

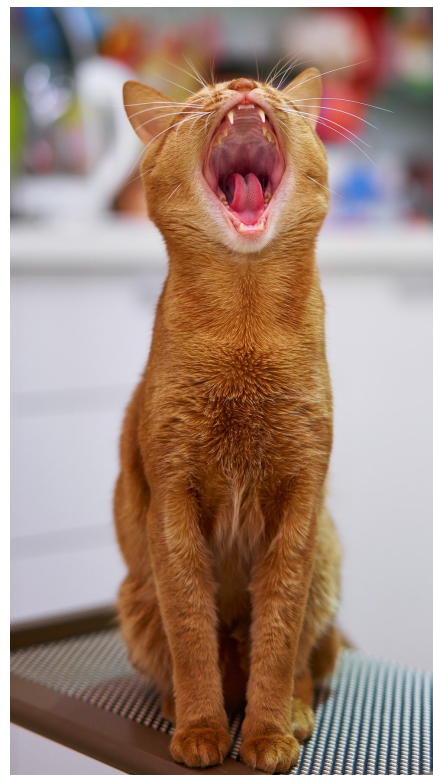
反轉錄病毒陽性貓 貓生管理要點

毛公館動物醫院
林辰柔 獸醫師
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大綱

- 前言
- 檢驗時機點
- 健康貓生管理
- 發病治療
- 病例分享



全球的盛行率

Table 1 Prevalence of FeLV antigen and FIV antibody by region in samples submitted to a referral laboratory (2008–2016)

Region (number of cats tested)	FeLV antigen prevalence (%)	FIV antibody prevalence (%)
North America (2.5 million)	4	5
Caribbean (6882)	9	13
Latin America (9984)	13	7
Northern Europe (95,800)	7	7
Southern Europe (206,157)	12	12
Middle East/Africa (4787)	14	14
Asia-Pacific (81,201)	6	13

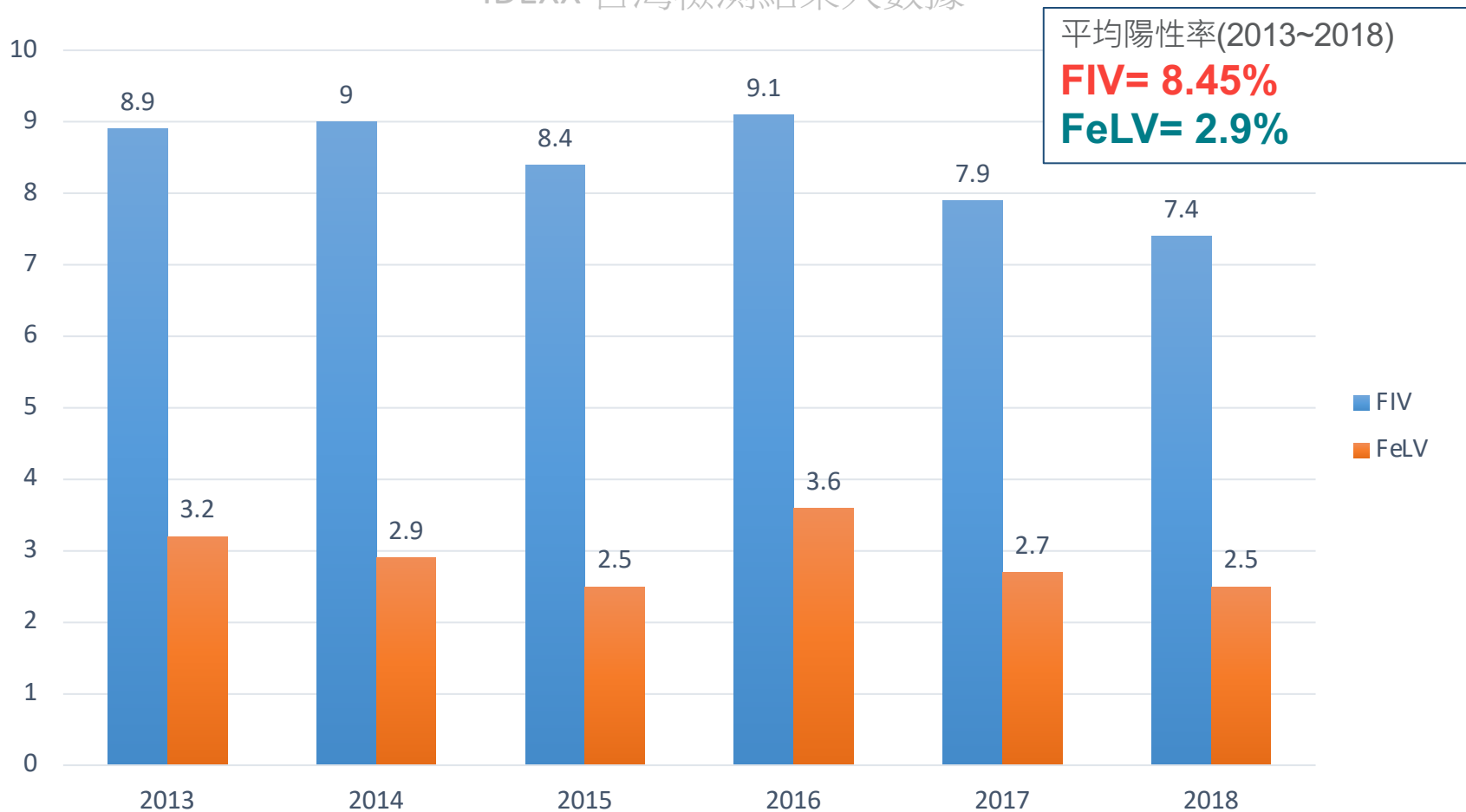
From Buch J, Beall M, O'Connor T, et al¹

FeLV = feline leukemia virus; FIV= feline immunodeficiency virus



台灣近年FIV FeLV盛行率

IDEXX 台灣檢測結果大數據



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5/28/21 (Order Received)
5/29/21 8:34 AM (Last Updated)

反轉錄病毒診斷工具



TEST	RESULT		
Feline Calicivirus RealPCR	NEGATIVE		
Cytauxzoon felis RealPCR	NEGATIVE		
Bartonella spp. RealPCR	NEGATIVE	Salmonella spp. RealPCR	NEGATIVE
Anaplasma spp. RealPCR	NEGATIVE	Toxoplasma gondii RealPCR	NEGATIVE
Ehrlichia spp. RealPCR	NEGATIVE	Feline Panleukopenia Virus RealPCR	^b NEGATIVE
Feline Coronavirus RealPCR	NEGATIVE		
Mycoplasma haemofelis RealPCR	NEGATIVE		
Candidatus Mycoplasma haemominutum RealPCR	POSITIVE		
Candidatus Mycoplasma turicensis RealPCR	NEGATIVE		

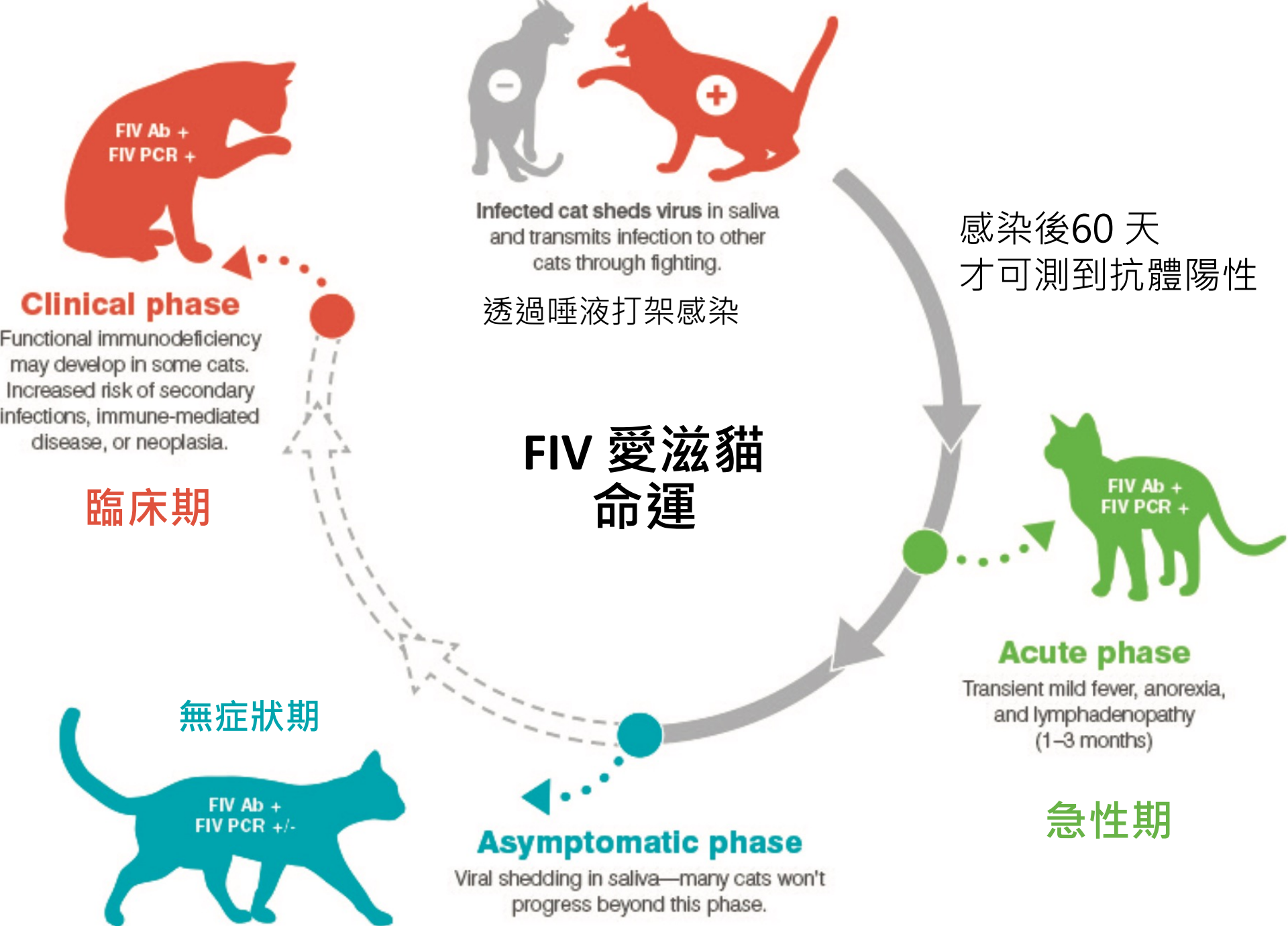
15種病原PCR篩檢

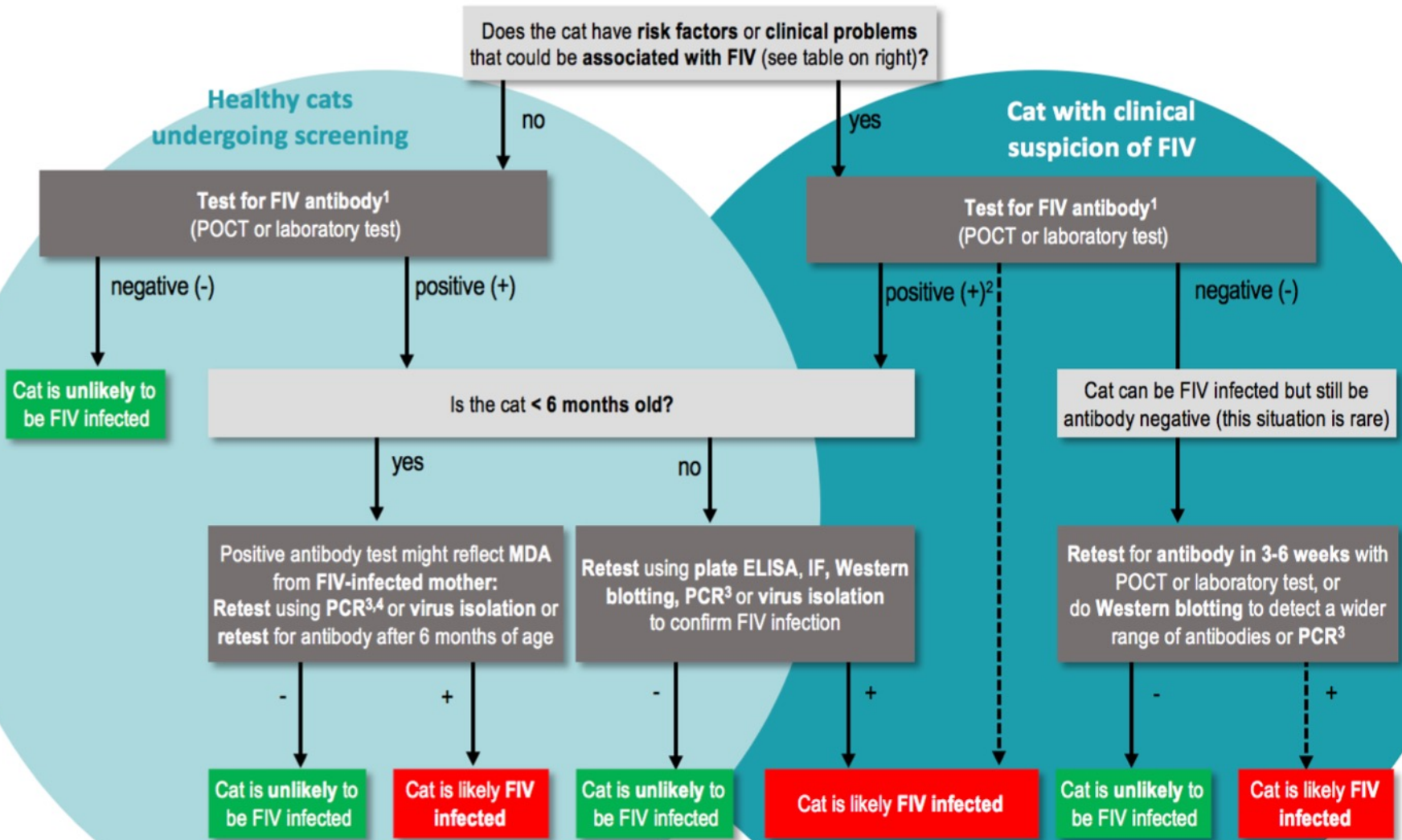
FeLV RealPCR	NEGATIVE		
FIV RealPCR	^a POSITIVE	^a	SUBTYPE A

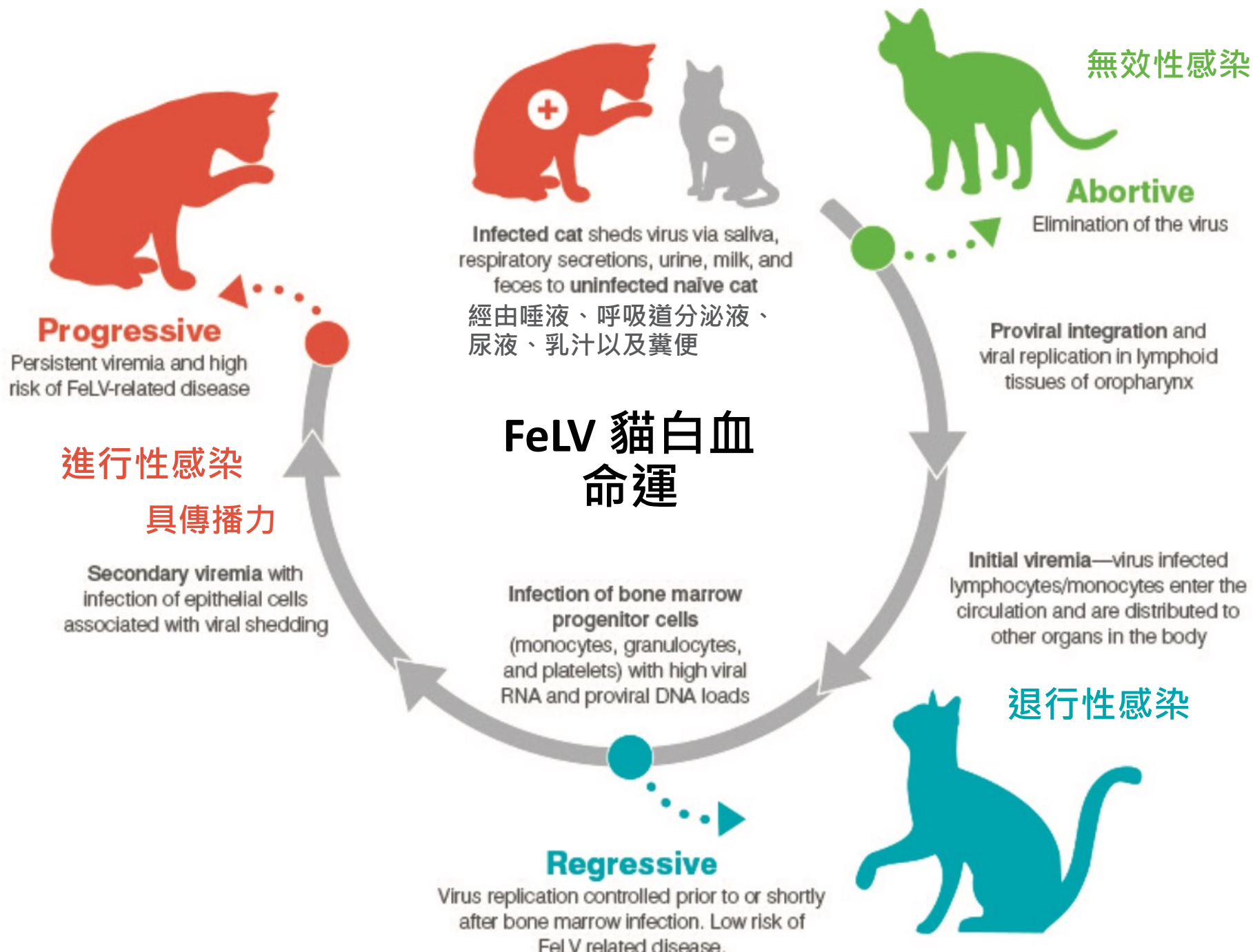
Cryptococcus spp. RealPCR

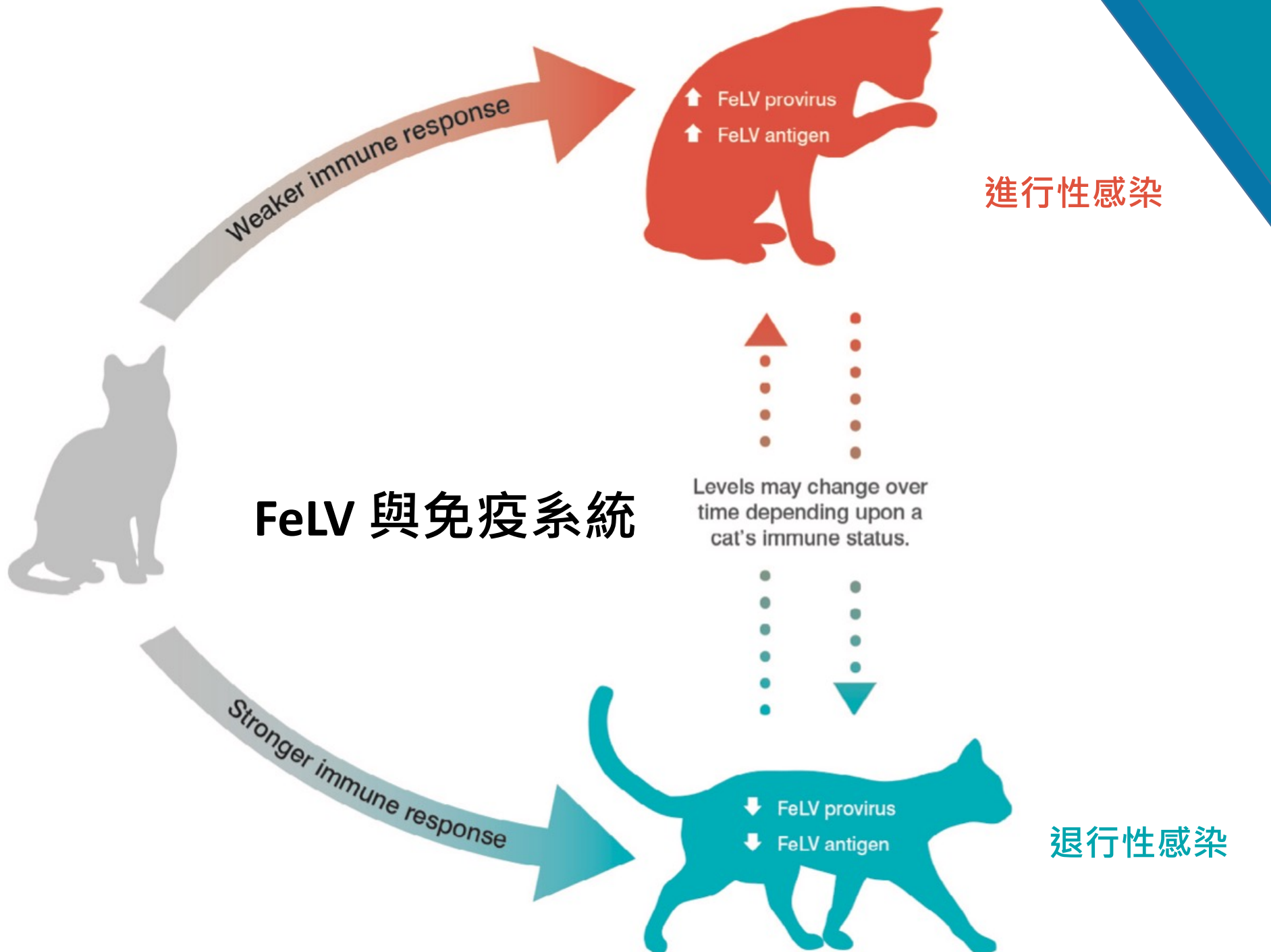
NEGATIVE











Possible outcomes

after exposure to the feline leukaemia virus (FeLV):

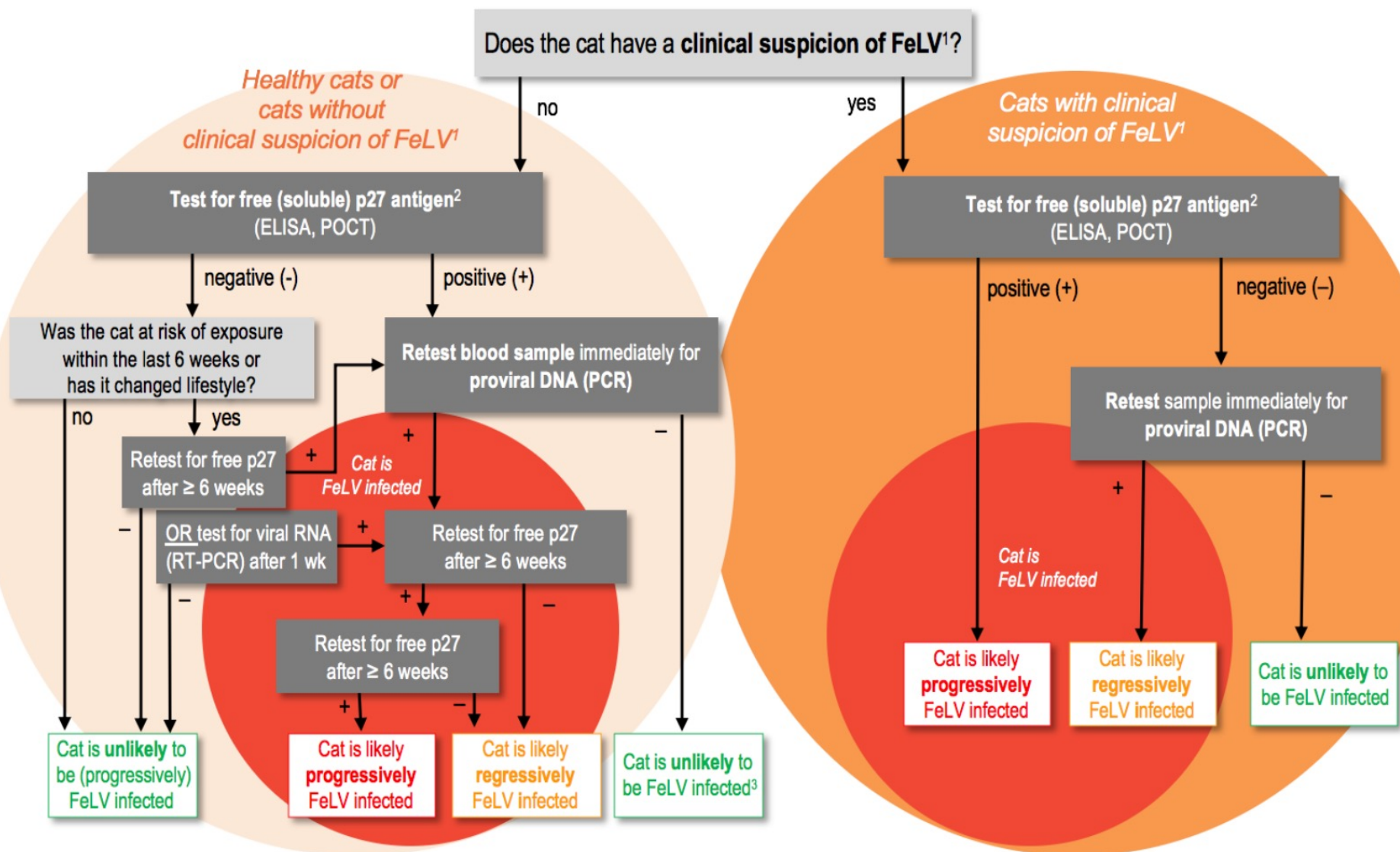


	Progressive infection	Regressive infection	Abortive infection	No infection
What's going on?	Persistent viraemia (poor immune response)	Transient viraemia (good immune response)	Virus eliminated (strong immune response)	No FeLV infection
Free (soluble) FeLV antigen by p27 ELISA or other immunomigration	+	— *	—	—
Intracellular FeLV antigen IFA on blood smear	+	— *	—	—
Proviral DNA (Quantitative) PCR on whole blood	+++	+++ / + **	—	—
FeLV antibodies Different tests	— / ±	+++	+ / ++	—
Replicating virus Viral culture of blood	+	— *	—	—
Viral RNA RT-PCR of blood/saliva	+	— *	—	—
Viral shedding	+++	— *	—	—
Consequences	FeLV-associated disease common , poor prognosis.	Latent infection ('carriers') FeLV-associated disease uncommon . Possible reactivation in case of immunosuppression; potential source of infection.	No FeLV-associated disease.	No infection. FeLV vaccination useful.

* Positive during initial transient viraemia

** Initially + + +, subsequently +

ABCD FeLV diagnostic tool



診斷流程前 先確認

- FeLV
- 暴露病史
- 健康狀態

- 目的：
- 確診或排除
- 進行感染狀態確認
- 漸進式/退行式

- FIV
- 暴露病史
- 健康狀態
- 年齡6m/o

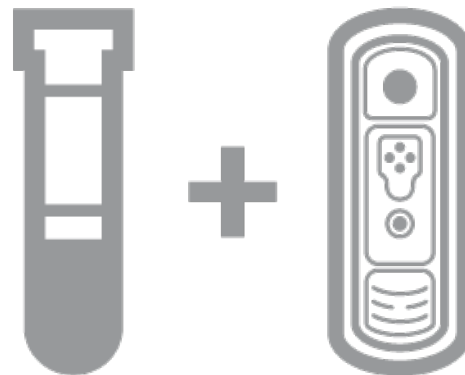


檢驗時機點

- The retrovirus status of **every cat** should be known.

AAFP. Feline Retrovirus Management Guideline 2020

- <1y以下的貓咪
- 有疾病症狀的貓咪
- 新貓咪：完整疫調
- 施打白血疫苗前
- 高風險狀態
- 供血貓



台灣福懋
毛公館動物醫院

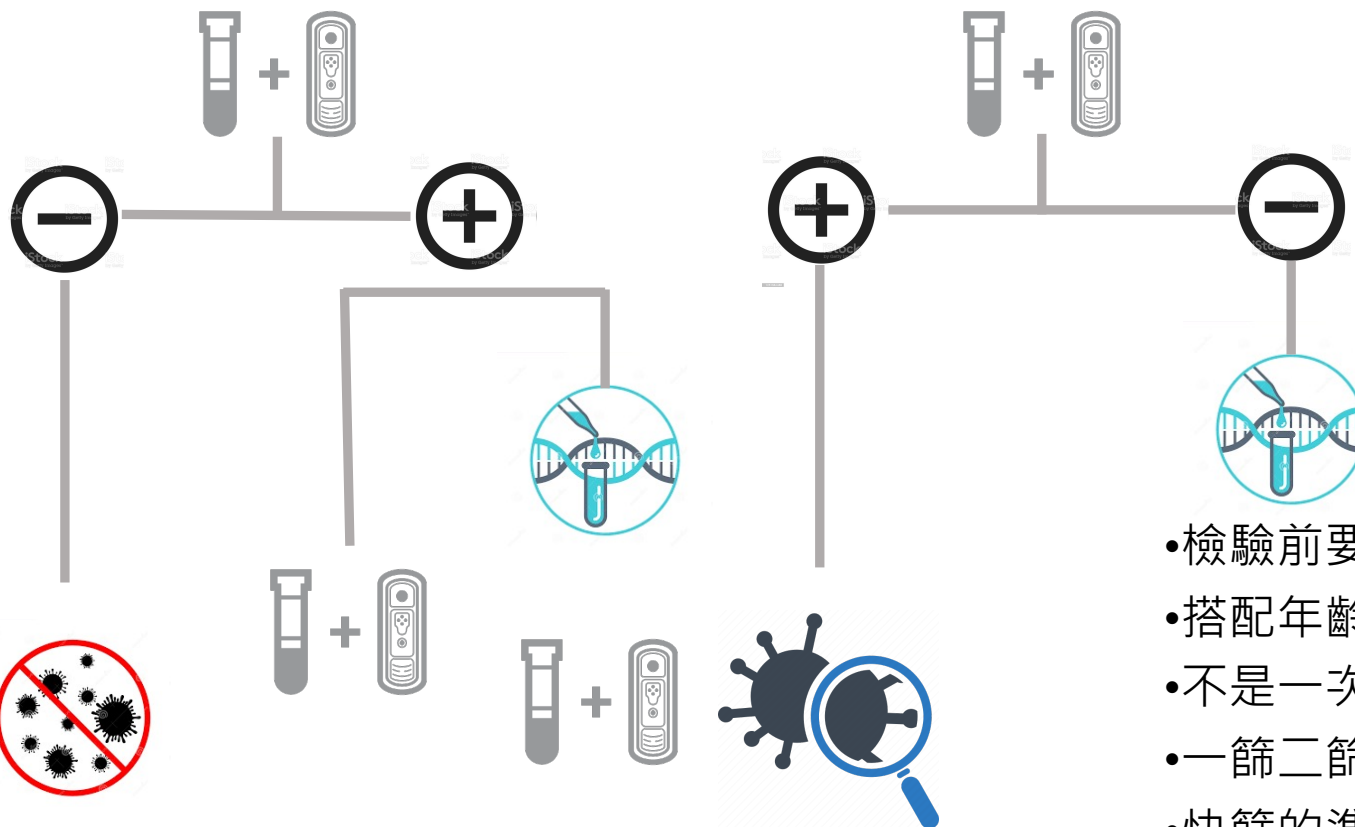
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1. 快篩
2. 強烈懷疑當下搭配PCR
3. 二個月後快篩

健康，無風險貓

有風險，生病



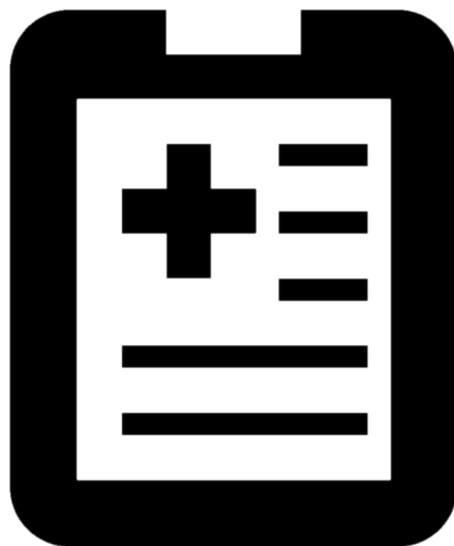
- 檢驗前要說
- 搭配年齡，暴露史
- 不是一次決勝負
- 一篩二篩，一採二採
- 快篩的準確度及病程
- 偽陽性，偽陰性



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完蛋了！
FIV/FeLV (+)
確診了！怎麼辦？



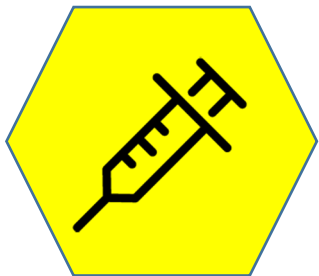




居家管理

- 因為可能具有傳播 Progressive Infection
- 單一貓隻飼養
 - 生活管理
 - 完全室內貓的生活
 - 避免緊迫
 - 開心生活





疫苗注射

- 核心疫苗還是要打
- FIV 不影響疫苗保護產生
- FeLV 可能影響保護效力
- 可監測核心疫苗產生的抗體效力





結紮及手術

- 在健康狀況下進行結紮手術
- 強烈不建議繁殖
- 避免發情緊迫
- 牙齒保健
- 牙周治療檢查





預防產品

- 確保沒有感染風險
- 跳蚤壁蝨
- 腸道內寄生蟲





食物與營養

- 生命的關鍵因子
- 避免生食
- 預防食物引起的感染性疾病
- 注意體重體態
- BCS, MCS





年度健檢

- 每年進行 健康檢查 2次
- 監控體重
- 注意理學外觀變化(淋巴結腫大?)
- CBC (FeLV [+])Q6m)
- 生化
- 尿檢
- 糞檢





	Kitten (Birth up to 1 Year)	Young Adult (1–6 Years)	Mature Adult (7–10 Years)	Senior (>10 Years)
Complete blood count: hematocrit, red blood cells, white blood cells, differential count, cytology, platelets		+	++	+++
Serum biochemistry panel: at a minimum include total protein, albumin, globulin, alkaline phosphatase, alanine aminotransferase, glucose, blood urea nitrogen, creatinine, potassium, phosphorus, sodium, calcium		+	++	+++
Urinalysis: specific gravity, sediment, glucose, ketones, bilirubin, protein		+	++	+++
T4		+	++	+++
Symmetric dimethylarginine and other renal indices		+	++	+++
Blood pressure		+	++	+++
Retroviral testing	+++	+	+	+
Fecal examination	+++	+	+	+
Testing frequency[†]	Single baseline, then as needed	Single baseline, then as needed	Every 1–2 years	At least yearly (every 6 months recommended)



FIV/FeLV(+) 有症狀的動物



- 病毒血症
- 影響全身系統性疾病
- FIV: Clinical phase
- FeLV: progressive infection
- 影響免疫系統等其他疾病



其他疾病與反轉錄病毒相關性

- 無相關性：FLUTD, CKD, DM, 甲狀腺亢進
- 繼發性感染：傳染性疾病，腫瘤，慢性口炎
- 直接相關性：
 - FeLV:原發性淋巴瘤，貧血，骨髓抑制，神經疾病
 - FIV:免疫抑制，神經疾病

Establishing the cause of clinical signs in retrovirus-infected cats

Unrelated to retrovirus infection

These include diseases and illnesses common to cats regardless of retrovirus status. Examples include lower urinary tract disease, hyperthyroidism, diabetes mellitus, chronic kidney disease, etc.

Secondary to retrovirus infection

These include conditions that retrovirus-infected cats are predisposed to due to retrovirus-related immunosuppression. Examples include infectious diseases and neoplasia, as well as chronic gingivostomatitis.

Directly related to retrovirus infection

These include diseases that are caused directly by the retrovirus:

- ✦ FeLV: neoplasia (primarily lymphoma), bone marrow suppression (anemia, thrombocytopenia, leukopenia, pancytopenia), neurologic disease.
- ✦ FIV: immunosuppression, neurologic disease.



FIV 感染可能的臨床症狀

臨床疾病	直接由FIV 病毒引起		伺機的感染所導致
腎臟方面	✓	腎衰竭 絲球體腎炎	細菌、FeLV、FIP、SLE
消化道方面	✓	小腸性下痢	Giardia spp., Cytoisospora spp., Cryptosporidium spp., Salmonella spp., Campylobacter jejuni ..etc
血液學疾病	✓	非再生性貧血、 嗜中性球減少、 血小板減少	FeLV、Mycoplasma haemofelis、Bartonella
血液腫瘤/癌化	✓	骨髓生成不良、 淋巴瘤	FeLV
神經方面疾病	✓	行為異常	FeLV、FIP、Bartonella、Toxoplasma gondii、Cryptococcus neoformans
眼睛方面疾病	✓	葡萄膜炎	FIP、FHV-1、Toxoplasma gondii、Cryptococcus neoformans、Bartonella
口腔方面		口炎	卡里希病毒、念珠菌、菌叢異常增生。
呼吸道方面		肺炎、膿胸 上呼吸道感染	細菌、Toxoplasma gondii、Cryptococcus neoformans、Bartonella、FHV-1、卡里希病毒、常在菌叢異常增生。
下泌尿系統		細菌性膀胱炎	細菌

FIV 臨床症狀

- 體重減輕
- 食慾不振
- 脫毛
- 毛髮粗糙
- 下痢
- 貧血
- 慢性感染或口炎



- FIV 發生淋巴瘤機率約上升5-6倍



FeLV貓白血貓的 臨床症狀

- anemia (18%)
- upper respiratory infection (11%)
- lymphoma (10%)
- myeloproliferative diseases (6%)
- stomatitis (5%)
- leukopenia (3%)
- hemoplasmosis (3%)
- lymphadenopathy (3%)

J Vet Intern Med. 15:2762001

- FeLV 發生淋巴瘤的機率上升60 倍



FeLV 骨髓抑制

- myelodysplastic syndrome
 - Leukemia
 - direct bone marrow suppression
 - neoplastic cells (e.g., lymphoma)
 - infectious agents, myelofibrosis
 - Osteosclerosis
-
- panleukopenia-like syndrome



生病動物的管理

- 治療繼發性的疾病
提早對症治療
- 治療病毒感染
 - Zidovudine (azidothymidine; AZT)
 - 免疫調控
 - Feline interferon omega (Virbagen omega)

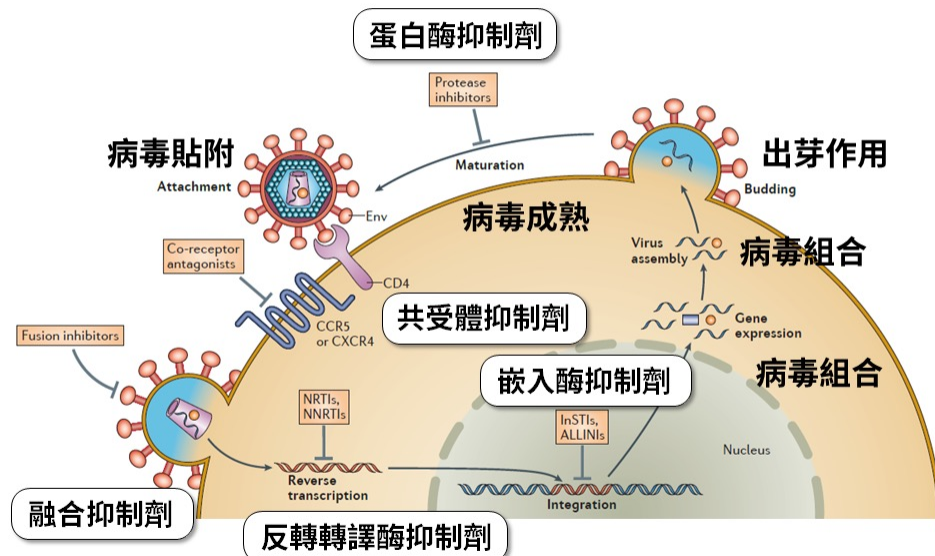


Antiretroviral Agents

- 高效能抗反轉錄病毒療法
(Highly Active Antiretroviral Therapy; HAART)

- 反轉錄酵素抑制劑 Zidovudine (AZT)
 - 5-10 mg/kg PO q12h

- 副作用：非再生性貧血
- 文獻有限
- 台灣缺貨 很貴



Immunomodulatory Antiviral Drugs

recombinant feline interferon-omega (Virbagen Omega)

- 干擾素

- FIV 治療

- 1 MU/kg SC q 24 h for 5 days,

 - repeated on days 14 and 60

- lower-dosage oral protocol

 - (0.1 MU/cat rFeIFN-omega PO q 24 h for 90 days)

- 無病毒特異性

- 但具物種特異性



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FIV/FeLV 最怕的共病症

- 免疫抑制，病情難以控制
- FIV 可以有正常的壽命
- FeLV 約 2.4-5年的壽命
- 終身帶原，終身感染
- 發病是不可治癒的，只能控制管理
- 避免感染，提早診斷，小心呵護



總結

- 每隻貓咪都應該知道目前的retrovirus states
- 暴露的風險評估
- >2次以上的快篩
- 提早診斷FIV/FeLV
- 健康的貓：好好伺候貓公主
- 發病的動物：積極治療管理
飼主溝通



