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CATTERY MANAGEMENT OF INFECTIOUS DISEASES

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CATTERY MANAGEMENT OF INFECTIOUS DISEASES

Goals include the following:

- [1] Decrease the number of infected cats
- [2] Decrease the severity of the disease in the infected cat
- [3] Decrease the number of chronically infected cats
- [4] Decrease the number of asymptomatic carriers [ie., those cats that are capable of transmitting the disease to other cats but that are not themselves showing signs of illness].
- [5] Maximize the number of kittens that remain free of disease after the sale

Factors influencing the development and outcome of infection are numerous but may be classified under three major headings: the host [cat], the infectious agent, and the environment [cattery or multi-cat household].

Host factors:

- [1] **Capabilities of the individual's immune system**
 - heritable or developmental defects and undefined heritable resistance factors -- not particularly well understood, but greater degrees of inbreeding assure lowered resistance to infection.
- [2] **Degree of maternal immunity conferred to kitten by queen**
 - antibodies in the colostrum ingested during the first hours of life provide protection to the kitten for 6 to 10 weeks after birth -- if inadequate quantities are ingested, kitten will be more susceptible to infection.
 - if the queen herself has low levels of antibodies present in her blood, she will pass little antibody to the kittens.
- [3] **Age at time of exposure to the infectious agent**
 - younger animals are much more susceptible to infection than more mature ones. For example, almost all neonatal kittens infected with FeLV will develop a progressively fatal disease whereas about one half of kittens between 12 and 16 weeks of age will recover without becoming ill. Also, upper respiratory tract infections [URI], other viral and bacterial infections, and ringworm are much more severe in young kittens.
 - full immunocompetence [ie., maximum capability of the immune system] does not take place for weeks to months after birth.
- [4] **Intercurrent illness, ie., other disease [infectious or noninfectious] present in the body**
 - marginal nutrition in sick animals -- diseased cats tend to have diminished appetites. Unfortunately, the body requires a higher plane of nutrition during illness to effectively fight any disease. Thus, not only do infections tend to be more severe in cats with suboptimal nutrition, the infection itself tends to cause malnutrition.

- intestinal parasites rob nutrients and decrease the intestine's ability to absorb.
- actual depression of immune system -- classic examples are FeLV and FIV. Until recently, it was estimated that 50% of all cats infected with FIP were coinfectd with FeLV, undoubtedly due to the immunosuppressive effects of FeLV.
- one agent may optimize another's ability to infect -- for example, catteries infested by fleas or other external parasites tend to have greater problems with ringworm. Itchy cats abrade their skin, thus making it more susceptible to infection.

[5] Nutrition

- cell-mediated immune response impaired, esp. T cells, if nutrition inadequate
- complement system, phagocytosis and opsinization also impaired
- nutritional requirements are very different depending upon age, reproductive status, and health. If these differences are not taken into account, malnutrition will result.

Agent Factors

- [1] Virulence** -- the ability of the infectious agent to cause disease
 - certain strains of an infectious agent [eg. calicivirus and coronavirus] tend to cause disease that is more severe or that affects more individuals.
- [2] Dose** -- the more infectious organisms that a host is exposed to, the greater the likelihood of infection. In general, the higher the dose, the higher the rate of infection, the more severe the disease, and the higher the death rate.

Environmental Factors

- [1] Population density** -- overcrowding is one of the greatest problems in catteries.
 - it increases the number of carriers.
 - it increases the risk of exposure.
 - it increases the concentration of infectious organisms contaminating the environment.
 - it minimizes the ability to segregate cats into appropriate groups.
 - it increases the amount of "stress" in individual cats -- free-roaming, solitary animals forced to live in confinement with other cats. Certainly reproductive performance in other species of animals decreases as population density increases -- probably true in cats also. Stress causes release of high levels of cortisol which in turn suppresses the immune system. Cortisol secretion is, for various

reasons, beneficial over a short-term, but long-term cortisol secretion will cause increased susceptibility to infection.

- [2] **Sanitation** -- inadequate cleaning and disinfection permits accumulation of infectious organisms thus increasing risk of infection and dose.
- [3] **Temperature and Humidity** -- rapid fluctuations are detrimental.
- [4] **Ventilation** -- inadequate ventilation allows for higher dose of inhaled pathogens.

Therefore, we want to control all three factors in order to maximize the health of the group

Control Host Factors

- minimize inbreeding.
- avoid lines with known problems.
- avoid extremes in body conformation.
- eliminate known disease-carriers from the group.
- institute appropriate vaccination programs.
- eliminate as many diseases as possible -- for example, it is possible to markedly reduce FeLV infections, internal and external parasites, ringworm, and URI. This reduction will decrease the incidence and severity of more difficult to control infections from other agents like FIP.
- provide proper nutrition for each stage of life.
- provide for adequate quarantine facilities for incoming cats.

Control Agent Factors

- little that can be done other than to reduce the dose by adequate ventilation and sanitation, and reduction of exposure to infected cats -- will be discussed in following sections.

Control Environmental Factors

- provide adequate ventilation. Recommendations vary--anywhere from 6 to 17 air exchanges per hour without creating a draft. Probably not as critical as the spacing of animals--aerosol spread of most infectious agents is not very efficient beyond 3 or 4 feet in still air.
- a temperature of about 72 degrees Fahrenheit and 40-60% relative humidity is ideal. Rapid fluctuations of temperature tend to be more harmful than the absolute temperature itself.
- provide barriers against transmitting infectious diseases. In general, the greater the distance and the better the physical barrier between an infected animal and a susceptible animal, the less the chance that disease will be transmitted.
- light:dark cycle of 14:10 hours is ideal for estrus control.

- provide adequate disinfection and sanitation. Surfaces that can't be adequately decontaminated create serious problems. Carpeted areas, upholstered furniture, carpeted scratching posts, shared bedding, and cluttered storage areas all can harbor disease-causing organisms but do not lend themselves to adequate cleaning. They should be eliminated. The most cost-effective disinfectant to use is a 1:32 dilution of chlorine bleach in water [4 ounces of bleach per gallon of water]. Mix up the dilution daily as it loses effectiveness if not used immediately. A small amount of detergent may be included to increase its cleaning ability. Be sure the surfaces are clean at the time of disinfection--organic material can hinder the disinfecting ability of many products. [See included table]
- handle the cats on an age-priority and susceptibility-priority basis daily. That is, handle the youngest first and the oldest last, and the healthy first and the diseased last.
- limit the number of animals of the same age that are housed together in order to decrease the number involved in a disease outbreak. [Similar-aged kittens tend to have similar susceptibility to infection]
- segregate the cats into at least five different categories: quarantine, isolation, main colony, pregnant queens/nursing queens, and weaned kittens. [See chart]

Quarantine Area for Incoming Cats

- should be in an area as isolated as possible from the rest of the cattery and should be easy to clean and disinfect.
- include any new acquisitions, queens coming in for breeding or returning from breeding, and cats returning from shows.
- length of time of quarantine should be no less than 3 weeks.
- those that become sick are transferred to the isolation area.
- test new acquisitions for FeLV and retest in 3 months if from an environment with unknown FeLV status.
- test new acquisitions for FIV.
- culture for ringworm and keep isolated from other cats until results are known [will be discussed in more detail later].
- perform fecal examination for worms, coccidia, and giardia [consider ELISA test for giardia] and treat as required.
- check for the presence of external parasites [fleas, lice, Cheyletiella]. Bathe prophylactically with insecticidal shampoo.
- do not bring in cats with obvious URI signs, conjunctivitis, or other illness.
- ideally, include only cats that test negative for coronavirus antibodies. Keep in quarantine until a second negative is obtained 6-8 weeks later.

Isolation Area

- any sick animal.
- obviously should be isolated as far as possible from the rest of the cattery and easy to clean and disinfect.
- wear garments that are only used in this section of the cattery. Many organisms are readily carried on clothing. Consider obtaining disposable gowns, shoe covers, and gloves. [This is true for all other sections of the cattery as well.]
- many cats with URI will remain carriers of the infectious agent for most if not all of their lives. Consider culling from the program.

Main Colony Area

- avoid overcrowding
- eliminate obvious carriers.
- never bring in a new cat, cats on loan for breeding, or cats from shows without first going through quarantine.

Pregnant/Nursing Queen Area

- pregnant queen is brought into this area 2-3 weeks prepartum.
- should be housed in individual queening boxes of adequate size for queen and kittens of up to 4-5 weeks of age.
- resist temptation to let all run together in same area -- better to keep queens and kittens of individual litters separate.

Weaned Kitten Area

- early wean at 4-5 weeks of age for optimal control of infectious diseases such as FHV-I infection, FCV infection, FIPV infection, and ringworm infection. [Will be discussed in more detail later]
- don't mix kittens of different ages and susceptibilities together.
- don't mix too many of the same age together -- if one becomes infected, many of the others may also due to similar susceptibility to infection.
- bring into main colony area no sooner than 2 weeks after last vaccination in the series -- usually at 14 to 16 weeks of age.

Accurate and complete cattery records are crucial. Information to be kept in the records include the following:

- identification of each animal and its parentage.
- vaccine records of each animal.
- diagnostic tests performed [dates and results].
- record of illnesses, dates, diagnosis, treatment, and results.

- breeding records to include:
 - dates of estrus.
 - breeding mates and dates.
 - record if pregnancy confirmed and when.
 - numbers of kittens, sexes, colors, sizes.
 - stillbirths, abortions, congenital/hereditary defects.
- consider routine palpation/ultrasound for pregnancy diagnosis if reproductive problems to distinguish between failure to conceive and abortion/resorption.

Remember to work closely with your regular veterinarian regarding any health problems encountered in your cattery. I would urge investigating all illnesses, deaths, stillbirths, or abortions with appropriate diagnostic tests. It is very difficult to solve a problem without knowing the cause.

Suggested additional readings:

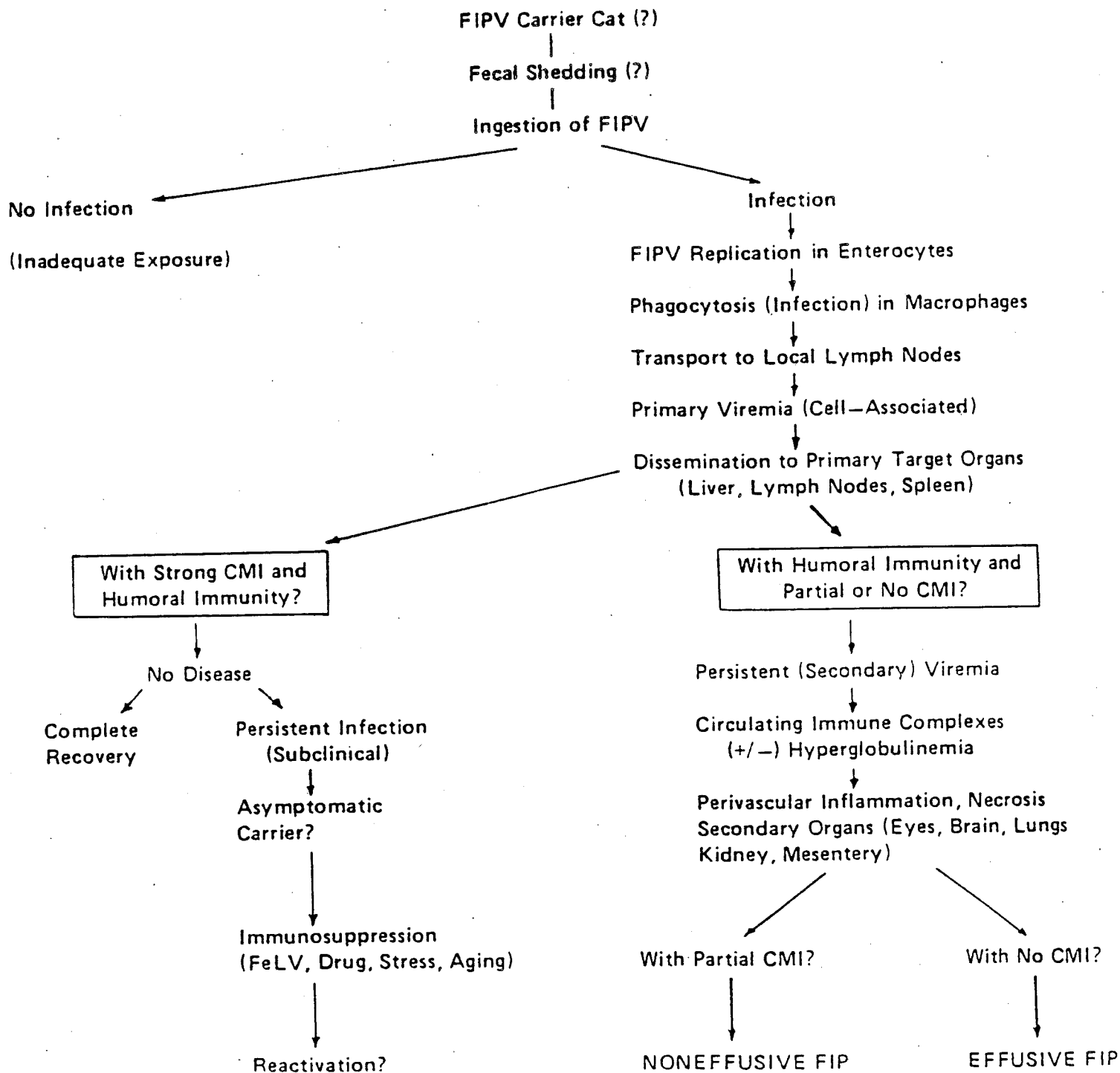
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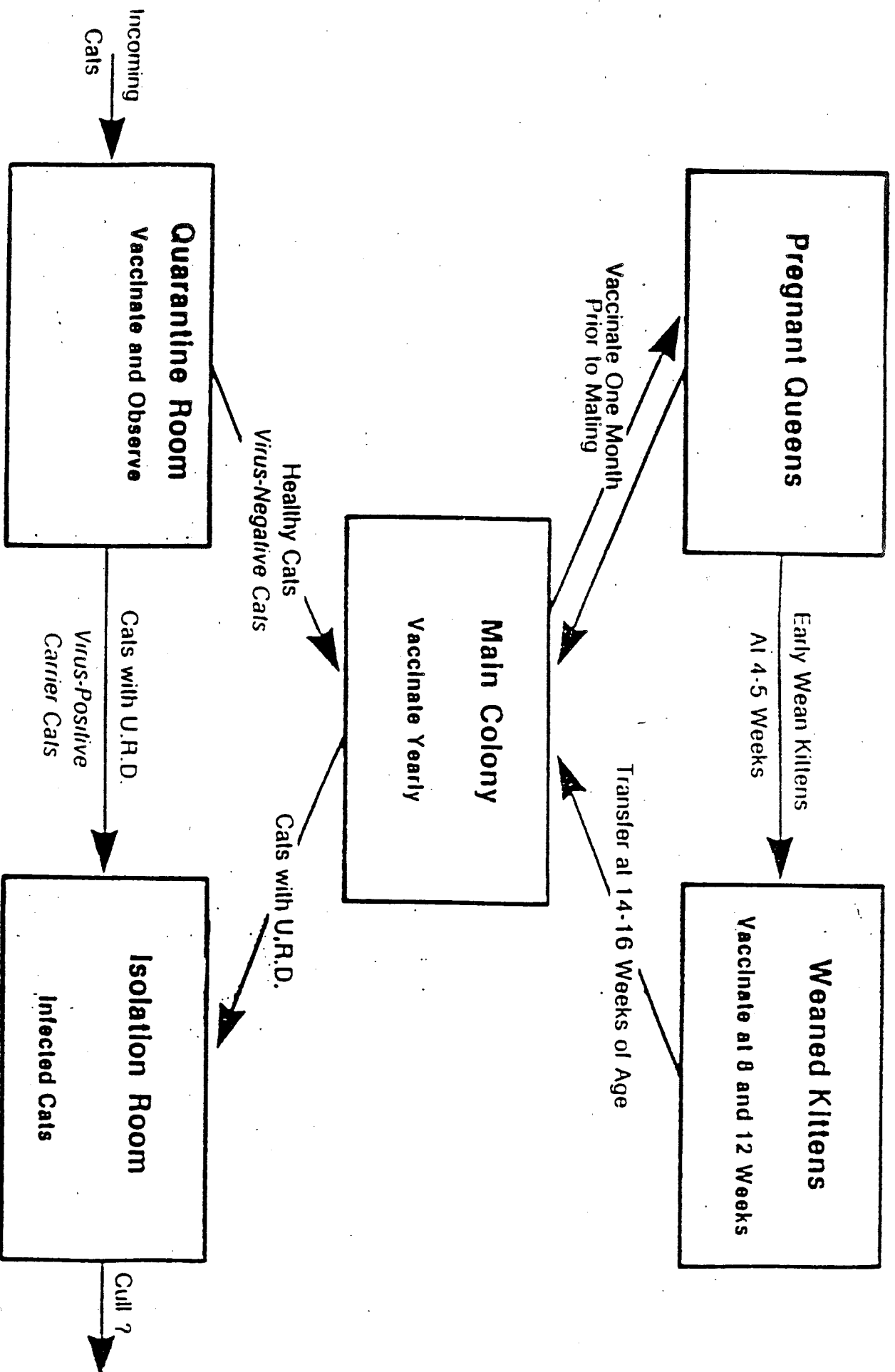
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Proposed pathogenesis of FIP [Adapted from THE CAT: DISEASES AND CLINICAL MANAGEMENT, edited by Robert Sherding, Churchill Livingstone, 1989]



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