### Possible outcomes after exposure to the feline leukaemia virus (FeLV):

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Progressive infection</th>
<th>Regressive infection</th>
<th>Abortive infection</th>
<th>No infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>What happens?</td>
<td>Persistent viraemia (poor immune response)</td>
<td>Transient viraemia (good immune response)</td>
<td>Virus eliminated (strong immune response)</td>
<td>No FeLV infection</td>
</tr>
<tr>
<td>Soluble FeLV antigen p27 ELISA or other immunomigration</td>
<td>+ ~ 6 weeks after infection</td>
<td>− *</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Intracellular FeLV antigen IFA on blood smear</td>
<td>+ 3 weeks after ELISA</td>
<td>− *</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Proviral DNA PCR on whole blood</td>
<td>+++</td>
<td>+++/+ **</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Anti-FeLV antibodies Different tests</td>
<td>− / ±</td>
<td>+++</td>
<td>+/+</td>
<td>−</td>
</tr>
<tr>
<td>Replicating virus Viral culture of blood</td>
<td>+</td>
<td>− *</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Viral RNA RT-PCR of blood/saliva</td>
<td>+</td>
<td>− *</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Viral shedding</td>
<td>+++</td>
<td>− *</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Consequences</td>
<td>FeLV-associated disease common, poor prognosis.</td>
<td>Latent infection ('carriers') FeLV-associated disease uncommon. Possible reactivation in case of immunosuppression; potential source of infection.</td>
<td>No FeLV-associated disease.</td>
<td>No infection. FeLV vaccination useful.</td>
</tr>
</tbody>
</table>

**Notes on tests**
- Only viraemic (antigen-positive) cats shed FeLV.
- Cats with either regressive or abortive FeLV infection will test negative for FeLV p27 antigen.
- Vaccination and maternal antibodies do not interfere with FeLV p27 antigen testing.
- A positive FeLV p27 antigen result indicates antigenaemia; in general, antigenaemia equates with viraemia. Cats will test positive from a few weeks after infection.
- In geographical areas with low prevalence of FeLV infection, the potential for false positive results must be considered; at low prevalence, the (inevitable) small number of false positives can exceed the number of true positives. Positive antigen tests results in low prevalence areas should therefore be confirmed by provirus real-time PCR.
- PCR tests that detect genome-integrated FeLV provirus reveal a higher percentage of FeLV-infected cats compared to tests routinely used to detect FeLV p27 antigen.
- Regressive and progressive infections can be distinguished by repeated testing for viral antigen in peripheral blood.
- Regressively infected cats usually test FeLV antigen-negative by at least 12 weeks after infection (longer in exceptional cases), while progressively infected cats remain FeLV antigen-positive.
- PCR tests detecting genome-integrated FeLV provirus are recommended on whole blood for doubtful and positive p27 serum test results. True positive p27 samples will test highly positive on FeLV provirus PCR.
- Initially, both regressive and progressive infections are accompanied by high levels of FeLV provirus in the blood. Subsequently, regressive infections are associated with low provirus loads, progressively infected cats maintain high provirus loads.
- Detection of FeLV RNA in blood samples by RT-PCR is rarely used; it is recommended if a very early phase of infection is suspected, as viral RNA can be detected in the blood 1 week after exposure.
**Notes on testing:**
- FeLV testing is **not recommended** in cats that have never been exposed to FeLV with certainty.
- It is recommended in all other situations.
- Screening for FeLV is particularly recommended:
  - At the time cats are first acquired
  - Prior to initial vaccination against FeLV
  - If there is concern that a naïve cat has been exposed to infected cats
  - If clinical signs are present

**Common clinical disorders associated with FeLV infection**
- Lymphoma (mediastinal, peripheral and spinal)
- Acute leukaemias
- Non-regenerative (macrocytic) anaemia with erythropoietic hypoplasia
- Immune-mediated haemolytic anaemia
- Chronic or recurrent infections suggesting immunosuppression
- Chronic gingivostomatitis

**Rare clinical disorders associated with FeLV infection**
- Lymphoma (gastrointestinal, renal, cutaneous, ocular)
- Pure red cell aplasia / aplastic anaemia
- Myelodysplastic syndromes / myelofibrosis
- Peripheral neuropathies
- Glomerulonephritis
- Immune-mediated uveitis
- Fading kitten syndrome
- Giant-cell dermatoses
- Cutaneous horns
- Erosive periostitis polyarthritis
- Multiple fibrosarcomas

**ABCD FeLV diagnostic tool**

Is the cat healthy?

- yes
  - Does the cat have clinical problems that could be associated with FeLV?
    - no
      - Test for p27 antigen (ELISA point-of-care test)
        - no
          - Was the cat at risk of exposure within the last 6 weeks or has it changed lifestyle?
            - yes
              - Retest for p27 antigen after 6 weeks
            - OR: RT-PCR (blood) for viral RNA after 1 week
              - Cat was recently infected
            - Cat is likely regresively infected
        - yes
          - Retest blood sample (immediately) for proviral DNA (PCR)
            - Cat is not infected
              - FeLV is not the cause of the clinical signs
            - Cat is FeLV infected
              - Retest for p27 antigen after ≥ 6 weeks
                - yes
                  - Cat is likely progressively infected
                  - Retest for p27 antigen after ≥ 6 weeks
          - Retest for p27 antigen (ELISA point-of-care test)
            - yes
              - Cat is likely progressively infected
              - The clinical signs are likely to be caused by FeLV
            - Cat is not infected
              - FeLV is not the cause of the clinical signs

- no
  - Test for p27 antigen (ELISA point-of-care test)
    - yes
      - Cat is likely regresively infected
      - The clinical signs may be associated with FeLV
    - no
      - Was the cat at risk of exposure within the last 6 weeks or has it changed lifestyle?
        - yes
          - Retest for p27 antigen after 6 weeks
        - no
          - Cat is very likely not progressively infected

Detection of FeLV RNA in saliva samples by RT-PCR is a reliable and highly sensitive test of viraemia. Although it can be used instead of p27 testing, this is rarely done as the test procedure is more labourious. However, as viraemic cats shed high levels of virus in their saliva, pooled saliva samples can be used to screen multicat households for FeLV shedders.