

Sanitation: What's really important and has the biggest impact

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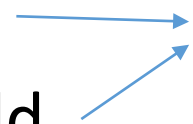
Cleaning Product Basics

- What is our goal?

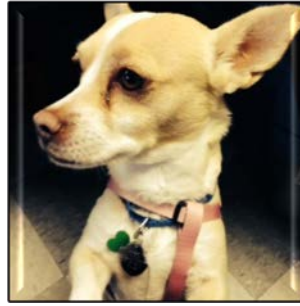
“Good sanitation is an integral part of humane animal housing. Proper cleaning and disinfection practices help reduce the transmission of infectious diseases to both animals and people, and result in a cleaner and healthier environment. A clean shelter also has the added benefits of increasing the comfort level of the animals and presenting a positive image of the shelter to the public. Protocols for proper sanitation are essential for any sheltering program. Providing education and training as well as ensuring compliance with those protocols is also essential.”

- ASV Guidelines for Standards of Care

Association of Shelter Veterinarians (ASV) Guidelines for Standards of Care in Animal Shelters

- <http://www.sheltervet.org/about/shelter-standards/>
- <http://www.aspcapro.org/asv>
- Unacceptable
 - Kennels or cages are sprayed down while animals are inside
 - Animals walk through footbaths
- Must  Very thorough. Give best practice guidelines.
- Should
- Ideal
 - Sanitation protocols are developed and periodically reviewed in consultation with a veterinarian experienced in shelter medicine

Sanitation Goals



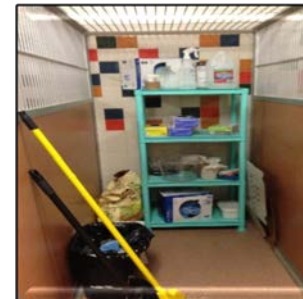
Protect animals
from disease

Protect staff,
volunteer, visitor
health



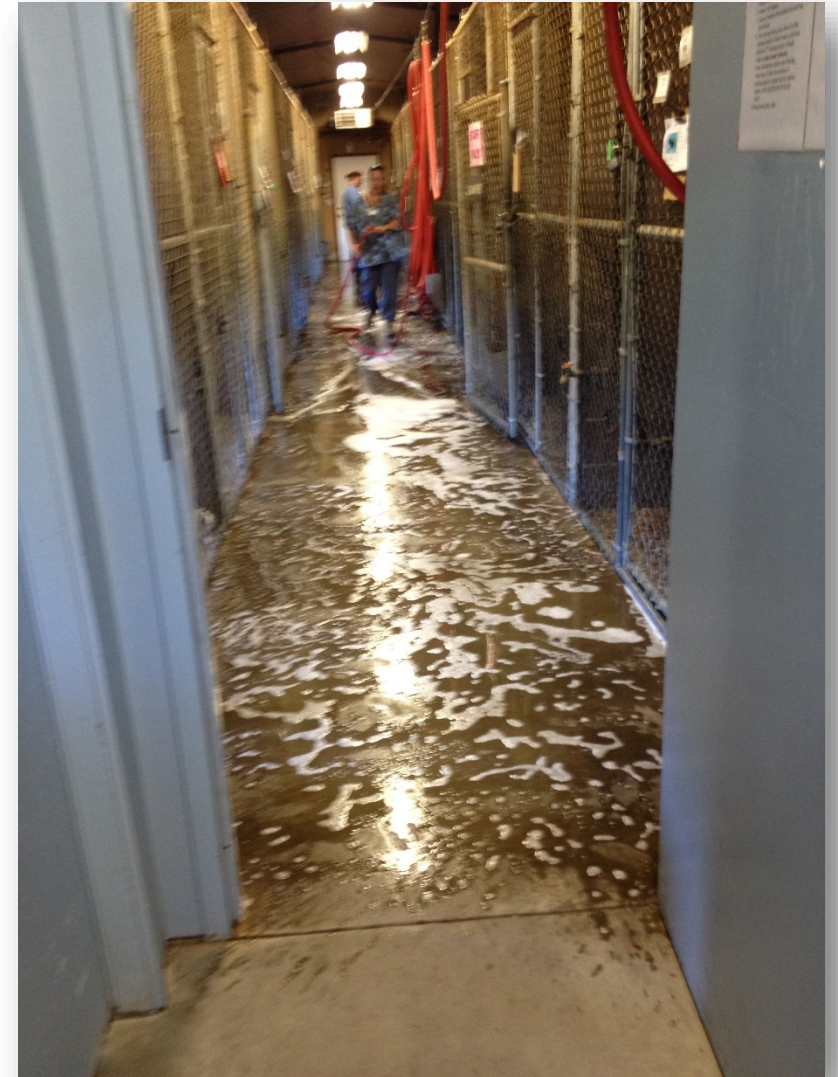
Create a pleasant &
welcoming
environment

Protect the
environment & use
resources wisely



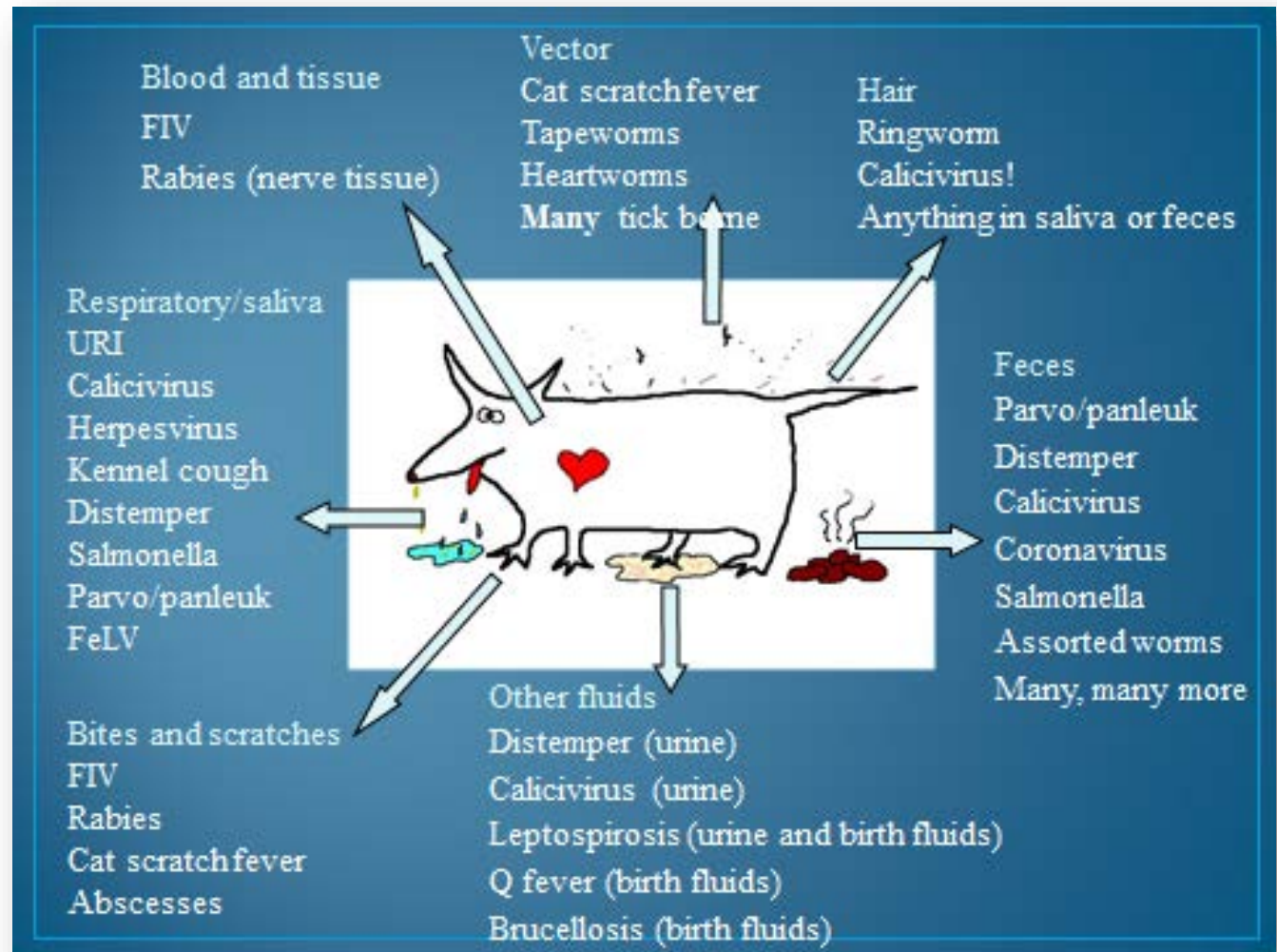
Important Points to Remember

- Efficiency in daily processes effects animal welfare and available resources
- Cleaning time is noisy and disruptive
- Prolonged cleaning time is stressful
 - Concentrate staff so cleaning time is quicker in each area
 - Ex: 4 people cleaning- team up so each area can be completed more quickly
 - Housing area that takes 1 person 40 minutes vs. 2 people in 20 minutes
 - Animal experience
 - Staff safety – work together
- Use cleaning processes that are efficient
 - Chose effective, efficient products and protocols
 - When calculating cost look at effectiveness, concentration needed and staff time for the cleaning process
 - Cleaning/sanitation does not have to take long for it to be done well



Preliminary concept: disease spread

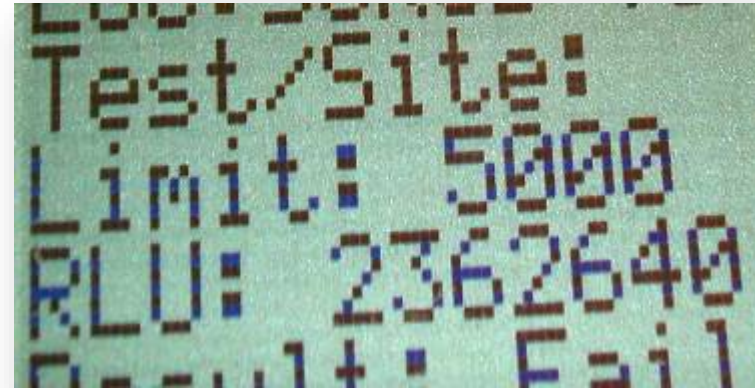
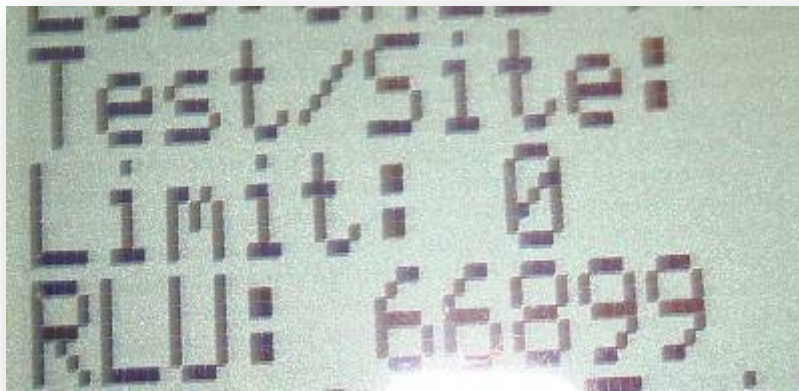
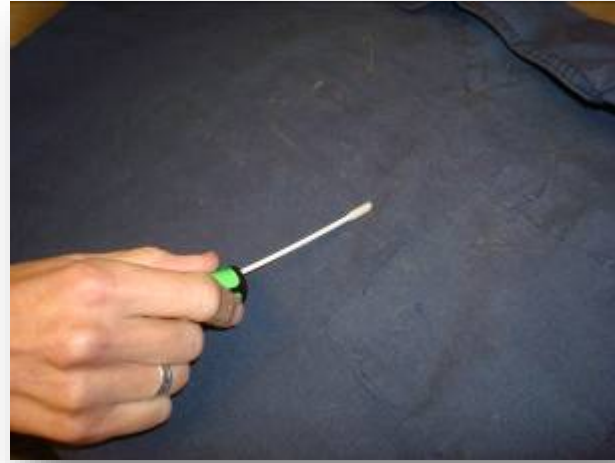
- Direct contact
 - Scratches
 - Nose to nose
- Fomites
- Hair-borne
- Sneeze-borne
- Airborne



Putting things in perspective



Putting things in perspective

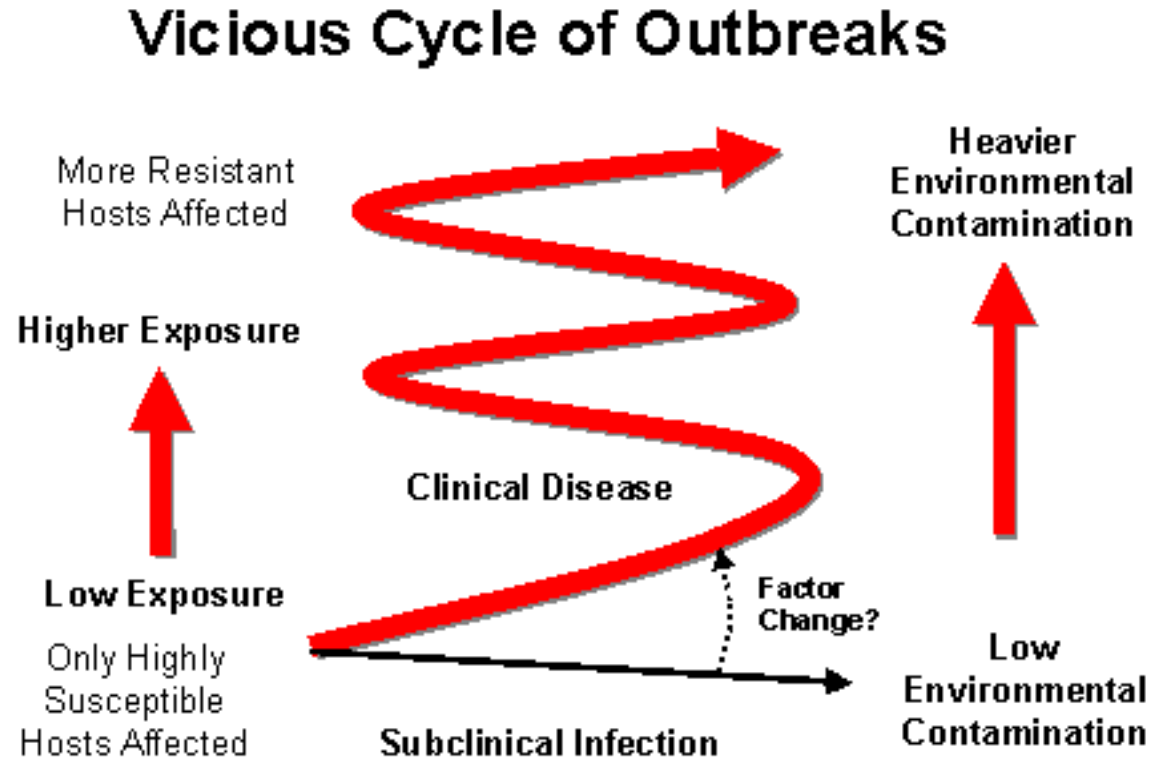


Foundation concept: dose effect

Dose required =
immune status of animal
&
virulence of pathogen

REDUCE DOSE BY REDUCING
SOURCE AND/OR TRANSMISSION

INCREASE DOSE TOLERATED BY
SUPPORTING ANIMAL IMMUNITY



Creating an infectious disease control program

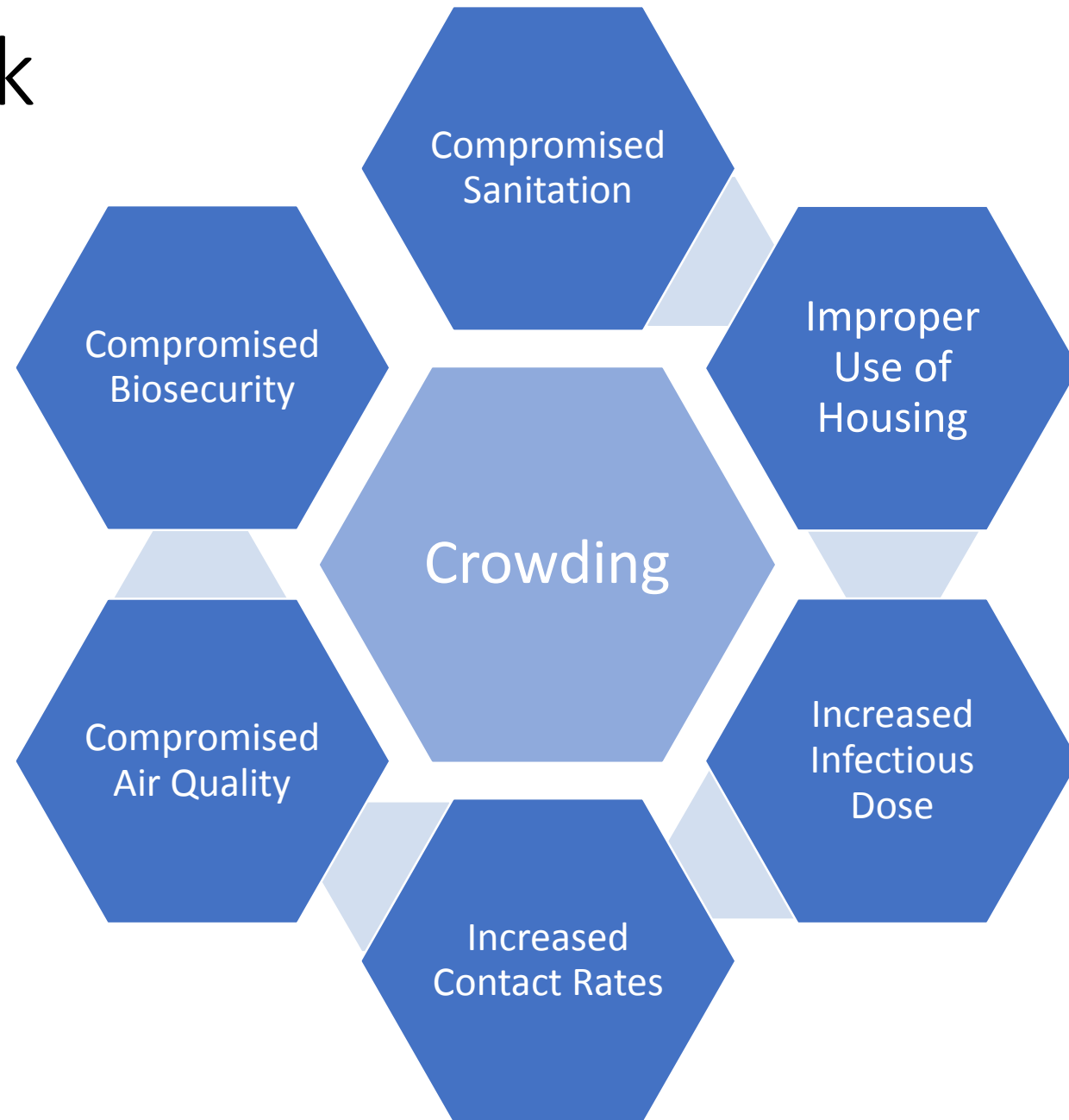
1. Assess shelter risks
2. Develop clear sanitation protocols
3. Educate & train staff/volunteers
4. Ensure consistent implementation
5. Assess efficacy regularly

Shelter Risk factors

- Crowding
- Stress
- Vulnerable population
 - Unknown vaccine history
 - Constant turnover
- Highly durable pathogens
- Staffing capacity



Biggest Risk



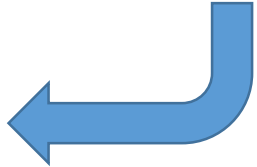
Capacity for Care

Date 7/30/14

Shelter Count

| | | |
|--|--|-----------------|
| ACO Cats: CF 14 | Red Pod CF 22: | Ours- <u>21</u> |
| Strays- _____ | Ours- _____ | |
| Ours- <u>33</u> | Feline Pod CF 25: | Ours- <u>22</u> |
| ACO Dog 1 CF 5: | Ours- _____ | |
| Stray- <u>1</u> | Sick Cat Room CF 11: | Ours- <u>18</u> |
| Ours- _____ | Ours- _____ | |
| ACO Dog 2 CF 5: | | |
| Stray- _____ | | |
| Ours- <u>5</u> | | |
| Stray Cat Room CF 13: | Other- <u>Clinic dogs - 6</u> | |
| Stray- <u>3</u> | <u>Clinic cats - 20</u> | |
| Ours- <u>28</u> | <u>Kim's office - 1 cat</u> | |
| White Pod CF 22: | <u>Casey's office - 1 cat</u> | |
| Stray- <u>5</u> | <u>MPE - 6 dogs</u> | |
| Ours- <u>8</u> | <u>Sater - 6 cats</u> | |
| Court Case- <u>4</u> | <u>1 Bunny</u> | |
| Eval CF 34: | | |
| Stray- <u>19</u> | | |
| Ours- <u>10</u> | | |
| Couts Case- _____ | | |
| Nursery CF 8: | Stray Dog Total <u>38</u> | |
| Stray- <u>3</u> | Stray Cat Total <u>3</u> | |
| Ours- <u>6</u> | Stray Total <u>41</u> | |
| Big Sick Dog Room CF 8: | Our Dog Total <u>162</u> | |
| Ours- <u>6</u> | Our Cat Total <u>135</u> | |
| Small Sick Dog Room CF 28: | Our Total <u>307</u> | |
| Ours- <u>12</u> | | |
| Yellow Pod CF 32: | Court Case/ Bite Case/ Safe Keeping Total <u>7</u> | |
| Stray- <u>10</u> | | |
| Ours- <u>19</u> | Other total <u>1</u> | |
| Blue Pod CF 26: | Grand Total CF 289 <u>346</u> | |
| Ours- <u>27</u> | | |
| Cat Day Room CF 4: | | |
| Ours- <u>6</u> | | |
| Dog Day Room CF 2: | | |
| Ours- <u>2</u> | | |
| Hydrant Pod CF 58/ 34 divided/ 5 Floor pins: | | |
| Ours- <u>34</u> | | |

July 30, 2014
346 in house



Dec 31, 2014
193 in house

Date 12/31/14

Shelter Count

| | | |
|--|--|-----------------|
| ACO Cats: CF 14 | Red Pod CF 22: | Ours- <u>16</u> |
| Strays- <u>2</u> | Ours- _____ | |
| Ours- <u>6</u> | Feline Pod CF 25: | Ours- <u>5</u> |
| ACO Dog 1 CF 5: | Ours- _____ | |
| Stray- _____ | Sick Cat Room CF 11: | Ours- <u>11</u> |
| Ours- _____ | Ours- _____ | |
| ACO Dog 2 CF 5: | | |
| Stray- _____ | | |
| Ours- <u>5</u> | | |
| Stray Cat Room CF 13: | Other- <u>Clinic - dogs - 3</u> | |
| Stray- _____ | <u>cats - 8</u> | |
| Ours- _____ | <u>Others - Rabbits - 4</u> | |
| White Pod CF 22: | <u>MPE - 7 dogs</u> | |
| Stray- _____ | | |
| Ours- <u>7</u> | | |
| Court Case- <u>1</u> | | |
| Eval CF 34: | | |
| Stray- <u>7</u> | | |
| Ours- <u>6</u> | | |
| Couts Case- <u>1</u> | | |
| Nursery CF 8: | Stray Dog Total <u>29</u> | |
| Stray- <u>11</u> | Stray Cat Total <u>2</u> | |
| Ours- <u>12</u> | Stray Total <u>31</u> | |
| Big Sick Dog Room CF 8: | Our Dog Total <u>126</u> | |
| Ours- <u>8</u> | Our Cat Total <u>30</u> | |
| Small Sick Dog Room CF 28: | Our Total <u>156</u> | |
| Ours- <u>25</u> | | |
| Yellow Pod CF 32: | Court Case/ Bite Case/ Safe Keeping Total <u>2</u> | |
| Stray- <u>11</u> | | |
| Ours- <u>1</u> | Other total <u>4</u> | |
| Blue Pod CF 26: | Grand Total CF 289 <u>193</u> | |
| Ours- <u>18</u> | | |
| Cat Day Room CF 4: | | |
| Ours- _____ | | |
| Dog Day Room CF 2: | | |
| Ours- <u>1</u> | | |
| Hydrant Pod CF 58/ 34 divided/ 5 Floor pins: | | |
| Ours- <u>17</u> | | |

Staffing

- **Training**

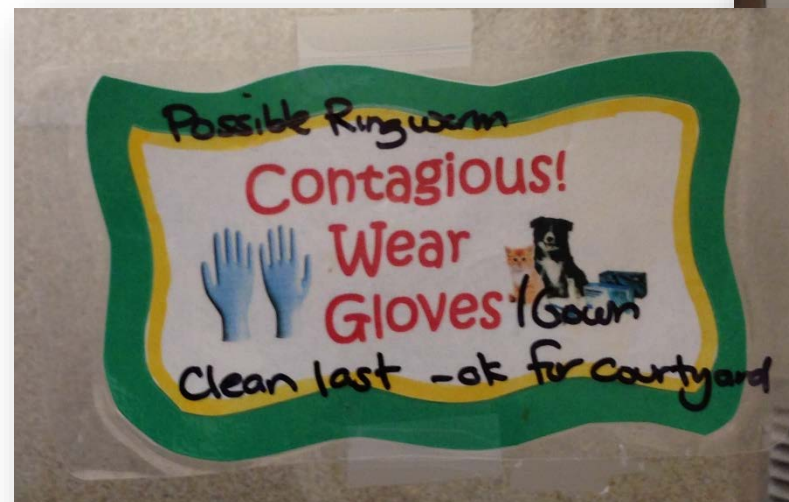
- Use past examples of diseases

- **Compliance**

- Signage
- Increase availability of sinks/hand sanitizers
- Accessible & functioning supplies/equipment
- Written protocols
- Sufficient staffing level

- **Capacity**

- Learn all about it tomorrow!



Staffing Capacity

Shelter has 100 animals each day

100 animals x 15 min care = 1500 min/60 min =
25 hrs for basic care each day

With **4** team members cleaning:
25 hrs/4 members =
6.25 hrs total min care each day

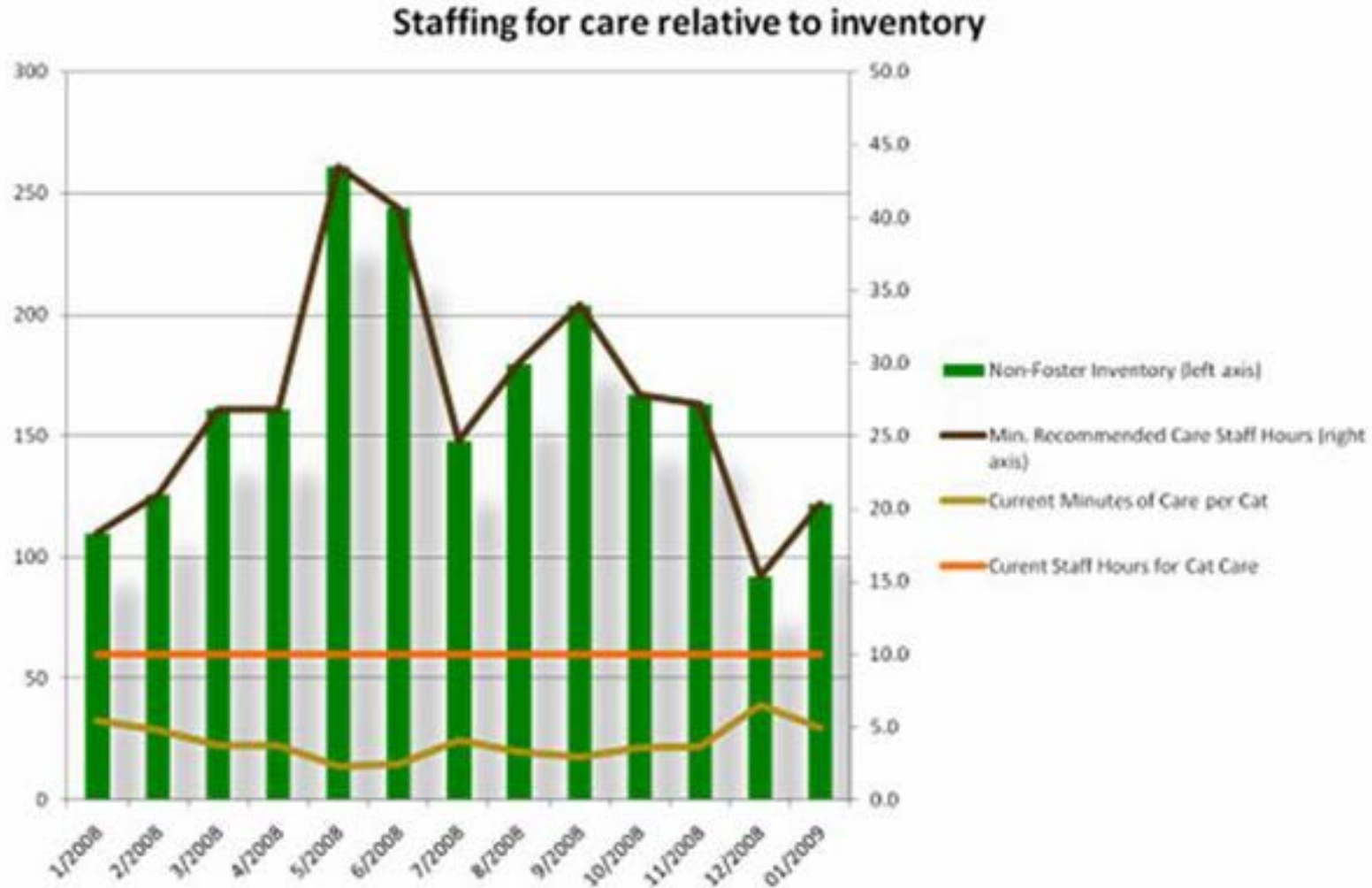
With **8** team members cleaning:
25 hrs/8 members =
3.1 hrs total min care each day

Staffing Capacity

Shelter has

100 animal
25 hrs for b

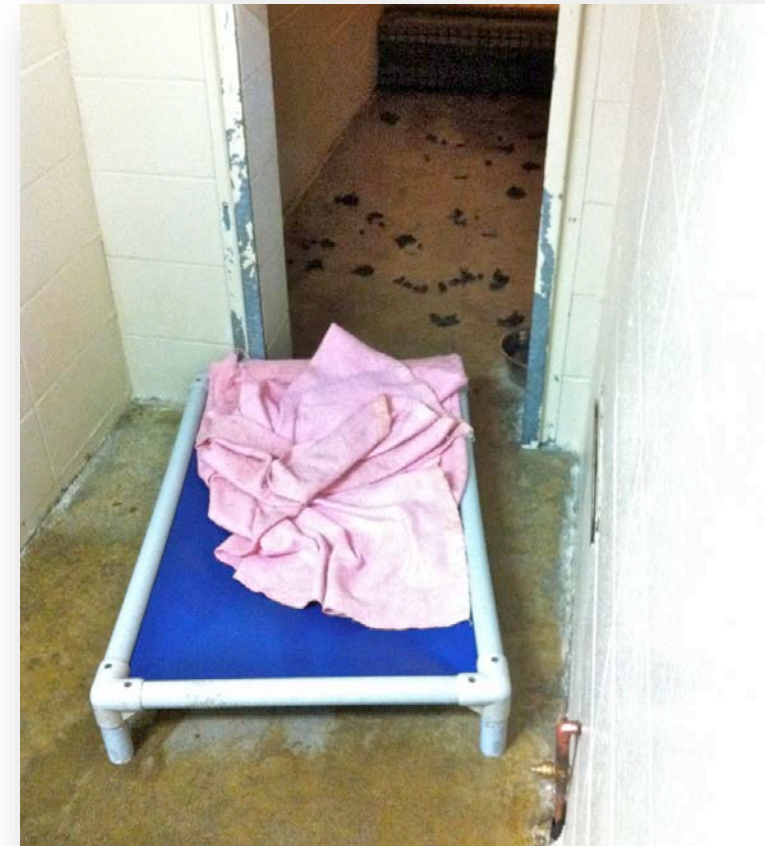
With 4 team
25 hrs/4 mo
6.25 hrs tot



cleaning:
e each day

Housing is key component of sanitation success

- Double compartment housing is an essential tool for efficient cleaning
 - Less stressful
 - Reduced fomite transmission
 - Limits chemical exposure
 - Safer for staff and animals
- Goal is to limit handling to reduce the hazards and risks of handling - during routine cleaning time
 - Housing makes it possible or kind of impossible



Housing Design: Double Compartment

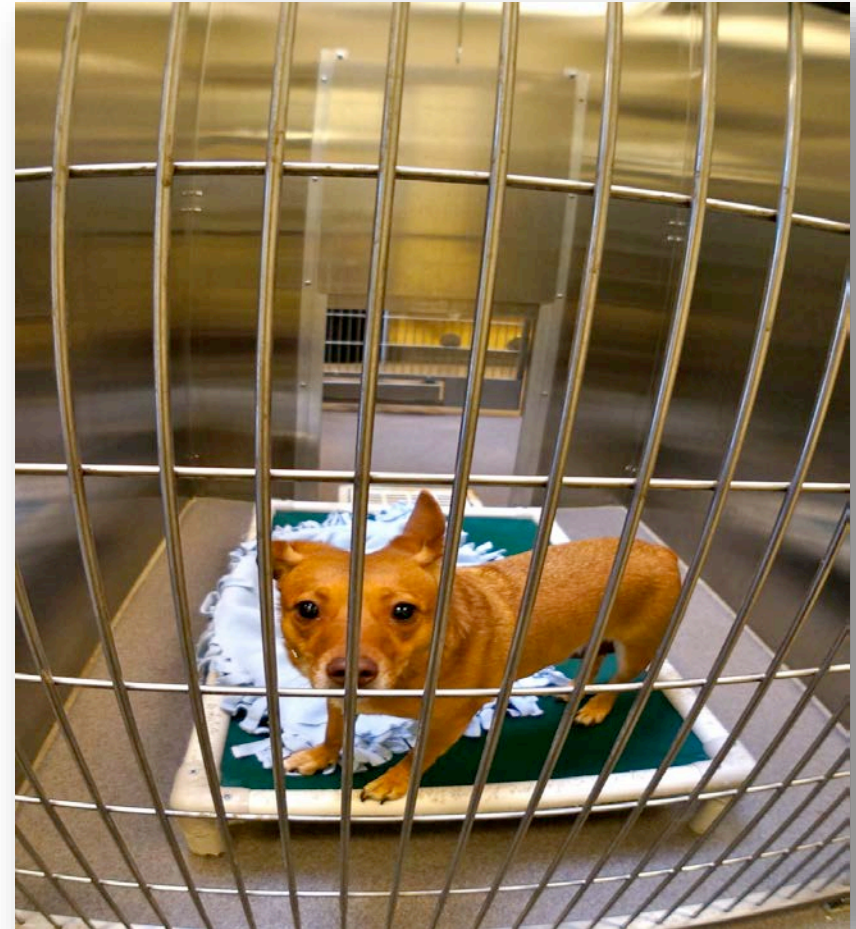




Housing Design: Double Compartment Indoor/Outdoor



Housing Design: Double Compartment Indoor/Indoor



Housing Design: Double Compartment Real Life Room



Housing is key component of sanitation success

- Alternative ways to achieve success with housing limitations
 - Cat housing - portals
 - Dog housing
 - Two singles/dog
 - Morning walks while cleaning



www.sheltermedicine.com/portal

Considerations for sanitation protocol development

- To use the **RIGHT product**
- At the **RIGHT dilution**
- For the **RIGHT amount of contact time**
- On the **RIGHT population**
- With the **LEAST stress to animals**
- (and possibly the **LEAST cost to the organization**)
- Write it all down
- **Tricky part:** these answers are not the same for every organization or situation

Terminology

Cleaning: The manual process of removing dirt and organic debris

Sanitizing: Eliminating as many infectious organisms as possible through cleaning and disinfecting

Disinfecting: Using solutions to kill or destroy pathogens still present after cleaning

Sterilizing: Eliminating all microorganisms from inanimate surfaces

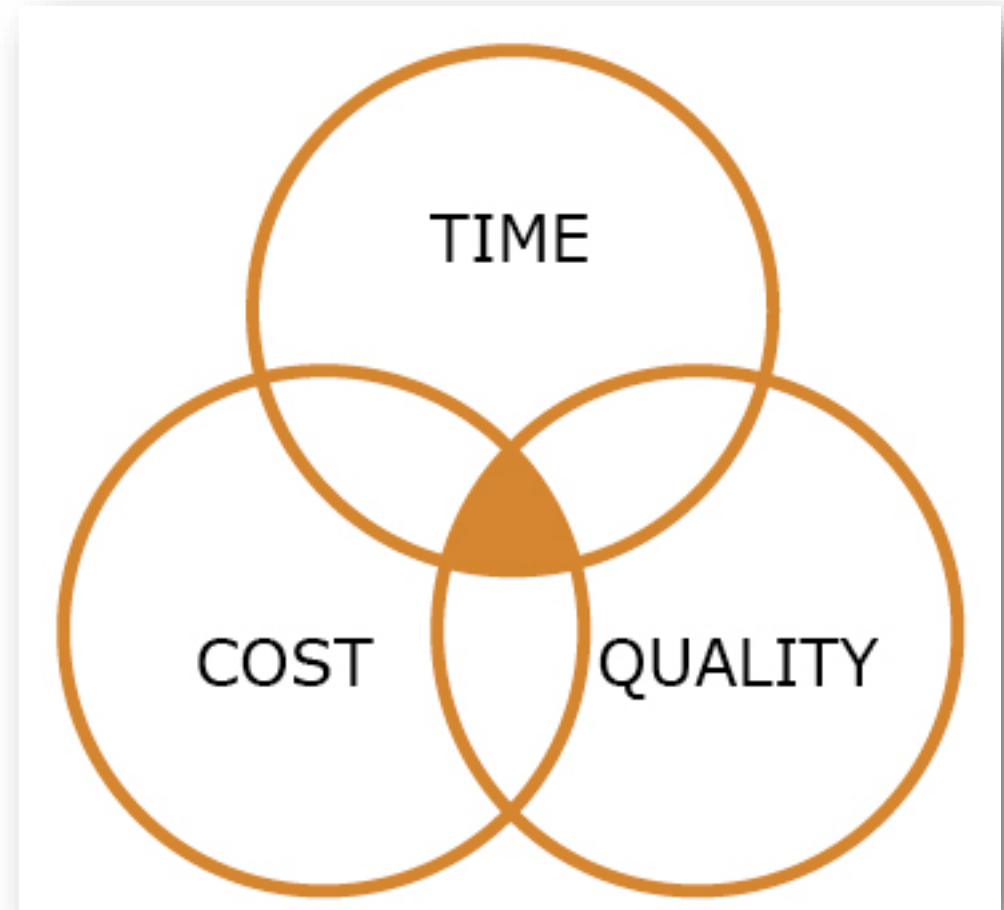
Destruction of Microorganisms



Choose the right product

Ideal disinfectant

- Broad spectrum
 - Non-toxic
 - Non-irritating
 - Non-corrosive
- Effective in face of organic matter
 - Ease of application
 - Short time to effect
- Relatively inexpensive



Common options



Sodium hypochlorite aka Bleach



Sodium dichloro-isocyanurate e.g. Bruclean



Calcium hypochlorite e.g. Wysiwash



Alcohol



Potassium peroxymonosulfate e.g. Trifectant, Virkon



Quaternary ammonium



Accelerated hydrogen peroxide (e.g. Accel)



Chlorhexidine

Sodium Hypochlorite - Bleach

| POSITIVES | CAUTIONS |
|---|--|
| Cost | No detergent activity – requires 2 steps |
| Effective against non-enveloped viruses | Partially inactivated by organic matter/must be applied to clean surface |
| Stable for 30 days if stored properly | Corrosive to metal |
| Effective against ringworm at 1:10 concentration* | Requires rinsing |
| | Respiratory irritant/caustic at high concentrations |
| | Inactivated if exposed to light/heat |

* however this concentration is caustic and not recommended



Calcium hypochlorite - Wysiwash

| POSITIVES | CAUTIONS |
|--|--|
| Cost | No detergent activity |
| Effective against non-enveloped viruses | Inactivated by organic matter/must be applied to clean surface |
| Easy to use – attaches to any hose end | Must use with specific applicator |
| Less corrosive to metal than bleach | Not effective against ringworm |
| Less of respiratory irritant/caustic than bleach | |
| No rinsing required | |



Sodium dichloroisocyanurate – Bru-clean

| POSITIVES | CAUTIONS |
|---|--|
| Cost | No detergent activity – requires 2 steps |
| Effective against non-enveloped viruses | Partially inactivated by organic matter/must be applied to clean surface |
| Less corrosive to metal than bleach | |
| Less of respiratory irritant/caustic than bleach | |
| All-in-one applicator system dispenses detergent & disinfectant | |



Quaternary ammoniums – roccal, parvo-sol, triple two, kennel care...

| POSITIVES | CAUTIONS |
|-------------------------|--|
| Cost | Not reliably effective against non-enveloped |
| Easy to use | Can be toxic if incorrectly diluted |
| Stable in solution | |
| Some detergent activity | |
| | Relatively effective in face of organic matter |



Quaternary ammoniums (“Quats”)

- **Label claims:** effective against parvovirus at higher concentrations
- **What independent studies have repeatedly shown:** quats are not reliably effective against non-enveloped viruses such as parvo, panleuk, calici or fungi such as ringworm
- **Note of caution:**
 - Higher concentration can cause toxicity
 - Respiratory irritant
 - Oral ulcerations, fevers in cats, scrotal burns
- **False sense of security**



Long history of lack of efficacy against un-enveloped viruses

1. Scott, F.W., *Virucidal disinfectants and feline viruses*. Am J Vet Res, 1980. 41(3): p. 410-4.
2. Kennedy, M.A., et al., *Virucidal efficacy of the newer quaternary ammonium compounds*. Journal of the American Animal Hospital Association, 1995. 31(3): p. 254-8.
3. Eleraky, N.Z., L.N. Potgieter, and M.A. Kennedy, *Virucidal efficacy of four new disinfectants*. J Am Anim Hosp Assoc, 2002. 38(3): p. 231-4.
4. Eterpi, M., G. McDonnell, and V. Thomas, *Disinfection efficacy against parvoviruses compared with reference viruses*. Journal of Hospital Infection, 2009. 73(1): p. 64-70.

*Un-enveloped viruses include canine parvovirus,
feline panleukopenia and calicivirus*

Potassium peroxymonosulfate - Virkon & Trifectant

| POSITIVES | CAUTIONS |
|--|---|
| Effective against non-enveloped viruses | Cost |
| Some detergent activity | Must use PPE with powder |
| Relatively effective in face of organic matter | Limited application - powder & tablet forms |
| Non-toxic | |
| Non-corrosive as solution | |
| Stable for 7 days as solution | |



Accel - Accelerated hydrogen peroxide

| POSITIVES | CAUTIONS |
|--|-------------------------------|
| Effective against non-enveloped viruses | Initial product cost |
| Good detergent activity – one step product | Must use PPE with concentrate |
| Effective in face of organic matter | |
| Non-toxic | |
| Non-corrosive | |
| Easy to use & multiple application systems | |
| Stable for 90 days as solution | |
| Contact time is concentration-dependent | |
| No need to rinse unless washing dishes | |
| Effective against ringworm at 1:16 dilution* <i>Trichophyton mentagrophytes</i> | |



* labeled effective against *Trichophyton mentagrophytes*

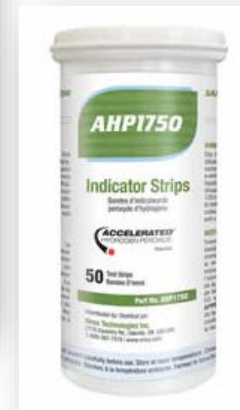
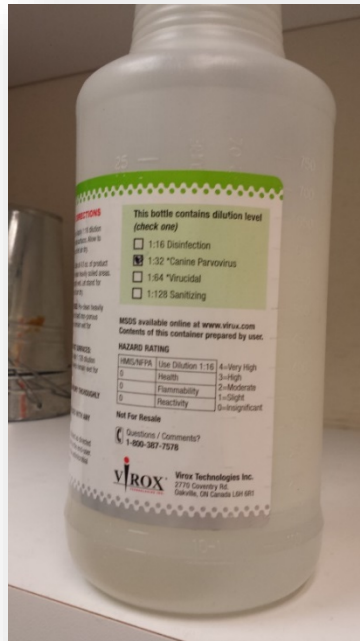
Disinfectant selection

| Non-enveloped viruses: | Organic matter (wood, carpets, yards, porous surfaces): | Respiratory pathogens |
|--|--|---|
| <ul style="list-style-type: none">• Accel• Bleach• Wysiwash• Bruclean• Trifectant | <ul style="list-style-type: none">• Accel | <ul style="list-style-type: none">• Any* |

* adenovirus-2 is the only non-enveloped respiratory virus, requiring an appropriate disinfectant

Importance of Correct Dilution

- Dilution impacts efficacy of product
- Dilution dictates contact time needed
- Consider water pressure when calculating dilution in large volumes, sprayers



Possible Outcomes of Incorrect Dilution

- At best, reduction of cleaning/disinfection capacity
- At worst...



Ringworm decontamination update

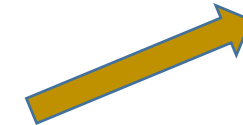
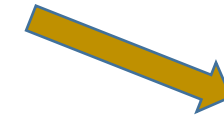
Many **over-the-counter cleaning products** labeled as **fungicidal** against *Trichophyton mentagrophytes* are effective against *Trichophyton* spp. and *Microsporum canis* when the **surface is properly prepared**

Mechanically remove debris, including hairs & spores

Wash with a detergent until visibly clean and rinse with water

Follow up with a disinfectant

Most important part of decon



Use the correct product, *correctly*

▪ Avoid mixing problems

- E.g. bleach and Trifectant, quats and detergent, bleach and Accel

▪ Storage time and method

- CLOSED containers
- Bleach in light-proof containers refreshed monthly
- Note storage/remix times for each product
- Label with product AND EXPIRATION DATE



In case of toxicity



- Remove source
- Dilute with milk/water if ingested
- Bathe
- Broad spectrum antibiotics
- Pain control!

Choose the right process

The actual process

- 1. Utilize personal protective equipment or separate clothing**
- 2. Cleaning**
 - Removal of all visible organic matter via manual processes & use of detergent
 - Can remove > 90% of bacteria from surfaces
 - Otherwise: may make your disinfectant less effective
- 3. Disinfection**
 - Chemical Inactivation of microorganisms
 - Contact time
- 4. Rinse (if necessary)**
- 5. Thoroughly dry**



Wet environments are tough on animals and facility

- Wet environments support the growth of mold, bacteria and spores.
 - Microorganisms on surfaces contribute to mold odor – microbial VOC's
- In areas where climate is humid – relative humidity is often above 80% on a daily basis
- In dry environments humidity levels during wet cleaning process can reach 80-90% and last for an hour to several hours
 - Good ventilation/dehumidification(AC) will help to normalize humidity but for some shelters it will remain high for hours



4 hours post cleaning

Solutions

- Huge consideration for new construction or remodel
- Dehumidification
- Squeegee standing water
- Increase ventilation during cleaning
 - Increase ventilation for > 30 minutes post
- Fans
- Use less water
 - Spot cleaning



Spot cleaning

- For cats, Most dogs, & all in/all out group housing
 - Ensure compliance with flow (sick animals handled last)
- Advantages
 - Less stressful
 - Reduced fomite transmission
 - Increased safety & efficiency
 - Reduced use of irritating disinfectants
 - Water conservation
- Thoroughly clean/disinfect once vacated



Sanitation order

Adoptable juveniles

Adoptable adults

Stray healthy juveniles

Stray healthy adults

Quarantine

Isolation

Goal:

To Minimize Disease Transmission

Shelter-Dependent, Based On:
Staffing Capacity & Training Level &
Compliance of Biosecurity Protocols

Contact time



- Dependent on disinfectant type, temperature, presence of organic matter, concentration, pathogen
- Cold, dirty, poor penetration, tough or unknown pathogen
- No time for contact?
 - optimize temperature, concentration, and product (e.g. Accel, potassium peroxymonosulfate)

Closure time



- Depends on confidence of cleaning/disinfection
- If not confident, then closure will *not* help

Foot baths?

Best to avoid

- Inappropriate contact time
- Contamination

Alternatives

- Dedicated boots
- Disposable booties
- Don't allow cats onto floor



If footbaths are used, minimize harm:

- Effective disinfectant against organic matter
 - Deep enough
 - Use brush
 - Change often



Mop buckets?

- Best to avoid
 - Contamination
- Alternatives if drainage not present
 - Use disinfectant effective in face of organic matter
 - Double bucket system
 - Dedicated mops in each room
 - Routinely launder mop heads



Accel Anivac Systems

- For bathing & spot cleaning
 - 12 foot hose



- For cleaning
 - 23 foot hose



Hand hygiene

Hand-Washing:

When visibly dirty
Contact with bodily fluids
Thorough drying

Hand Sanitizers:

60-80% alcohol-based
Only if NO gross contamination present
Availability improves compliance

Gloves:

Handling infectious animals
Contact with bodily fluids
Handling disinfectants
Wash hands after



Prioritizing Hand hygiene

High risk:

Diseased– iso

Naïve/vulnerable– intake

Potentially diseased- quarantine

Zoonoses

Outbreak response

Low risk:

Healthy - adoptions

Laundry

- Do not overload machines
- Remove large food particle, feces, heavy hair contamination, other organic matter
- Hot water (at least 48 C/118 F)
- Bleach (4 oz/load) w/ detergent

OR

- Accel (1oz/gallon of washer capacity)
 - No additional detergent needed
- Dry completely



Choose the right places to
disinfect

Extra attention

- **Shared spaces/equipment** – vehicles, surgery, restraint items, intake, animal housing between occupants
- **Heavy contact areas** – clothing, hands, countertops, intake
- **High risk & vulnerable animals** – juveniles, isolation, quarantine, intake, recently recovered



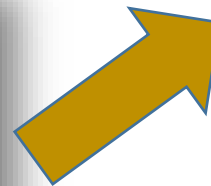
Group housing



- Ideally, all in/all out
- 18 sq ft/cat
- Maximum 3-4 cats/room
- Can be spot cleaned
- Décor: easily disinfectable items
- Complete disinfection required:
 - New group moving in
 - Outbreak of infectious disease
 - Heavily soiled

Play & outdoor areas

- Prompt removal of solid waste
- Use Disinfectant NOT inactivated by organic material (e.g. Accel)
- Maximize sunlight exposure
- Only allow healthy, vaccinated adults (>5 mo)



Sanitation & Air Quality

- Prevent crowding
- Minimize irritants
 - Spot cleaning
 - No high pressure hoses
- Thorough drying
- Maximize outdoor exposure
- Let in fresh air



Write it down and check for
efficacy

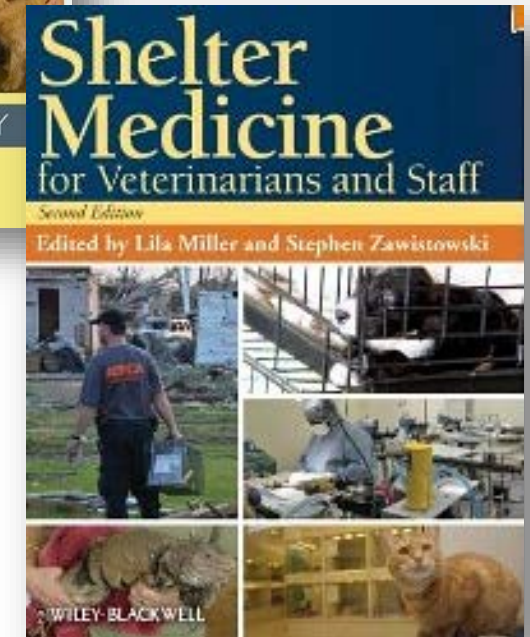
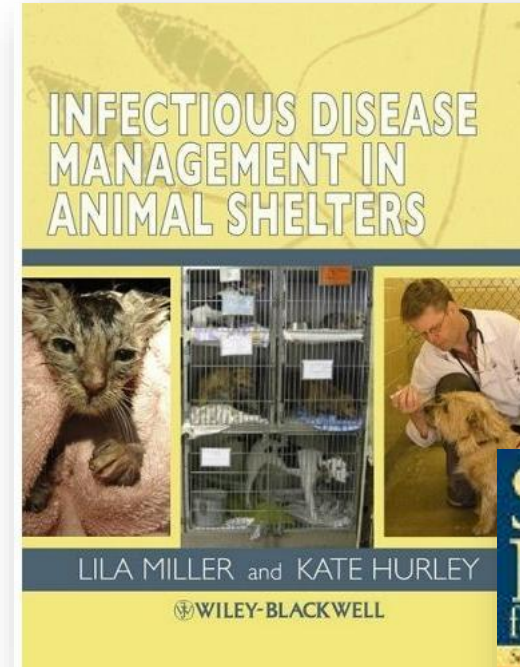
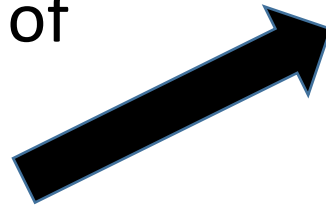
Written policies

- Include:
 - Recognition
 - transmission
 - treatment
 - Control
 - Prevention
- Policies for:
 - Different pathogens
 - Foster homes
 - S/N clinic
 - Outbreak response
 - Zoonoses
- Observe process periodically



Evaluating success

- www.glogerm.com
- Concentration test strips
 - E.g. www.sanitationtools.com
- Bacterial and *fungus* culture of environment
 - Chapter 16 for ringworm details
- Periodic observation
 - Dilution
 - Application
 - Handling



THANK YOU!



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