# Feline vaccination from kittens to senior cats

# Q&A

1. Hi, I want you to ask that is it really necessary to repeat all three main vaccines every year? Where do we know that antibody levels are low? Or should antibody levels be checked before vaccinations? As an owner i find yearly repeat doses a lot. What do you suggest about this?
2. What are your recommendations for effective immunity annually? And how many boosters should be made? Regards from Paraguay

For the previous questions, the answer is the same. Annual repetition of the core vaccines (panleukopenia [FPV], herpesvirus [FHV-1] and calicivirus [FCV]) is not necessary: all vaccines work very well and you can decide for a 3 year booster for all is the cat is a zero-low risk cat (indoor, solitary, no contact with unknown cats) or eventually every 1-2 years if the cat is a medium-high risk cat, but only for FHV-1 and FCV infections because FPV gives a long-lasting protection. There is the possibility to check protection with VacciCheck (complete name ImmunoComb VacciCheck Feline), a very useful in-clinics test based on the dot ELISA technique, both before and after vaccination in order to check if booster is needed (before) or if vaccination has worked (after).

3. The latest US vaccination protocol states to vaccinate every three years for core vaccines, rather than every year. Yet, some veterinarians push for yearly vaccines (of all core vaccines). Could you please comment on this?

As I have just explained, annual core vaccine boosters are not necessary if live vaccines (MLV) or killed vaccines that state this opportunity is their leaflet are used. Vets should always control and consider the risk for each cat for respiratory pathogens (FHV-1 and FCV, core) and FeLV (circumstantial or non-core).

4. Can you use intranasal rhino/calici vaccine as a treatment for upper respiratory infection?

In Italy there are no respiratory vaccines registered for IN use in cats, but some vets can use this administration route with SC vaccines, but I think for preventive and not for therapeutic purposes.

5. Are the queen variability factors that affect the transfer of passive immunity known? Ex health status, previous exposure to natural immunity or vaccination?

Yes, all these are factor affecting transfer of passive immunity both in queen and in bitch. There is a tremendous individual variability between queens and also between mammary glands of the same queen. Very important is how many antibodies have the mother (different for age, health status, stress, nutrition, immunity, strength of the immune response…), how many antibodies it transfers into colostrum, how much colostrum is taken in by the kitten (also different for maternal attitude), how many colostral antibodies are absorbed into the gut… so yes, the variability among queens is big!

6. Herpes is transferred from many queens to their kittens, through their milk. Does that mean that FHV-1 vaccinations should be given earlier than other kitten vaccinations?

No, you can’t vaccinate kittens as early as the virus is transmitted. Feline vaccines are generally registered for 6-8 weeks old kittens (in Italy and in some other countries only for 8-9 weeks of age) and only in case of emergency you can anticipate vaccination as early as 4 weeks of age, but never before 4 weeks, in order not to risk vaccine adverse effects.

7. Thank you for your great presentation. When the queen should be vaccinated after giving birth?

Thank you for the compliments! If needed, you can vaccinate after weaning, but only if needed: in many cases protection lasts very long, and you don't need to vaccinate too often.

8. Is it recommended to vaccine FIP positive cat?

What you mean with FIP-positive cat? As far as I know, there is not a test that permit to diagnose FIP before symptoms… to date, unfortunately, no reliable tests are available for this, and a PCR positivity for coronavirus therefore don't allow confirmation of a FIP. If you mean a coronavirus-positive cat, like other cats with some infections (eg. FIV and FeLV) you can consider vaccination if the cat is well and is only positive for that pathogen, but if cat is not well your priority are different…

9. What would the vaccine protocol be for a 5-year-old cat with epilepsy?

In this case you must consider the infectious risk for the cat: if it has an indoor life (as I can imagine) risks are very low; if it lives with other cats consider their life (if indoor or outdoor) and the possibility to vaccinate the other cats. In any case, this cat should be tested with VacciCheck for core diseases, while for FeLV you must consider the risk well: for this purpose, the "2020 AAFP Feline Retrovirus Testing and Management Guidelines" are a perfect read:


[https://journals.sagepub.com/doi/pdf/10.1177/1098612X19895940]

10. Which vaccines are country-specific (primarily recommended in certain regions because of higher prevalence of certain illnesses in certain regions)?

For cats this distinction is not as easy as in the dog, partly because the number of feline vaccines is fewer. Apart core vaccine (really recommended for all cats worldwide starting from kittens), FeLV vaccines (recommended for all kittens since you don't know the life they're going to live when they grow up, with a booster after 1 year), and rabies vaccines (mandatory in some countries and for international movements), the few others (*Chlamydophila felis*, FIV, FIP, dermatomycosis) are non-core and in each country vets should evaluate every single cat and decide if this kind of vaccination is useful or useless.

11. Why are FIP vaccines not recommended, even though it's such a deadly disease?

For this question, the "WSAVA Guidelines for the Vaccination of Dogs and Cats" and many other papers help me: I suggest you read this very interesting and recent work (2020) of Dr. Diane D. Addie "Feline coronavirus and Feline Infectious Peritonitis diagnosis and prevention":

Biogal Laboratories and www.catvirus.com present:

# Feline Coronavirus and Feline Infectious Peritonitis Diagnosis and Prevention

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May 2020

[https://www.biogal.com/wp-content/uploads/2020/06/Addie-FCoV-FIP-diagnosis-prevention-2020.pdf]

In this paper, Dr. Addie explains that the only FIP vaccine available is an intranasal temperature-sensitive vaccine which must be used in seronegative cats at least at 16 weeks of age (and the second dose 3 weeks later) in order to be effective, but unfortunately, by 16 weeks of age, most purebred kittens are already infected, which means that the vaccine is of limited use in the largest demographic of FIP victims: young pedigree cats. Also the "2020 AAHA/AAFP Feline Vaccination Guidelines" consider FIP vaccine as not recommended:

**Not Generally Recommended Vaccines for Pet Cats**

| FIP | Administration Instructions | Clinically Relevant Comments for Administration |
|---|---|---|
| Intranasal<br>Attenuated live | For frequency and interval, follow label instructions | • **Not generally recommended** at this time because its uncertain ability to uniformly prevent disease in North American cat populations does not justify its routine use<br>• Only coronavirus seronegative cats have the potential to be protected, and most cats are seropositive before the age of recommended vaccination<br>• Vaccine virus (serotype II) differs from the serotype (I) that predominantly causes clinical disease<br>• The benefits and risks of vaccination remain unclear (see comments in text) |

[https://www.aaha.org/aaha-guidelines/2020-aahaaafp-feline-vaccination-guidelines/feline-vaccination-home/]

12. Which rabies vaccine is the safest?

The today's rabies vaccines for companion animals are all safe because in most of the world they are non-infectious (killed) or vectored, while live vaccines (MLV) are no longer often used: in fact, although MLV rabies vaccines are safe and potentially potent in dogs, the WHO stopped recommending them for parenteral inoculation in animals in 2004. In any case, when permitted (not in Europe) MLV rabies vaccines are safe. MLV are instead still present in baits for orally immunization of wild animals, since in this case the stimulation of a local immunity is needed and only MLV vaccines are suitable for this purpose.

13. Dr. Dall'Ara is talking about using live vaccines for kittens. However, in the US, primarily killed vaccines are used. Could you please comment on this?

Inactivated (killed) vaccines are generally more difficult to manage in stimulating a good protection. Firstly, differently from MLV, killed vaccines require two doses 3-4 weeks apart, and immunity is present only after the second dose and is not complete. Secondly, the duration of immunity (DOI) after vaccination with killed vaccines is likely to be shorter than for MLV. Thirdly, killed vaccines generally (but not always) contain adjuvants that help stimulating immune system, but in cats these molecules are suspected to stimulate an inflammatory process and then to be responsible, among others, of development of the so-called Feline-Injection Site Sarcoma (FISS). Considering all these aspects, vets must then correctly use killed vaccines and possibly check protection after vaccination (VacciCheck is perfect for this purpose).

14. Is it handy to vaccine every 6 months of the cat has chronic sneeze disease?

In my opinion no. The duration of immunity (DOI) reported in the leaflet of all vaccines represents a minimum value: this means that a vaccine protects at least for 1 year (some for 3 years). Using them every 6 months, above all in ill cats, is useless. Cats recovered from FHV-1 disease are usually not

protected for life against further disease episodes: in these cases, vaccination is recommended, but not in chronically infected cats.

15. What would be the most appropriate vaccination protocol for a kitten shelter?

It depends on the shelter situation and there is no one-size-fits-all strategy for vaccinating shelter animals. As well underlined in WSAVA guidelines (see below), animal shelters are characterized by a random source population with a mostly unknown vaccination history, high population turnover and high infectious disease risk. Due to this high risk of diseases, for kittens entering a shelter core vaccination may be started as early as 4-6 weeks of age (never before), foreseeing revaccination every 2 weeks until kittens reach 20 weeks of age (if they are still in the shelter) (see WSAVA table 4 below). For adult cats, literature also demonstrates that cats entering shelters may be seropositive for vaccine-preventable infectious disease agents and protected at least in part.

**Table 4. WSAVA Guidelines on Feline Vaccination for the Shelter Environment**

| Vaccine | Kittens | Adult | Comments |
|---|---|---|---|
| FPV<br>FHV-1<br>FCV | Administer a single dose prior to or at the time of admission as early as 4–6 weeks of age; then, every 2 weeks until 20 weeks of age if still in the facility. | Administer a single dose at the time of admission; repeat in 2 weeks if the animal remains in the shelter. | MLV preparations are preferable.<br>Use of intranasal FPV vaccines is not recommended in the shelter environment (Schultz 2009). Use of intranasal FCV/FHV-1 MLV vaccines may be preferable when rapid onset (48 hrs) of immunity is important. Post-vaccinal sneezing, more commonly seen following administration of intranasal FCV/FHV-1 vaccine is impossible to distinguish from active infection. |
| Rabies | A single dose should be administered at the time of discharge from the facility. | A single dose should be administered at the time of discharge from the facility. | The administration of rabies vaccine will be determined by whether the shelter is in a country in which the disease is endemic and vaccination is required by law. |

The VGG does not recommend the use of other feline vaccines in the shelter situation.

[https://wsava.org/wp-content/uploads/2020/01/WSAVA-Vaccination-Guidelines-2015.pdf]

16. Besides FISS are there any other adverse events, specific to cats (and especially correlated to life stages)
17. For the first time in 30 years, I had two lethal adverse reactions in two kittens, about 3 months old, one Blue Russian and the other in an European stray but adopted, both in good clinical condition, checked for parasites etc. with the Panleukopenia, Herpes and Calicivirus, both with pneumonia, no post mortem examination. Same vaccine box. The manufacturer, after the pharmacovigilance alert, at the moment claims there is no relationship. What is your opinion?

Yes: in cats, like dogs, vaccine side effects are also possible, but the risk is very small: only 1-10 cats out of every 10,000 vaccinated will experience a serious side effect to a vaccine (rate of 0.52% of vaccinated cats). I suggest you read the AAHA webpage dedicated to the post-vaccine adverse reactions in cats ("Adverse Postvaccination Reaction", see below), where this problem is well explained.


[https://www.aaha.org/aaha-guidelines/2020-aahaaafp-feline-vaccination-guidelines/adverse-postvaccination-reactions/]

In this page, AAHA explains that postvaccination adverse events in cats are considered rare: most of side effects are short in duration and generally mild, far less dangerous than the illnesses the vaccinations protect from: examples are lethargy, anorexia, slight and transient fever, localized swelling, sneezing, and cold-like symptoms. Only in a few rare cases more severe reactions requiring immediate medical attention can occur. This is the case of anaphylaxis, the most severe allergic reaction that pets can get from vaccinations but rare (1-5 reactions per 10,000 vaccinations). It may manifest as vomiting, diarrhea, respiratory distress, facial or generalized pruritus, facial swelling, and collapse. It typically occurs very soon (20-30 minutes) after vaccination, but delayed reactions can

appear up to 48 hours after the vaccine administration. For these reasons, is very important to carefully monitor cats in the veterinary practice the 20-30 minutes after vaccination (since it is during this time that these problems are most likely to occur) and then ask owners to continue to monitor cats over the next 24 hours.

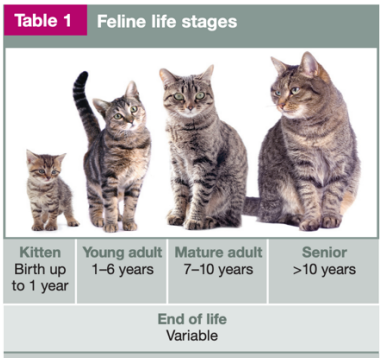
Relative to the two kittens who died after core vaccination, unfortunately without a post-mortem examination is really difficult to establish the real role of vaccines in this sad situation: it would also be important to know when the reaction occurred (whether after the first vaccination or after subsequent vaccinations, and how long after).

18. Important needle gauge in FISS?

No, it is not important. As you can read in the Facebook page of the International Society of Feline Medicine (ISFM) dedicated to FISS "How much do you know about FISS?" [https://www.facebook.com/ISFMcats/photos/how-much-do-you-know-about-fiss-one-article-published-in-our-recent-feline-focus/2976849239051267/], variables such as needle gauge and syringe type do not alter the risk for tumor development.

19. Hi Dr, is it necessary to vaccinate geriatric cat annually? If not, at what age do we stop annual vaccine (if the risk is low)
20. Is it true that senior cat more than 10y no need to get vaccination anymore?

For the previous questions, the answer is the same. Based on the "2021 AAHA/AAFP Feline Life Stage Guidelines", a cat that is more than 10 years old is considered a senior cat.




[https://catvets.com/guidelines/practice-guidelines/life-stage-guidelines]

And no, a senior cat doesn't need neither annual vaccination nor stopping vaccination. During elderly immune system doesn't work very well: the component most affected by the aging process is the cell-mediated one. An older subject may have difficulty fighting a new antigen (never encountered before), while remembering a known antigen (because immune memory still works well) and being able to successfully fight it: so, the trick is don't let it lose its memory. As the "2020 AAHA/AAFP Feline Vaccination Guidelines" [https://www.aaha.org/aaha-guidelines/2020-aahaaafp-feline-vaccination-guidelines/feline-vaccination-home/] well explain, most adult cats should be revaccinated every 1-3 years based on their lifestyle risk, and an older cat should be treated as an adult one. A decision not to vaccinate might involve a senior or geriatric cat residing in a single-cat household with no outdoor access, or when the risk is a pathogen with low virulence or limited local prevalence. To avoid unnecessary core vaccination (above all FPV) you can control if antibody levels are adequate (and once again VacciCheck is perfect for this purpose).

21. So, if you see a cat that has no known prior vaccination history, say at 7 months of age, is a FVRCP booster 3 to 4 weeks later needed?
22. Would you recommend giving a single dose of MLV vaccine to a cat/dog that is over 16 weeks of age?

For the previous questions, the answer is the same. The WSAVA guidelines state that an adult cat (even a kitten over 16 weeks of age is considered adult) of unknown vaccination history requires only a single dose of MLV panleukopenia (FPV) core vaccine and two doses of MLV FHV-1/FCV vaccine (3-4 weeks apart) to stimulate a protective immune response. Using two vaccinations for a very good immunogen like FPV in an adult cat (as for a kitten less than 16 weeks old) is consider unjustified and contrary to fundamental immunological principles: multiple vaccinations are needed in kittens to overcome MDA interference. Nevertheless, in my opinion, get two MLV vaccinations in cats less than one year old would not be a mistake, as their immune system is not yet fully mature. For FHV-1/FCV, serological and challenge studies show that postvaccination protection lasts up to 3 years or longer in the majority of animals; nevertheless, protection is not always complete and may decline slightly as the vaccination interval increases. Once again, VacciCheck can help clarify the situation.

23. Should a calici vaccine be administered to an older cat with calicivirus?

Reading specific literature dedicated to FCV infection, I never found the suggestion to use this vaccination for therapeutic purposes.

24. If the kitten did not suckle from its mom within 24 hours, should the kitten be vaccinated earlier than 8-9 weeks?

Yes, this possibility is suggested because this could be considered an emergency, but you can't anticipate vaccination before 4 weeks of age, in order not to risk vaccine adverse effects (VAEs). As I have already mentioned (see Question n. 6), feline vaccines are generally registered for 6-8 weeks old kittens, but in Italy and in some other countries they are registered only for 8-9 week old kittens, so if you have to use them first you do an off-label use.

25. What is the recommended vaccination protocol for older cats (>1 y.o.) vaccinated for the first time? For both low- and high-risk cats.
26. How should be the vaccination protocol for pets older than one year old?

For the previous questions, the answer is the same. If you must vaccinate an adult cat of unknown vaccination history, see Question n. 21 & 22. If this cat has been properly vaccinated as a kitten, the suggested protocols could be as follows based on the risk:

| AGE | VACCINATION |
|---|---|
| ZERO risk cats | |
| 1 year* | panleukopenia, herpesvirus and calicivirus infection + FeLV |
| 2 years | === |
| 3 years | === |
| 4 years | panleukopenia, herpesvirus and calicivirus infection |
| 5 years | === |
| 6 years | === |
| 7 years | panleukopenia, herpesvirus and calicivirus infection |
| ... AND SO ON | |

| AGE | VACCINATION |
|---|---|
| LOW-risk cats | |
| 1 year* | panleukopenia, herpesvirus and calicivirus infection + FeLV |
| 2 years | === |
| 3 years | herpesvirus and calicivirus infection + FeLV |
| 4 years | === |
| 5 years | panleukopenia, herpesvirus and calicivirus infection + FeLV |
| 6 years | === |
| 7 years | herpesvirus and calicivirus infection + FeLV |
| ... AND SO ON | |

| AGE | VACCINATION |
|---|---|
| HIGH-risk cats | |
| 1 year* | panleukopenia, herpesvirus and calicivirus infection + FeLV |
| 2 years | herpesvirus and calicivirus infection + FeLV |
| 3 years | herpesvirus and calicivirus infection + FeLV |
| 4 years | panleukopenia, herpesvirus and calicivirus infection + FeLV |
| 5 years | herpesvirus and calicivirus infection + FeLV |
| 6 years | herpesvirus and calicivirus infection + FeLV |
| 7 years | panleukopenia, herpesvirus and calicivirus infection + FeLV |
| ... AND SO ON | |

27. What are the factors that influence the formation of a sarcoma?

As you can read in the already mentioned (see Question n. 18) Facebook page of the International Society of Feline Medicine (ISFM) dedicated to FISS "How much do you know about FISS?" [https://www.facebook.com/ISFMcats/photos/how-much-do-you-know-about-fiss-one-article-published-in-our-recent-feline-focus/2976849239051267/], several studies have shown that specific risk factors may increase the probability of developing a FISS. For example, getting two or more separate injections into the intrascapular region has proven risk increase; on the contrary, when vaccines are warmed to room temperature prior to administration, FISS development risk decreases. In my experience, I know that risk is higher in young cats, with cold vaccines, as the number of doses at the same point increases, using adjuvated vaccines (without adjuvants the local inflammation is significantly lower and with a faster resolution), and using any substance/material causing inflammation. Useful recommendations are to administer vaccines only SC and never IM, and to abandon the interscapular area

permanently, preferring inoculations in much more distal areas, which are more easily surgically removed in case of FISS. But always remember that the FISS risk is still lower than that of developing disease if unvaccinated, and the risk/benefit ratio is always in favor of vaccination.

28. What is the recommendation about a cat that is recovering of a viral disease? when should we restart vaccination
29. Good day, if a cat comes out of the viral infection, how long after should it be vaccinated?
30. Thank you for the sharing. Hi doc, when we can give FPV vaccination to the cat that has been recovered from the parvovirus?
31. Good morning, if a cat just finishes a viral infection what is your recommendations in terms to start vaccination?

For the previous questions, the answer is the same. In cats recovering from FPV infection the duration of immunity (DOI) is lifelong, while respiratory natural infections/diseases should not be expected to provide the same robust degree and duration of protection: immunity is far from solid and of variable duration. Consequently, in my opinion it is possible to restart FHV-1 and FCV vaccination after 1 year from recovery.

32. What would be your protocol for revaccination of older cats diagnosed with chronic kidney disease?
33. So, in an elderly cat with a chronic disease such as cancer or chronic renal disease, and is indoor only, should core vaccines be continued?
34. Are any of the vaccines contraindicated for cats with heart disease (valvular disease as well as sick-sinus disease)?
35. Dr. Dall'Ara, how often do you recommend revaccination in adult feline cancer patients?

For the previous questions, the answer is the same. Cats with well-controlled CKD, cancer or heart disease can be vaccinated. Before vaccinating, however, it is always advisable to perform an antibody titration for core vaccines to assess the actual need for such vaccinations (and VacciCheck is perfect for this purpose), above all since some authors suspect that vaccination is a potential risk factor for CKD in cats. Similarly, the need to administer one or more non-core vaccines should always be very carefully evaluated by the vet together with the owner, based on the subject's lifestyle and risk/benefit ratio. If the disease is not well controlled, vaccination should be avoided: in fact, in these cases the priorities over vaccination are others (eg, stabilization of the patient and treatment of the ongoing chronic disease).

36. What can you say about internal and external parasite vaccines? can you give your suggestions in terms of zoonotic? (for only indoor cats)

As far as I know there are no vaccines neither for external parasites (eg, fleas, ticks, lice) nor for vector-borne diseases for cats (for dog there are 3 vaccines against vector-borne diseases: leishmaniasis, Lyme disease and piroplasmosis) and nor for internal parasites. A commercial vaccine for giardiasis was previously developed for pets and farm animals, but its efficacy was controversial. Unfortunately, at the present time efficient vaccines against Giardia are not still available, above all because this parasite, undergoing antigenic variation, is able to escape the host’s immune defenses, causing chronic infections and/or re-infections. To the best of my knowledge, there is currently only one promising but experimental vaccine (being studied in Argentina since 2016, see below) that appears highly efficient in preventing new infections and reducing chronic giardiasis in dogs and cats both in experimental and natural infections.

Vaccination of domestic animals with a novel oral vaccine prevents *Giardia* infections, alleviates signs of giardiasis and reduces transmission to humans

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*Npj Vaccines* (2016) **1,** 16018; doi:10.1038/npjvaccines.2016.18; published online 15 September 2016
[https://www.nature.com/articles/npjvaccines201618]

37. Dr. Dall'Ara, you recommend vaccination against feline leukemia in those patients in whom it is not possible to perform an antigen or PCR test, but who are at high risk of contracting the disease?
38. It is necessary a negative test for FeLV previous vaccination?
39. Good morning, excellent teacher, I take this opportunity to greet you since you were my teacher at the univ. I wanted to ask about the feline leukemia vaccine, is it necessary to carry out the test before vaccinating?

First, thanks for compliment! For the previous questions, the answer is the same. As the "2020 AAFP Feline Retrovirus Testing and Management Guidelines" [https://journals.sagepub.com/doi/pdf/10.1177/1098612X19895940] state, cats should be tested for FeLV before initial vaccination. Administering FeLV vaccines to infected cats is of no therapeutic value (there is no benefit, as vaccine will not offer any protection against the virus) and every unnecessary vaccination carries the risk of potential adverse reactions (see Question n. 16 & 17). One of the reasons is that if a vaccinated cat's status is unknown and the cat is later determined to have a progressive FeLV infection, vaccine efficacy would be questioned, and vaccine failure suspected. On the other hand, FeLV vaccination does not affect the test results and does not give false positives.

40. Hello Dr., I have a question that, let say the cat had the complete vaccinations (FPV, FCV, FHV, FeLV, Rabies) in the first year but when the annual vaccinations time comes, the cat comes late to update the vaccinations. In this case, dose the cat needs only one dose of it or need to have one more dose in the next 3-4 weeks?

It depends on the type of vaccine used and the duration of the delay. If MLV vaccines are used, no worries about any delay because these vaccines "recall themselves" and only one dose is sufficient to recall immune memory (see Question n. 21 & 22). If non-infectious (killed) vaccines are used and the delay is long (5-6 months), I think it could be better to administer two doses 3-4 weeks apart. Rabies vaccination (generally with killed or vectored vaccines, see Question n. 12) depends on the current rules of each country, and it is therefore appropriate to adapt vaccination to these.

41. Brilliant question- is there a link between specific feline breeds and adverse events

No. While some adverse vaccinal effects are more commonly seen in certain breeds of dogs (Dachshunds, Pugs, Boston terriers, Miniature pinschers, Chihuahuas, Boxers …), suggesting a genetic predisposition, no similar predisposition seems to affect cats.

42. Adult cat 7 years not vaccinated, should I vaccinate now?

In my opinion yes, at least with core vaccines. WSAVA guidelines suggest that all cats (regardless of circumstances or geographical location, no matter where or how they live) should receive core vaccines (including rabies in endemic areas) at least once in their lives, in order to provide lifelong protection against infectious diseases of global significance: in fact, core vaccines protect animals from severe and life-threatening diseases that have widespread distribution. For FeLV, considered a circumstantial vaccine, it is advisable to well assess the risk taken by the cat (indoor/outdoor, solitary/multicat household, …) and decide accordingly: for this purpose, the "2020 AAFP Feline Retrovirus Testing and Management Guidelines" are a perfect read [https://journals.sagepub.com/doi/pdf/10.1177/1098612X19895940].

43. The vaccine is applied in general according with the region, regards from Mexico

Yes, it is possible that some regions/countries ask for particular vaccinations. This is for example the case of rabies vaccination, mandatory in some countries and in others no, administered with one shot in some countries and in others with two shots, repeated annually in some countries and in others depending on the vaccine used…

44. Good afternoon. I would like to know how effective are FIV and FeLV test? Your recommendations

FIV and FeLV test are a very useful tool to well manage any type of cat. There are many different tests on the market, based on ELISA or lateral flow technique, and they must be used to check the status of each individual cat. Generally, FeLV tests look for antigen while FIV tests look for antibodies (as far as I know there is only one other test that for FeLV looks also for antibodies). Once again, the "2020 AAFP Feline Retrovirus Testing and Management Guidelines" [https://journals.sagepub.com/doi/pdf/10.1177/1098612X19895940] are a perfect read to use them correctly. One hoax regarding FIV and FeLV tests is that they cannot be used in cats less than 6 months old. Obviously, the interpretation of the results depends on various factors, but if, for example, an 8-week-old kitten must be tested for a general screening and the result is negative for both diseases, this can be considered as valid, as well as if the result is positive for FeLV (apart some exceptions): in case of FIV-positive result in a kitten less than 6 months, however, the detected positivity could be related to the presence of the maternally derived antibodies (MDA) since the queen (and no the kitten) was infected, and thus represent a false positive result. FIV antibody-positive kittens can be retested immediately with a reliable PCR assay to clarify their status, since PCR looks for virus and not for antibodies.

45. Rabies vaccine, when to apply?

As already explained in answering other questions, rabies vaccination depends on the current rules of each country. For example, in Europe the 576/2013 EU regulation on formalities for pet animals travelling between EU countries applies to non-commercial movement of pet animals. In accordance with this European regulation, dogs, cats, and ferrets must be identified by a transponder, have the Pet Passport and be vaccinated against rabies by an authorized veterinarian before getting out of their own country. Animals must be at least 12 weeks old at the time of the first vaccination (there are some exceptions). The period of validity of the vaccination starts not less than 21 days from the completion of the vaccination protocol for the primary vaccination (often only one shot), and any subsequent vaccination should be carried out within the period of validity of the vaccination according to the manufacturer's instructions reported in the leaflet of the chosen vaccine (1, 2 or 3 years). To enter some non-EU countries, rabies vaccination alone is not sufficient and an antibody titration by an authorized lab must be performed, the positive result of which must be reported on the passport. When an owner tells you he wants to go abroad with his pet, always move early and carefully consult official and reliable sources (the best are the government sites but also PetTravel [https://www.pettravel.com/], a really useful independent website designed for pet owners traveling with their pets). In countries where rabies is endemic, vaccination is mandatory and generally free of charge and may require one or two administrations in the primary vaccination.

46. The application should be subcutaneous or intramuscular?

Parenterally vaccines generally are registered for a subcutaneous (SC) administration, and only few also for intramuscular (IM) administration. One of the recommendations for avoiding the development of FISS in cats is use only the SC route ad never the IM one.

47. Would you recommend that different type of vaccines (FPV FCV FHV) (FeLV) be administered as a single dose at intervals of two weeks?
48. Is it dangerous to administer multiple vaccines at the same time?

Generally, FPV, FCV and FHV-1 are contained in a single vaccine and represent the so-called “trivalent” vaccine, sometimes with the addition of FeLV as well. The commercial production of polyvalent (multivalent) vaccines has made vaccine protocols less expensive and more convenient for both veterinarians, owners, and breeders, increasing the likelihood that animals are properly vaccinated. Manufacturers produce polyvalent vaccines with an appropriate balance between different valences: consequently, polyvalent vaccines and separately administered monovalent vaccines stimulate the same immunity vs the contained pathogens. For this reason, only licensed polyvalent products (tested for their compatibility) should be administered. Different products should never be mixed to make "do-it-yourself" polyvalent vaccines: this is the case of vaccines from different brands or even vaccines of the same brand if this possibility is not clearly specified in the leaflets. Polyvalent vaccines must be administered according to the vaccine types (MLV or killed): if killed, they generally require two shot 3-4 weeks apart (2 weeks should be used only in emergencies and not as a routine protocol). Veterinarians and owners are often concerned about the number of components included in some polyvalent vaccines thinking that they are too many to well stimulate the immune system or even that they are dangerous, but this is an unfounded fear: the immune system is perfectly able of responding to multiple antigens simultaneously, and multicomponent vaccines would not be licensed if all components were not proven to be effective. Furthermore, there is no evidence of any kind of danger or increased risk of adverse reactions by using such vaccines.

49. Would you always suggest FeLV Elisa test before every FeLV vaccination?

It depends on the risks of each cat: repeat testing over time might be needed to clarify the status of some cats. Since not all vaccinated cats will be protected by FeLV vaccination (because it is not 100% protective), preventing exposure remains important even for vaccinated cats and checking that the situation has remained unchanged can be very important.

50. How to vaccinate a previously unvaccinated young adult cat with moderately compromised immunity?

In this case, like in the others, very important is the evaluation of risks. If the cat lives solitary indoor, one core vaccination could be sufficient, but ideal would be to test the protection after vaccination (and VacciCheck would be perfect for this purpose). Also in case of a FIV- or FeLV-positive but healthy cat (I don’t know what you mean with “*cat with moderately compromised immunity*”), vaccine selection and protocol should be based on individual risk assessments (and “2020 AAHA/AAFP Feline Vaccination Guidelines” are fit for this purpose [https://www.aaha.org/aaha-guidelines/2020-aahaaafp-feline-vaccination-guidelines/feline-vaccination-home/]).