

Influence of humans on pet health

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The Sequel....When Fido strikes
back

Concepts/Concerns

- Can changes in disease patterns in people be reflected in their pets?
- Can things done to people or pets be risk factors for the other?
- Are we creating a household pet reservoir of infectious agents?
- Are we increasing morbidity and mortality in our pets?

- *Clostridium difficile*
- Methicillin-resistant *Staphylococcus aureus* (MRSA)

Hospital Visitation Dogs

- Cross-sectional study: 102 active visitation dogs in Ontario, 2004
- *C. difficile*: 58%
 - Including ribotype 027/NAP1
- Group A streptococci: 0%
- MRSA: 0%
- VRE: 0%

Therapy Dogs: Longitudinal Study

- Dogs enrolled before starting visitation careers
 - Healthcare facilities (n=100)
 - Other facilities (ie schools) (n=100)
- Monthly sampling for MRSA, VRE, *E. coli*, *Salmonella*, *C. difficile*...

Results

- 9% of exposed dogs acquired MRSA
 - 1% unexposed ($P < 0.001$)
 - CMRSA-2, CMRSA-10
- *C. difficile* acquisition by
 - 15 unexposed dogs
 - 28 exposed dogs ($P = 0.025$)
- 1 exposed dog acquired VRE

- MRSA risk factors
 - Healthcare centre visitation: OR 6.3
 - Visitation of children: OR 7.1
- *C. difficile* risk factors
 - Healthcare contact: OR 3.3
 - Visitation of children: OR 3.5
 - Antimicrobial treatment: OR 2.2
 - Antimicrobial treatment of someone in the house: OR 3.2

Nested Case-Control Study

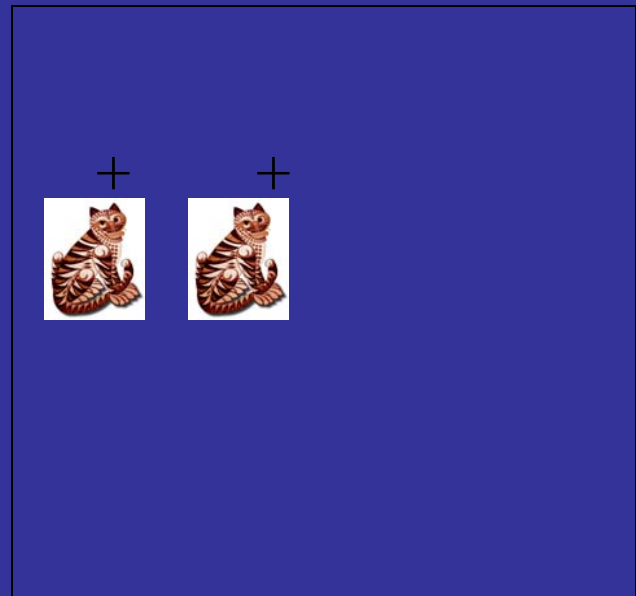
- Positive/negatives in healthcare group
- MRSA
 - Licked patients: OR 13.5
 - Fed treats by patients: OR 12.3
- *C. difficile*
 - Licked patients: OR 2.9
 - Sat on beds: OR 2.9
 - Ate feces: OR 0.12

Clostridium difficile

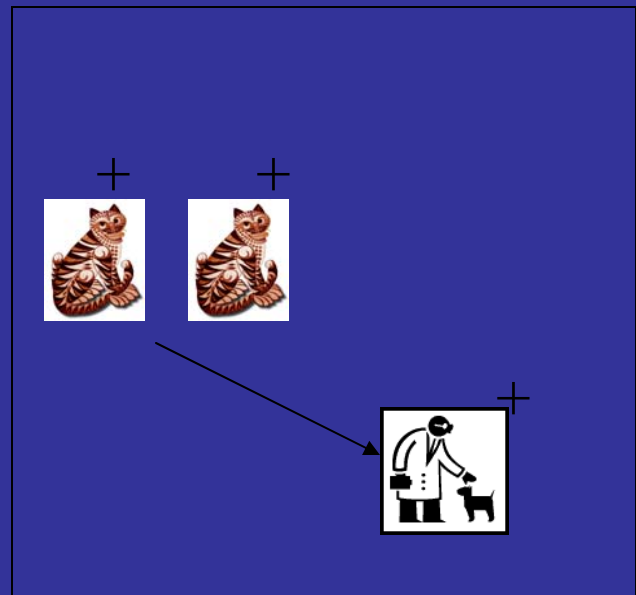
- Study of colonization of pets in households
- Factors associated with *C. difficile* shedding by dogs
 - Immunocompromised person in the house
 - OR 7.8
 - Allowed to run freely in the park
 - OR 0.3

Scenario 1

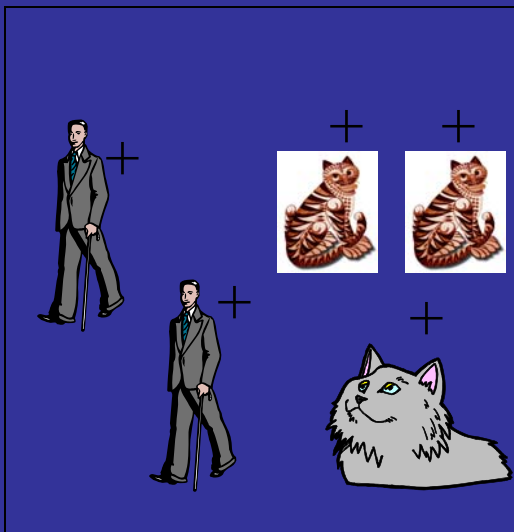
Clinic



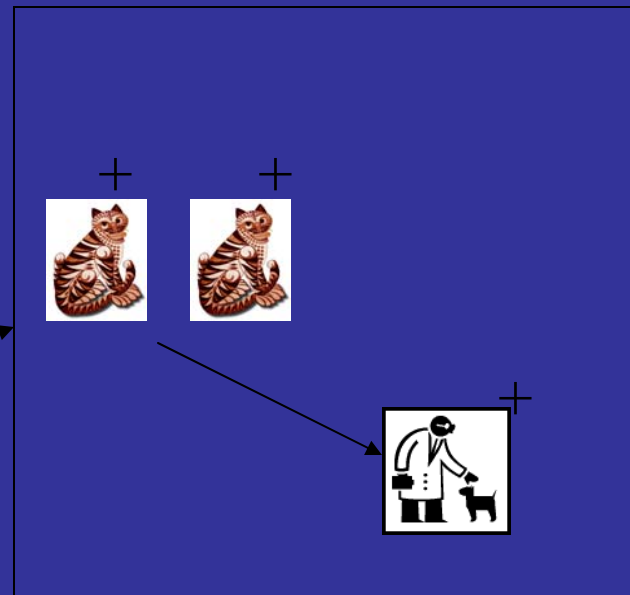
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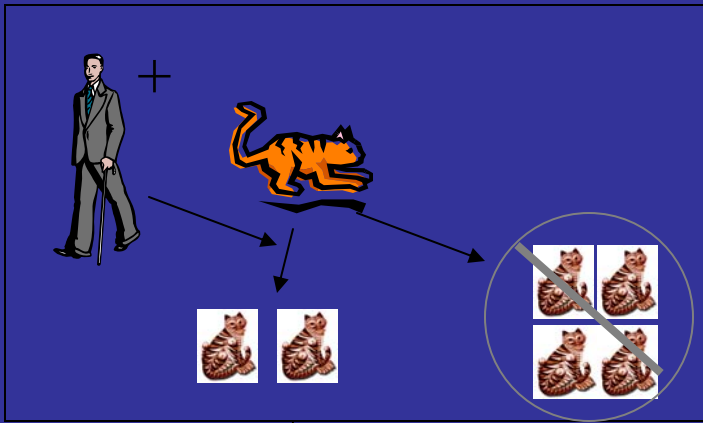
Home



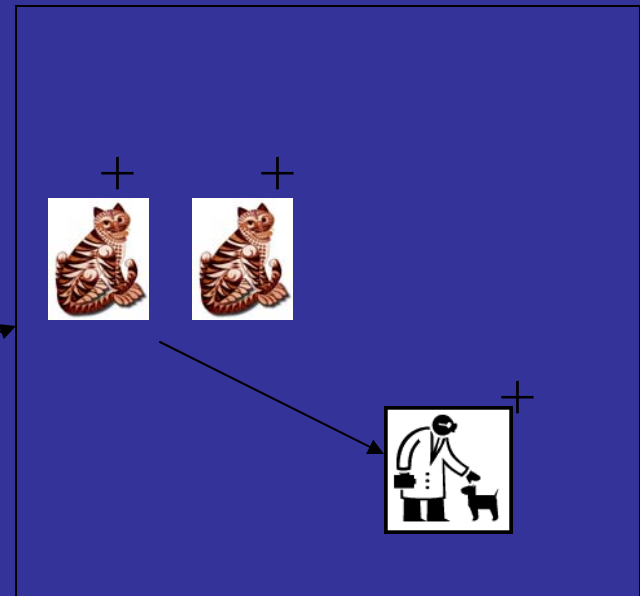
Clinic



Animal Rescue



Clinic



Home



Worse scenario

- Household
 - mother, father, toddler, infant, 2 dogs
- Father
 - MRSA skin infection
- Mother
 - C-section incision infection
 - Nasal abscess
- Toddler
 - 11 separate episodes of skin infection/abscess
- Infant
 - 6 separate episodes of skin infections

- Multiple treatments
 - Mupirocin, doxycycline, trimethoprim-sulfa
 - Bleach soaks, triclosan baths
 - Attempts to treat whole family at once
 - No success

- Nasal/rectal swabs from both dogs
 - One dog colonized (nasal)
 - USA300/CMRSA-10

- Pets are part of the family, microbiologically as well as socially.
- Factors affecting human disease patterns can affect pets, and *vice versa*
- We only have very superficial understanding of pet-human transmission of many pathogens
 - *Cross-sectional studies, basic associations..*
- *Broad investigation of emerging diseases is required*

The End

