. In Sweden and Japan, for instance, vaccinating a person with more than one vaccine at a time is prohibited by law.

The US Army is probably the worst abuser of this rule, demanding multiple vaccinations of its personnel – and trying to explain away the many casualties its gets from this ridiculous procedure that might be cost effective in terms of a military perspective – but certainly completely unacceptable from a humane standpoint.

So, why should we do this to our dogs....?

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