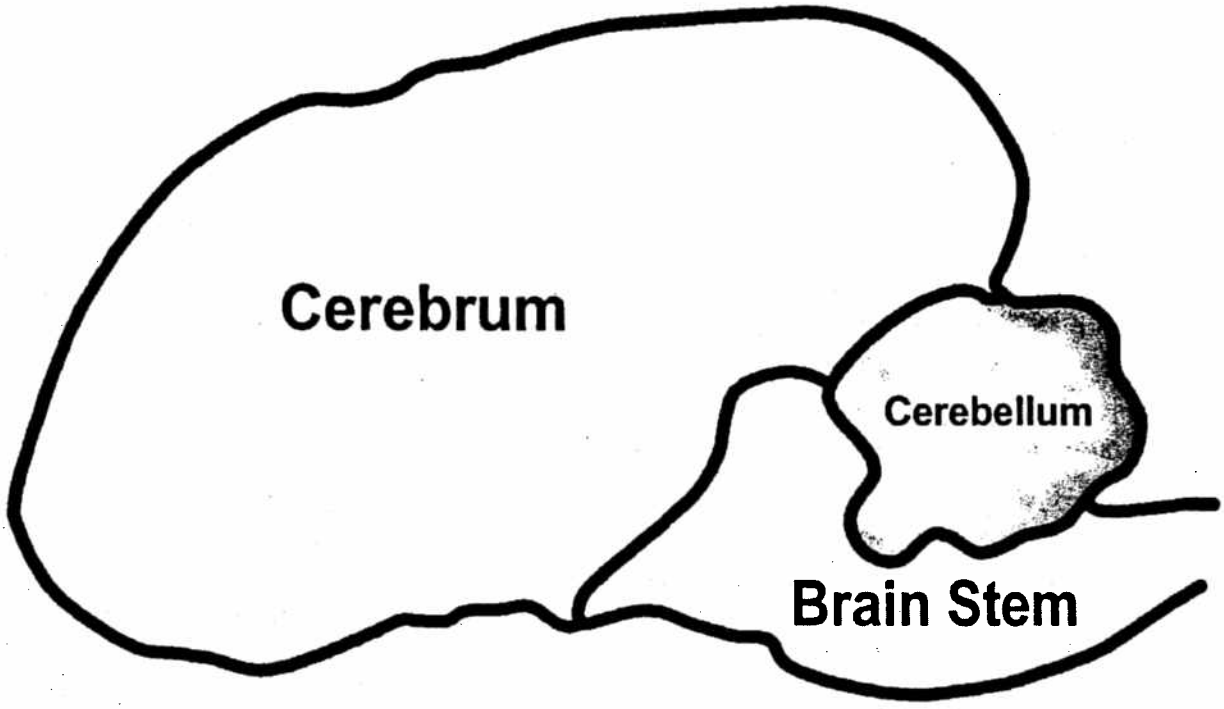
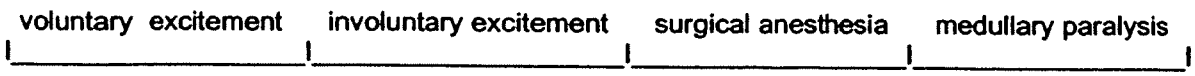
DOG BRAIN



C. What sodium pentobarbital does to the brain

1. cerebral cortex – part of the brain most sensitive to anesthetics
   a) perceives pain; pain is the first sensation to start disappearing (stage 1)
   b) all pain responses are abolished by the latter part of stage 3
2. cerebrum – high order functions
   a) memory
   b) senses (sight, smell, hearing, taste, and touch)
3. cerebellum – involuntary motor and balance
4. medulla oblongata – most primitive part of the brain
   a) regulates vital signs: body temperature, respiration, blood pressure, and heart rate. All of these functions are lost by the latter part of Stage 4.

D. Anesthesia is a continuum of decreasing sensation from an alert, awake state to death. Stages of anesthesia:



1. Stage 1: voluntary excitement (also known as the stage of delirium or analgesia)
    a) conscious
    b) excitement, struggling, and increased heart rate are common
    c) all *reflexes* present
    d) all vital signs present
    e) can experience deep pain stimulus
    f) will respond to deep pain stimulus
2. Stage 2: involuntary excitement
    a) unconscious
    b) paddling and vocalizations are common (uncontrolled motor activity)
    c) reflexes present, but slower
    d) all vital signs present
    e) will respond to deep pain stimulus
3. Stage 3: surgical anesthesia
    a) unconscious
    b) muscle relaxation
    c) all vital signs present
    d) gradual loss of most reflexes
4. Stage 4: medullary paralysis
    a) unconscious
    b) irregular, gasping breathing, stoppage of respiration and fall in blood pressure
    c) corneal reflex fades away
    d) heart beats weakly, then stops
    e) death occurs with cessation of heartbeat

E. Lethal dose versus label dose
    1. lethal dose is the laboratory calculation for the minimum dose necessary to shut down the central nervous system (IV is 30 mg / 1 lb. of body weight)
    2. label dose is the amount specified by the sodium pentobarbital manufacturer on the label (IV is 1 ml / 10 lbs. of body weight [39 mg / 1 lb.] for most brands)

F. Dose for effect

The amount of sodium pentobarbital given should bring the animal quickly through the four stages of anesthesia and shut down the central nervous system. If circulatory problems exist, it is sometimes necessary to increase the amount of sodium pentobarbital to achieve a smooth and rapid transition from awake to unconscious to dead.

To calculate the most effective pentobarbital sodium dosage, use **1 ml per 10 lbs. (IV/IC)** or **3 ml per 10 lbs. (IP/PO)** of body weight as a baseline then add more for specific circumstances (as described below) to achieve smooth, rapid, and peaceful transition through the four stages of anesthesia.

DESCRIPTION	DOSAGE and ADJUSTMENT
Intravenous Administration	
1) healthy, calm	1 ml/10 lbs. no adjustment
2) pregnant	1 ml/10 lbs. + 1 ml
3) heavily muscled in proportion to body weight	1 ml/10 lbs. + 1 ml
4) fractious/feral – actively in fight or flight	1 ml/10 lbs. + 1 ml
5) circulatory problems due to old age, disease, or injury	2 ml/10 lbs.
6) owner witness	2 ml/10 lbs.
Intracardiac Administration	
No adjustment necessary	
Intraperitoneal Administration	
1) healthy, calm	3 ml/10 lbs. no adjustment
2) pregnant	3 ml/10 lbs. + 1 ml
3) eaten large meal within 2 hours	3 ml/10 lbs. + 1 ml
4) fractious/feral – actively in fight or flight	3 ml/10 lbs. + 1 ml
5) rabbit	6 ml/10 lbs.
6) reptile (anesthetize first)	6 ml/10 lbs.
7) circulatory problems due to old age, disease, or injury	6 ml/10 lbs.
8) owner witness	6 ml/10 lbs.

G. Sodium pentobarbital can be administered through various routes:

1. IV (intravenous) injection into any vein
   a) within 3 to 5 seconds the animal is in stage 3 and within 5 minutes is dead
   b) recommended for dogs older than 2 to 3 months and calm cats; can be used for puppies and kittens if animal can be gently restrained
   c) not usually recommended for cats, kittens, and small puppies due to the amount of restraint necessary
2. IP (intraperitoneal) injection into the abdominal cavity but not into an organ
   a) within 3 to 5 minutes the animal is in stage 3 and within 30 minutes is dead
   b) rapid analgesia
   c) recommended for puppies younger than 8 weeks, cats, kittens, or other mammals
   d) easy route causing little or no pain or discomfort to animal
   e) animal must be placed in darkened, quiet environment post-injection to minimize excitement (anesthetic reaction)
   f) not recommended for adult dogs, as they tend to struggle once the anesthetic starts to take effect
3. PO (oral)
   a) within 40 minutes the animal is in Stage 3 and within 2 hours is dead; times may vary
   b) recommended for fractious and wild animals
   c) squirt in the animal's mouth or put powder or capsules into the animal's food

Oral Dosage

WEIGHT		SPECIES	LIQUID	AMOUNT OF POWDER			PRESENTATION		
lbs.	kg	Example	ml	grains	mg	grams	5 grain cap.	teaspoon	tablespoon
1.5	0.68	Kitten (6 weeks)	1.0	6	390	.39	1	1/10	
2	0.9	Kitten (8 weeks)	1.0	6	390	.39	1	1/10	
3	1.4	Kitten (12 weeks)	1.0	6	390	.39	1	1/10	
8	3.6	Cat	3.0	18	1170	1.17	4	¼	
10	4.5	Puppy (8 weeks)	3.0	18	1170	1.17	4	¼	
15	6.8	Cairn Terrier	4.5	27	1755	1.76	5	½	
20	9.1	Fox Terrier	6.0	36	2340	2.34	7	½	
25	11.4	Beagle	7.5	45	2925	2.93	9	¾	¼
30	13.6	Cocker Spaniel	9.0	54	3510	3.51	11	¾	¼
40	18.2	Springer Spaniel	12.0	72	4680	4.68	14	1	1/3
50	22.7	Irish Setter	15.0	90	5850	5.85	18	1 ½	½
60	27.3	Labrador	18.0	108	7020	7.02	22	1 ½	½
70	31.8	Airedale	21.0	126	8190	8.19	25	2	¾
80	36.4	German Shepherd	24.0	144	9360	9.36	29	2	¾
90	40.9	Rottweiler	27.0	162	10530	10.53	32	2 ½	¾
100	45.4	Great Dane	30.0	180	11700	11.70	36	2 ¾	1
150	68.2	Mastiff	45.0	270	17550	17.55	54	3 ½	1 ½
200	90.9	St. Bernard	60.0	360	23400	23.40	72	5	2

WEIGHT: 1 Kilogram (kg) equals 2.2 lbs.

SOLUTION: Dosage is calculated on 390 mg/ml or 6 grains/ml.

RECORD-KEEPING: For DEA accounting subtract the amount of powder removed from the bottle in grams.

PRESENTATION: Number of capsules is based on 5 grains per capsule. *Note: 300 five-grain capsules per bottle.*

Amount per teaspoon is based on approximately 4.5 grams per teaspoon.

Amount per tablespoon is based on approximately 13 grams per tablespoon.

From Vortech Pharmaceuticals, Ltd. 7/95

4. IC (intracardiac)
    a) not acceptable in awake animals – AVMA 2000
    b) most painful route for administering sodium pentobarbital
    c) accidental injection into lung is common
    d) considered inhumane if animal is not deeply anesthetized (stage 3 or 4) due to the pain caused by the injection
    e) ruling by the California Attorney General (January 2002) declared intracardiac administration on awake, alert animals to be a violation of the state's cruelty statute
    f) most efficient route for administering sodium pentobarbital
    g) injection must be into one of the blood chambers, not the heart muscle
    h) injection site: right or left side between the fourth and fifth rib (called fourth intercostal space)
    i) never used on pregnant animals because mom's heart stops so quickly that not enough of the drug is circulated to the fetus to euthanize it, and the fetus dies from asphyxiation
5. IH (intrahepatic [liver])
    a) not recommended as initial route of administration
    b) believed to cause discomfort and possibly pain due to fullness distortion of the liver
    c) the liver is difficult to locate, and does not consistently aspirate blood
6. IM (intramuscular) and SQ (sub-cutaneous)
    a) not approved as alkaline sodium pentobarbital will cause immediate burning and stinging pain
    b) ineffective absorption into blood stream (especially SQ)

Injectable Barbiturate Euthanasia Agents: Sodium Pentobarbital

Brand	*Euthanasia-6*	*Succumb*	[redacted]	[redacted]	*Pentasol*	*Sleepaway*	[redacted]	*Beuthanasia-D Special*	*Euthasol*
Schedule	II	II	[redacted]	[redacted]	II	II	[redacted]	III	III
Sodium pentobarbital concentration	389 mg/ml	389 mg/ml	[redacted]	[redacted]	392 mg/ml	260 mg/ml	[redacted]	390 mg/ml	390 mg/ml
Dosage form	liquid	liquid	[redacted]	[redacted]	powder [1]	liquid	[redacted]	liquid	liquid
Amount per bottle	250 ml	250 ml	[redacted]	[redacted]	98 grams (250 ml)	100 ml	[redacted]	100 ml	100 ml
Additives	glycol and alcohol	glycol and alcohol	[redacted]	[redacted]	none	glycol and alcohol	[redacted]	glycol and alcohol	glycol and alcohol
Additional active ingredients	none	none	[redacted]	[redacted]	none	none	[redacted]	phenytoin sodium	phenytoin sodium
Viscosity	viscous	viscous	[redacted]	[redacted]	aqueous	viscous	[redacted]	viscous	viscous
Manufacturer	Veterinary Labs	The Butler Co.	[redacted]	[redacted]	Delmarva Labs	Fort Dodge Labs	[redacted]	Schering-Plough	Delmarva Labs
Species approved	all species	all species	[redacted]	[redacted]	all species	all species	[redacted]	dogs only	dogs only
[redacted]outes [redacted]roved	all routes	all routes	[redacted]	[redacted]	all routes	all routes	[redacted]	IV / IC	IV / IC

[1] constitute with tap water

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Vortech

Pre-Euthanasia Drugs: Acepromazine, Xylazine, PreMix, Telazol®, and Sodium Pentobarbital

Shelters usually employ one of the following two systems when using pre-euthanasia drugs:

1. Pre-euthanasia anesthetics (usually PreMix or Telazol®) on every animal being euthanized.
2. Pre-euthanasia anesthetics (usually PreMix or Telazol®) when safety or technical difficulty makes the direct IV administration of sodium pentobarbital impractical.
   a) safety: animal is fractious, feral, or nervous
   b) technically difficult: animal has circulatory problems as a result of old age, injury, or severe illness or is short-legged (like a dachshund)

Use of these drugs on cats is not generally necessary since, once handled, cats can be injected IP with sodium pentobarbital.

These drugs must never be used as the sole agents of euthanasia as the dosage cannot be predicted.

A. **acepromazine** (Acepromazine®, PromAce®)

NOT RECOMMENDED – see adverse effects

Description: 10 mg/ml tranquilizer for dogs, cats, horses; phenothiazine; reduces alertness and increases tolerance (reduces inhibition)

Administration:		IM or SQ (inject slowly), orally
Onset:		10-20 minutes
Duration:		4-8 hours
Dosage:	cats:	0.5-1.0 ml per 10 lbs.
	dogs:	0.25-0.5 ml per 10 lbs.
	horses:	0.2-0.4 ml per 100 lbs.
Indications:		slightly nervous or exuberant dogs
Contraindications:		dogs with history of seizure, dangerous dogs
Human hazard:		seek medical attention if accidentally injected
Shelf life:		see label; keep at room temperature
Adverse effects:		lowers blood pressure; may lower seizure threshold; tranquilized animals are more likely to bite and to bite more severely. Intracarotid administration of acepromazine will produce violent seizures, especially in horses.

B. **xylazine** (Rompun®, AnaSed®, Gemini®)

NOT RECOMMENDED – see adverse effects

Description:	20 mg/ml (dogs and cats) and 100 mg/ml (horses). Injectable sedative, analgesic, and muscle relaxant for dogs, cats, horses, deer, and elk.
Administration:	IM, SQ
Onset:	10-15 minutes
Duration:	1-2 hours (analgesia 15-30 minutes)
Dosage:	20 mg/ml: 0.5 ml per 10 lbs. 100 mg/ml: 0.1 ml per 10 lbs.
Indications:	frightened, nervous, or injured dogs; excellent pre-euthanasia drug IV in horses
Contraindications:	dangerous dogs
Human hazard:	seek medical attention if accidentally injected
Shelf life:	see label; keep at room temperature
Adverse effects:	lowers blood pressure; animal usually vomits (emetic). Animal will react to loud noises. Intracarotid administration will bring about immediate and violent seizures. Analgesic effect is short term.
Antidote:	Yobine, Doxapram, Tolazoline

C. **PreMix** 5 mg ketamine : 1 mg xylazine; veterinary compound

Description:	ketamine (100 mg/ml) dissociative anesthetic used in combination with xylazine (100 mg/ml) as an injectable pre-euthanasia anesthetic. Ketamine is a Schedule III Controlled Substance.
Administration:	IM, SQ, or squirted into a cat's mouth
Onset:	3-5 minutes for immobilization/anesthesia
Duration:	30-40 minutes
Dosage:	0.6 ml per 10 lbs.
Indications:	very effective injectable compound for rapid anesthesia of dogs, wild animals, reptiles, and birds. Can also be used for remote chemical capture.
Contraindications:	animals used for food
Human hazard:	seek medical attention if accidentally injected
Shelf life after mixture:	very stable compound
Adverse effects:	occasional mild seizures or vomiting

PreMix Dosage Chart

use a ratio of: 5 parts (5 mg) ketamine to 1 part (1 mg) xylazine

ANIMAL'S WEIGHT	PREMIX ML (.6 ml / 10 lbs.)
5	0.3
10	0.6
15	0.9
20	1.2
25	1.5
30	1.8
35	2.1
40	2.4
45	2.7
50	3.0
55	3.3
60	3.6
65	3.9
70	4.2
75	4.5
80	4.8
85	5.1
90	5.4
95	5.7
100	6.0

NOTE: administration of less than the above amounts will still result in varying levels of anesthesia dependent upon dose and animal's weight.

D. **Telazol® (tiletamine-zolazepam)** Fort Dodge Laboratories and Aveco Co. Inc.

Description: 100 mg/ml non-narcotic, non-barbiturate, injectable anesthetic for dogs and cats. Add 5 ml injectable sterile water to each vial.

Administration: IM

Onset: 5-12 minutes

Duration: 20-25 minutes

Dosage: dogs/cats – 0.3-0.45 ml per 10 lbs. (label), recommend 0.6 ml per 10 lbs.

Indications: frightened, nervous, or dangerous dogs or cats. Most commonly used for remote chemical capture. Comes in 5-ml sterile powder vials; constitute with saline or injectable sterile water. Works quite well for pigs. Telazol® is a Schedule III Controlled Substance.

Contraindications: animals used for food

Human hazard: seek medical attention if accidentally injected

Shelf life after reconstitution: 4 days at room temperature; 14 days refrigerated

Adverse effects: respiratory depression, seizures, and hyper and hypotension

E. **S.P.P.O.** sodium pentobarbital by mouth (oral heavy sedation)

Description: sodium pentobarbital (390 mg/ml) solution (liquid)

Administration: squirt into animal's mouth using syringe or syringe pole

Onset: 8-20 minutes (faster on animals with an empty stomach)

Duration: 30-40 minutes

Dosage: 3 ml per 100 lbs. *NOTE: this is a non-lethal dose that should result in heavy sedation (lateral recumbency) and eventual recovery.*

Indications: use on fractious/dangerous dogs as an alternative to "snare poling" and restraint gate

Verification of Death

A. medical death – means complete cessation of heartbeat due to central nervous system shutdown. Heart may still be fibrillating, animal may exhibit agonal breathing (gasping) and muscle flutter

B. clinical death – means complete cessation of heartbeat and ventricular fibrillation, gasping and muscle flutter

Use one of the following three methods to positively verify that the animal is dead – no other method may be sufficient!

A. Cardiac puncture

1. locate the heart – between fourth and fifth ribs (fourth intercostal space) or "point of the elbow" landmark. Needle can be inserted into left or right side or sternally
2. insert a needle (with syringe attached) into the heart (muscle or blood chamber)
3. aspirate blood to verify proper location (note: very slight flash if needle is in the heart muscle; good flash if needle is in blood chamber)
4. let go of the syringe, if the heart is beating or fibrillating (even faintly) the syringe will quiver
5. a completely still syringe indicates cardiac standstill
6. not suitable for owner-witness euthanasia

B. Stethoscope

1. check for no breathing
2. check for dark blue tongue
3. place the drum or head of a stethoscope on the left or right side of the chest approximately at the point of the elbow and listen for no respiration or heartbeat
4. suitable for owner-witness euthanasia

C. Rigor mortis ("rigidity of death")

1. partial rigor, especially of the jaw muscles or lower extremities can occur within 20-30 minutes of death; full rigor usually within 2 hours
2. is due to chemical changes in the body as part of the death process and results in gradual muscle cramping
3. after rigor mortis, the body softens due to decomposition
4. especially useful for birds, reptiles, rodents, or animals whose hearts are difficult to locate

Other things to keep in mind:

A. Timing – Use the following guideline to determine if something has gone "wrong"
   1. IV – dead (clinical death) within 5 minutes
   2. IP – dead (clinical death) within 30 minutes
   3. if the heart is still beating (sinus rhythm) after the above times, inject at least one-half the original dose
   4. if the heart is fibrillating, do not inject any additional sodium pentobarbital

B. Gasp reflex, terminal gasp, or agonal breathing
   1. reflexive spasm of the diaphragm causing the animal to appear to be taking a breath
   2. happens before or after death (cardiac standstill)

C. Carcass disposal
   1. incineration – removes all but minute traces of sodium pentobarbital
   2. rendering – removes all but minute traces of sodium pentobarbital (there is some controversy over rendering's effectiveness in removing sodium pentobarbital)
   3. burial – carcass is toxic (even lethal) to scavengers for several months
   4. tissue digestion – alkaline medium combined with heat dissolves tissue, thought to remove all sodium pentobarbital

Safety

Review the Material Safety Data Sheet (MSDS) for all drugs used for euthanasia.

A. Injury prevention
   1. Attitude – having a bad day means more likely to get injured
   2. Clothing – wear comfortable, okay-to-get-dirty clothes
   3. Teamwork – always work in pairs or let someone know where you will be

B. Exposure hazard – in general, humans are more sensitive to the drugs used than are dogs and cats. Even a small amount can cause problems.
   1. on the skin – wash the skin with fresh water and soap
   2. in the eyes – immediately flush eyes with eye-wash solution or fresh, cool water
   3. in the mouth – do not swallow; spit and rinse mouth. If swallowed, induce vomiting immediately

C. Needle stick – needle puncture but no sodium pentobarbital is injected
   1. apply immediate first aid to wound – wash with water and soap
   2. control bleeding as necessary

3. apply bandage as necessary

D. Accidental injection – less than 0.5 ml of sodium pentobarbital
   1. TELL COWORKER OR SUPERVISOR IMMEDIATELY
   2. clean the puncture wound with lots of fresh water

E. Accidental injection – more than 0.5 ml of sodium pentobarbital
   1. TELL COWORKER OR SUPERVISOR IMMEDIATELY
   2. clean the puncture wound with lots of fresh water
   3. seek medical attention – go to a medical care provider
   4. bring the MSDS

F. Accidental injection – any amount of pre-euthanasia drugs
   1. TELL COWORKER OR SUPERVISOR IMMEDIATELY
   2. clean the puncture wound with lots of fresh water
   3. seek medical attention – go to a medical care provider
   4. bring the MSDS

G. Human abuse of drugs used in euthanasia
   1. all the drugs can be abused by humans
   2. drug side effects on humans
      a) xylazine
         1. lowers blood pressure
         2. causes shock
         3. depresses respiration

      b) ketamine
         1. can cause hallucinations and convulsions; similar to the street drug "PCP"

      c) sodium pentobarbital
         1. causes medullary depression, shock, and respiratory depression
         2. lowers body temperature
         3. chronic (long-term) abuse produces vegetative state

- *The public: they're not our enemy; they're our clients*
- *"Thank you for bringing the animal to the animal shelter!"*
- *Why is it okay to divorce our spouse but not our cat?*
- *"We'd rather euthanize that dog than let something bad happen to him"*

Compassion Fatigue

1. Compassion Fatigue (CF) is a "term," not a "disease"
2. CF is what we call the negative effects (characteristics) of helping others
3. CF characteristics are normal displays of stress that result from helping
4. Latest findings conclude that animal caregivers (especially those who euthanize) experience the highest rates of CF
5. Often people who are attracted to animal caregiving are "other directed" and do not participate in the self-care necessary for a healthy lifestyle
6. First step to alleviating CF is to devise a personal self-help plan that consists of healthy outlets
7. It's not the load that breaks us down, it's the way we carry it
8. Caregivers typically have CF even before they're hired

Compassion Fatigue Organizational Characteristics (Symptoms)

When compassion fatigue hits critical mass in the workplace, the organization itself suffers. Chronic absenteeism, spiraling Worker's Comp costs, high turnover rates, friction between employees, and friction between staff and management are among organizational symptoms that surface, creating additional stress on workers.

Compassion fatigue is a loaded gun pointed at our head, our finger on the trigger. We think we're shooting at the public (we hate them) but instead we commit organizational suicide resulting in low adoption and high euthanasia rates.

Healing an organization takes time, patience, and most important, commitment. An awareness of compassion fatigue and its far-reaching effects must be present at the highest level of management and work its way down to encompass line staff, as well as volunteers. Often, the mistrust that employees feel toward management is not unfounded. Since many caregiving

institutions are non-profit, they inherit additional challenges such as low wages, lack of space, high management turnover, and constantly shifting priorities.

Organizational Symptoms of Compassion Fatigue

1. High turnover
2. Morale problems such as anger, bickering, factions, feuds, disrespect, distrust, and theft
3. Rude and disrespectful treatment of clients
4. High absenteeism
5. Constant changes in coworkers' relationships
6. Inability for teams to work well together
7. Desire among staff members to break company rules
8. Outbreaks of aggressive behavior among staff
9. Inability of staff to complete assignments and tasks
10. Inability of staff to respect and meet deadlines
11. Lack of flexibility among staff members
12. Negativism toward management
13. Strong reluctance toward change
14. Inability of staff to believe improvement is possible
15. Lack of a vision for the future

Individual Characteristics (Symptoms) of Compassion Fatigue

Compassion Fatigue symptoms are normal displays of stress resulting from cargiving day in and day out. While the symptoms are often disruptive, depressive, and irritating, an awareness of the symptoms and their negative effect can lead to positive change, personal transformation, and a new resiliency. Reaching a point where we have control over our own life choices takes time and hard work. There is no magic bullet. There is only a commitment to make our lives the best they can be.

Individual Symptoms of Compassion Fatigue:

1. Bottled up emotions
2. Unusual amount of complaints received from others
3. Excessive complaints voiced about administrative functions
4. Substance abuse used to mask feelings
5. Compulsive behaviors such as overspending, overeating, gambling, and sexual addictions
6. Poor self-care (e.g., hygiene, appearance)
7. Legal problems, indebtedness

8. Recurrence of nightmares and flashbacks to traumatic event
9. Chronic physical ailments such as gastrointestinal problems and recurrent colds
10. Apathy, sadness, or no longer finding activities pleasurable
11. Difficulty concentrating
12. Mentally and physically tired
13. Preoccupation
14. In denial about problems
15. Angry
16. Difficulty sleeping or sleeping too much
17. Loss of appetite or eating too much
18. Lowered libido
19. Tendency to isolate from others
20. Detachment in feelings toward clients (public) and sometimes animals

COPING SUCCESSFULLY

1. **Acknowledge the problem**
2. **Seek support**

Managing CF is primarily an inside job. We must take a primary role in our own recovery. As managers we must encourage our staff to do the same.

As organizations, we can reduce the climate of CF by doing everything humanly possible to reduce the number of animals being euthanized. We can and must reduce the number of animals being born, increase adoptions, and increase the number of animals returned to their owners.

We must foster a climate of acceptance toward our sometimes compassion-fatigued coworkers, volunteers, and governing boards. We must also learn to accept that the public is our client, no matter what they do and to always treat them with respect and genuine courtesy.

Individual Coping Strategies

1. Find and regularly talk with our Primary Support
2. Balance work and other caregiving activities with non-caregiving pursuits such as hobbies and outside activities
3. Learn to say "NO"
4. Stay healthy through exercise and nutritious diet
5. Laugh – gallows or grim humor is especially appropriate to reduce stress
6. Take time off for breaks, lunches, weekends, holidays, and vacations
7. Take regular and honest self-appraisal to see if you are satisfied with your work

RESOURCES FOR EFFECTIVELY MANAGING COMPASSION FATIGUE

Shelters that effectively manage Compassion Fatigue are more likely to lower turnover, increase adoptions, and reduce euthanasia!

***American Humane* offers "Managing Compassion Fatigue" one-day training and awareness-building workshops:**

http://www.americanhumane.org
Contact Doug Fakkema: dougf@americanhumane.org

***Humane Society University* offers training and awareness-building workshops:**

http://www.hsus2.org/hsu/cf.htm

Patricia Smith offers training and awareness-building workshops and a comprehensive and information-filled website:

http://compassionfatigue.org

Support Services for Animal Care Professionals (SSACP) – Dr. Carol Brothers and her team offer training and awareness-building workshops.

Contact Dr. Brothers: carol_ab@juno.com

Internet support group (list serve) for euthanasia technicians:

http://groups.yahoo.com/group/euthtechsupport

TWENTY-FIRST CENTURY ANIMAL SHELTER

- **Client friendly – treats public with genuine courtesy and respect always**
- **Practices open adoption**
- **Matches, doesn't screen when connecting a pet with the new guardian (owner)**
- **Encourages return of adoptions that do not work out and does not scold or condemn when animals are brought back**
- **Recognizes that adoption is a critical client/shelter interaction and treats the entire process with the seriousness it deserves**
- **Approves adoptions as "gifts" within the adopter family**
- **Encourages the public to bring their "unwanted" animals to the shelter and treats them courteously when they do**
- **Uses language: "adoptable," "potentially adoptable," and "unadoptable" to describe all animals entering the facility – avoids divisive, dishonest, and offensive language such as "no kill" or "low kill"**

Anatomy, Injection Sites, and Drug Dosages

Intracardiac (IC)

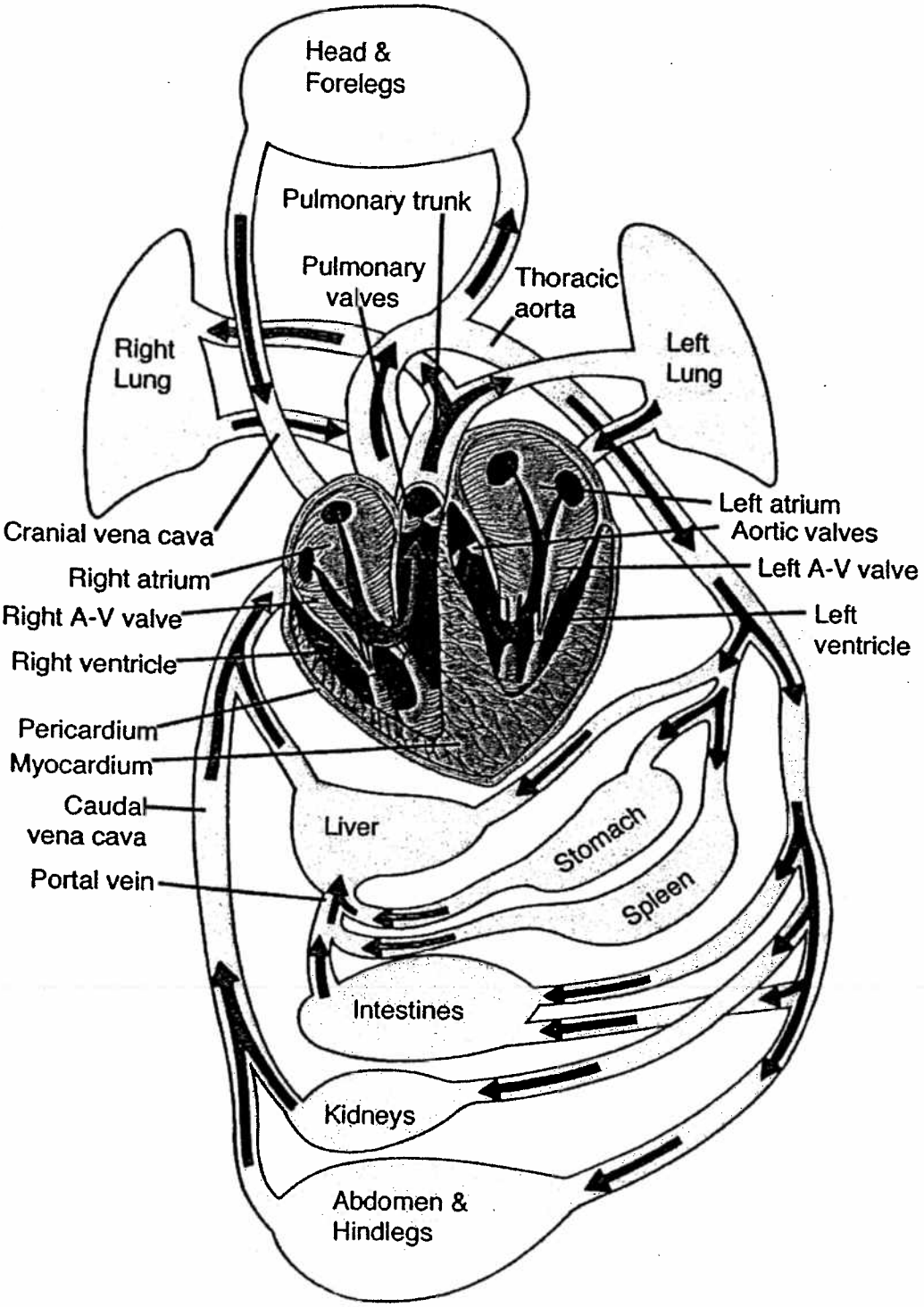
A. Needle gauge and length for IC injection:

1. cat: 22-gauge, 3/4 - 1-inch needle
2. small to medium dog: 20-gauge, 1-inch needle
3. large dog: 18-gauge, 1½-inch needle

B. Dosage:

1. IC dosage is 1 ml per 10 lbs.
2. IC dosage formula: weight ÷ 10 = dose

Blood Circulation



Intravenous (IV)

- cephalic vein – dog and cat foreleg
- lateral saphenous vein – dog and cat hind leg (lateral aspect)
- medial saphenous vein (also known as the femoral vein) – dog and cat hind leg (medial aspect)
- jugular vein

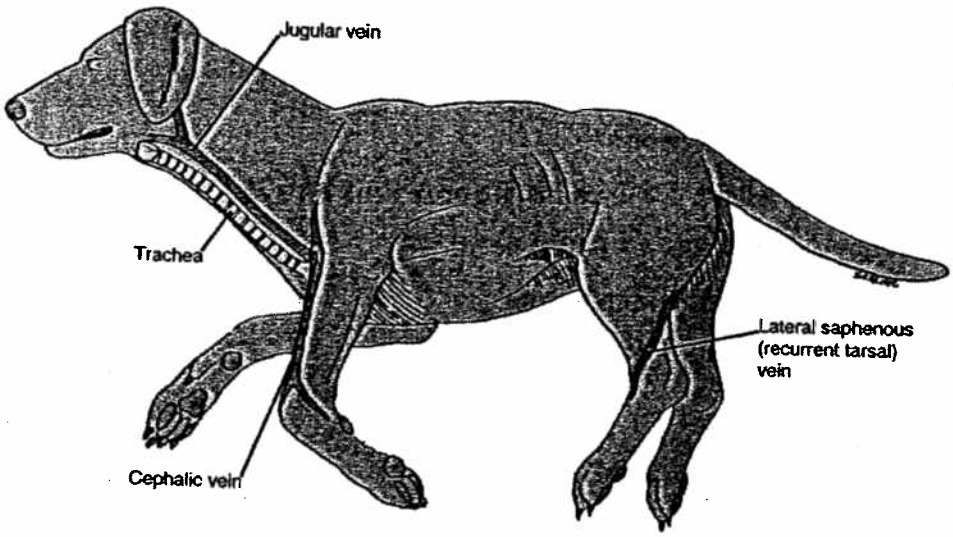
A. Needle gauge and length for IV injection:

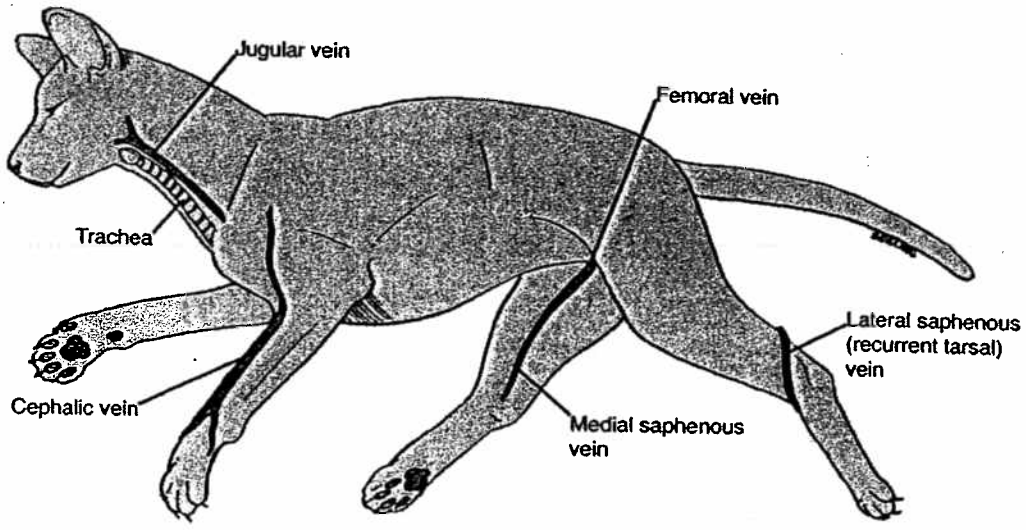
1. cat: 25-gauge, 5/8-inch needle on a 1 ml TB syringe
2. small-medium dog: 22-gauge, 3/4 - 1-inch needle
3. large dog: 20-gauge, 1-inch needle

B. Dosage:

1. IV dosage is 1 ml per 10 lbs.
2. IV dosage formula: weight ÷ 10 = dose

Dog Veins and Cat Veins





Intraperitoneal (IP)

(Do not use sodium pentobarbital combinations with phenytoin such as Beuthanasia-D Special® or Euthasol® for IP)

1. Description of peritoneum: thin layer of tissue in the abdominal cavity that protects various organs and secretes lubricating fluid
2. Location of the IP injection site:
   a) ventral surface
   b) midline
   c) in the middle third of the area between the umbilicus and the pubis bone (on an adult cat, approximately 2 inches below [caudal to] the umbilicus)
   d) the Linea alba (central fibrous ridge between muscle groups)
3. Not recommended for dogs over 3 months of age due to behavioral reaction, including struggling, of dogs to the onset of anesthesia
4. Areas to avoid
   a) liver – usually (but not always) aspirates blood
   b) kidneys – aspirate blood
   c) bladder – aspirates urine
   d) stomach – aspirates stomach contents (greenish)
   e) bowel – aspirates bowel contents (greenish)
   f) spleen – aspirates blood
   g) feline infectious peritonitis (FIP) – aspirates pus and protein (wheat color) – okay to inject

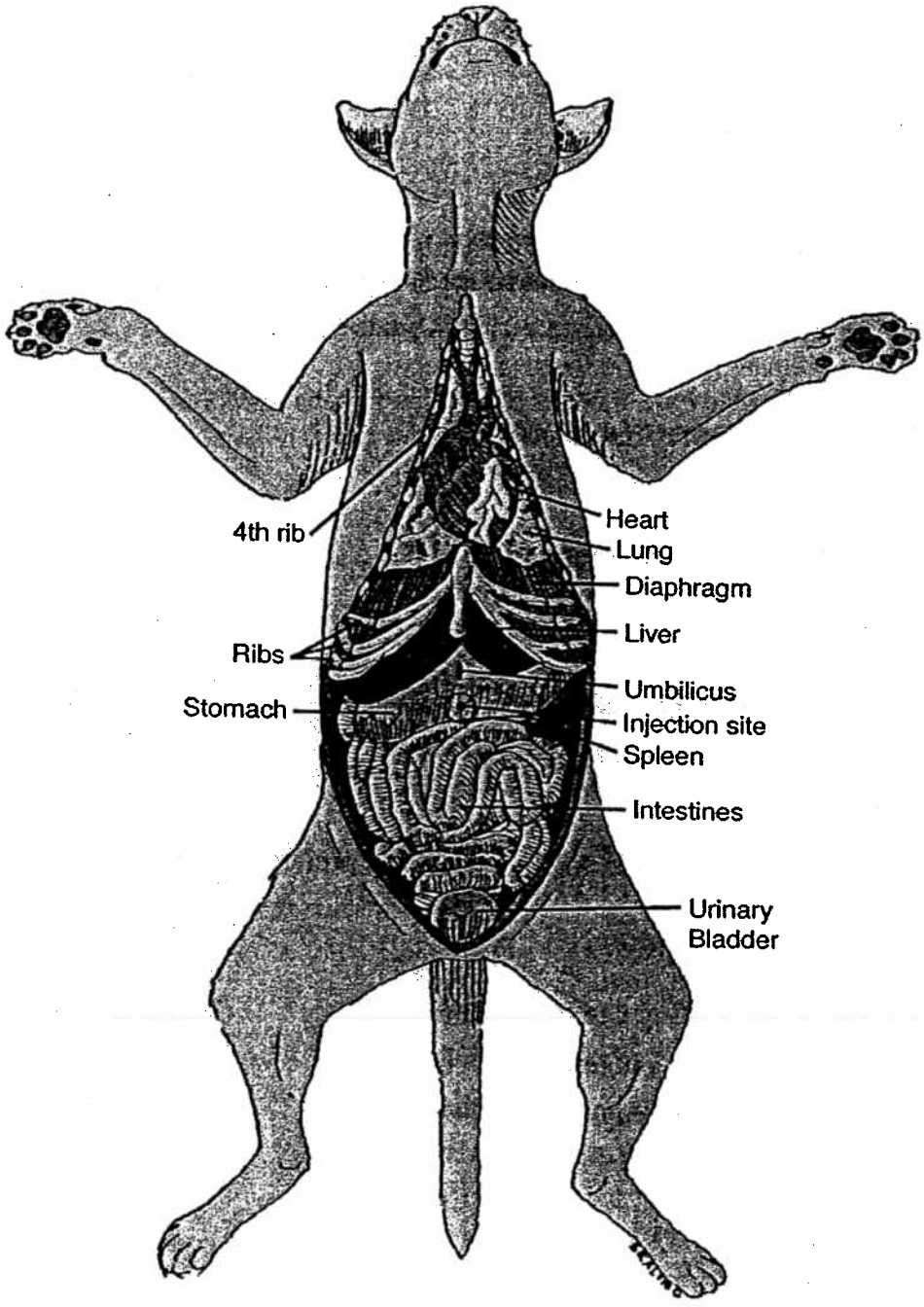
A. Needle gauge and length for IP injection:

1. tiny or newborn species: 25-gauge, 5/8-inch needle
2. cat or small puppy: 22-gauge, 3/4-inch needle
3. obese cat: 20-gauge, 1-inch needle

B. Dosage:

1. IP dosage is 3 ml per 10 lbs.
2. IP dosage formula: weight ÷ 3/10 = dose

Cat Abdomen



Oral (PO)

Dosage using any 6-grain sodium pentobarbital (do not use sodium pentobarbital combinations with phenytoin such as Beuthanasia-D Special® or Euthasol® for PO)

1. liquid – (see Oral dosage chart) squirt into animal's mouth
2. powder – (see Oral dosage chart) mix with fresh cooked hamburger
3. pre-euthanasia heavy sedation – 0.33 ml/10 lbs. (non-lethal dosage). Even a non-lethal dose can quickly anesthetize or heavily sedate an animal; squirt into an aggressive animal's mouth (through the wires of the cage)

Intramuscular (IM)

1. route of administration for pre-euthanasia drugs (not sodium pentobarbital)
2. to reduce sting of IM injection
   a) warm solution (place capped syringe in hot water bath for 1 minute)
   b) inject as slowly as possible
   c) massage the muscle immediately after injecting
3. use rear leg muscle (avoid sciatic nerve)

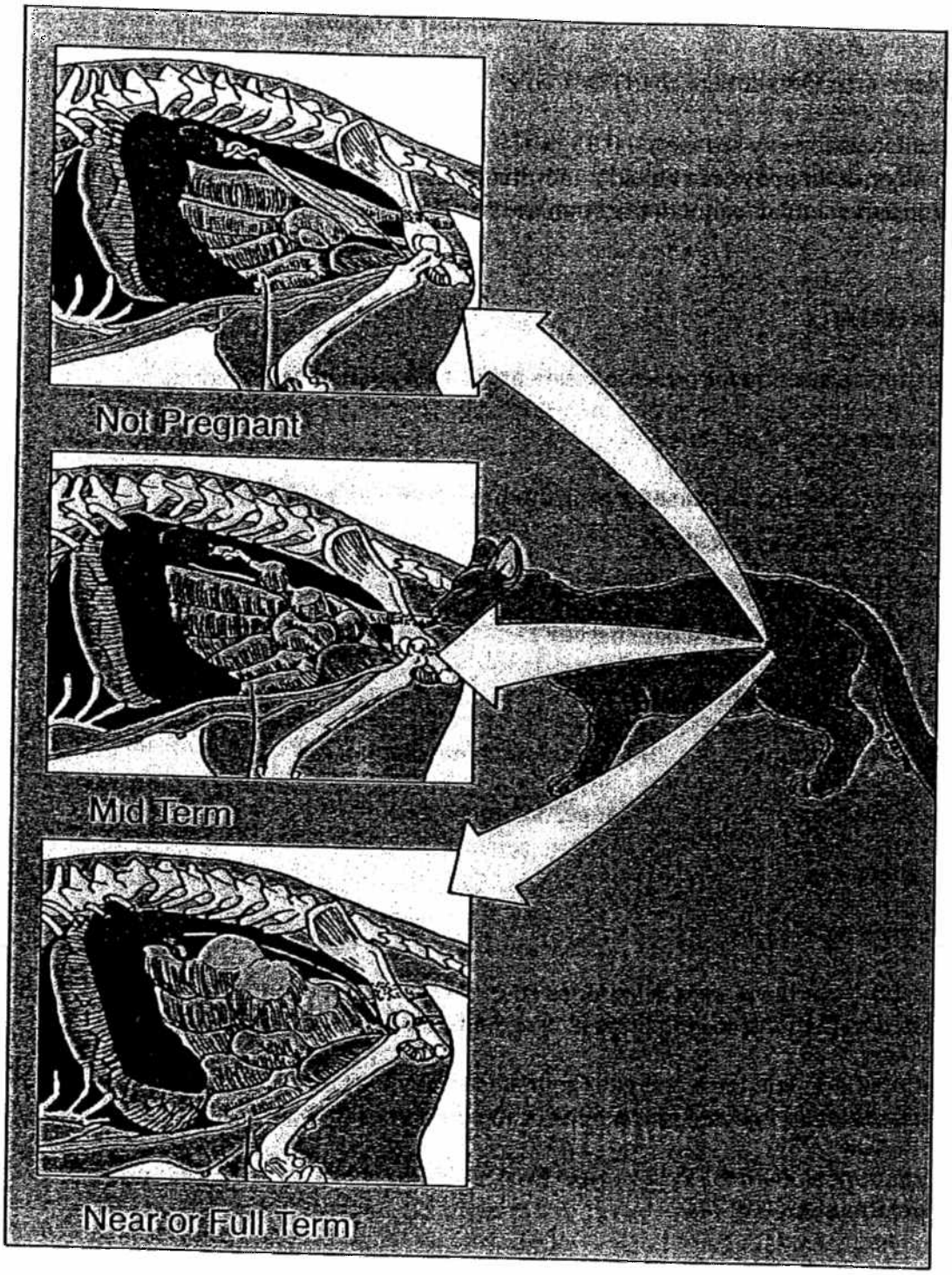
A. Needle gauge and length for IM injection:

1. medium to large dog: 20-gauge, 1-inch needle
2. cat or small puppy: 22-gauge, 3/4-inch needle

B. Pregnant animals

1. increase dose by 1 ml
2. do not inject IC as the mom's heart stops so quickly that not enough sodium pentobarbital is circulated to the fetus to euthanize it, and the fetus dies from asphyxiation
3. do not inject IP on late-term pregnant animals (weeks 7-8) as the sodium pentobarbital can be inadvertently injected into a fetus or the intestines
4. inject sodium pentobarbital IV, or inject PreMix IM to anesthetize then administer sodium pentobarbital IV

Pregnant Cat



Legal and Record-Keeping Requirements

The *Controlled Substances Act* – part of the *Comprehensive Drug Abuse Prevention and Control Act* – was passed by the U.S. Congress in 1970 and is administered by the federal Drug Enforcement Administration (DEA). It requires animal shelters that purchase, possess, or administer controlled substances to follow the requirements as listed for "mid-level practitioners" under the *Code of Federal Regulations*.

By definition, a controlled substance is a drug that has or may have a potential for human abuse. Not all controlled substances have the same potential for abuse by humans. Controlled substances are divided into five categories depending upon their potential for abuse. These categories (called Schedules) are:

1. Schedule I – high potential for abuse; no accepted medical use (e.g., crack-cocaine, heroin, LSD, marijuana, peyote, MDMA, methaqualone)
2. Schedule II – high potential for abuse; accepted medical use; severe psychic or physical dependence liability (e.g., opium, morphine, codeine, amphetamine, sodium pentobarbital, Demerol, cocaine, secobarbital)
3. Schedule III – less potential for abuse than Schedules I and II (e.g., ketamine, Telazol, Pentothal, and pentobarbital combinations, such as FP-3, Beuthanasia-D and Euthasol)
4. Schedule IV – less abuse potential than Schedule III (e.g., phenobarbital, chloral hydrate, Valium, Librium)
5. Schedule V – Less abuse potential than Schedule IV (e.g., Lomotil, Robitussin AC)

Under federal law, an animal shelter has no authority to purchase, possess, or administer controlled substances. This authority must come from one of three sources:

1. Off-site registration – the animal shelter is registered with the DEA under a local veterinarian's (DEA) license. The veterinarian is responsible for ordering, securing, and maintaining all paperwork associated with the possession, storage, and administration of controlled substances.
2. Animal shelter staff veterinarian – the animal shelter employs a DEA-licensed veterinarian and orders controlled substances through and under that veterinarian's license. The veterinarian is responsible for ordering, securing, and maintaining all paperwork associated with the possession, storage, and administration of controlled substances.
3. Direct registration – in states where direct registration exists, it is lawful for animal shelters to order, store, and administer limited controlled substances and do so without a licensed veterinarian anywhere in the "loop." At this time approximately 33 states have enacted some form of direct registration, also known as "direct purchase."

Over 20 states require some form of certification for euthanasia technicians. Certification usually involves some amount of formal training and in some cases, proficiency. In states without direct registration, no such certification currently exists.

In states where there is no direct registration legislation, animal shelters with off-site or staff veterinarians must conform to federal regulations regarding purchase, storage, and record-keeping.

Legal and Record-Keeping Requirements (Federal)

	FEDERAL REQUIREMENTS: Title 21, Chapter II of the *Code of Federal Regulations* (CFR), Part 1300-end
Security storage of controlled substances	"securely locked, substantially constructed cabinet"
Inspection / enforcement agency	Drug Enforcement Administration, an agency of the federal government
Security storage of non-controlled substances	not mentioned
Use records – for each use, write down the following:	1) date; 2) amount used; and 3) signature of person administering
Purchase records (222-C and original invoices)	keep order forms and invoices locked
Inventory records: written list of all on-hand controlled substances	biennial (every two years) during registration renewal month
Records retention	two years
Who may legally euthanize	not mentioned
Responsible person	DEA-licensed veterinarian either on staff at the animal shelter or who provides sodium pentobarbital under "off-site" registration "off-site" registration means the veterinarian has registered with the DEA at the animal shelter location (separate from his/her clinic registration) controlled substances must be shipped directly to the animal shelter by common carrier
Outdated, unwanted, or obsolete controlled substances	DEA Form 41 and send to Reverse Distributor
Theft or significant loss	DEA Form 106 and notify DEA Field Division Office
Computerized record-keeping	approved as long as hard copy of records is available upon request
Certification / length / recertification required	not mentioned
Pre-euthanasia drugs	not mentioned
Vehicle transport of controlled substances	not mentioned
Approved routes of administration	not mentioned
Approved drugs	not mentioned

Restraint

General rule: THE BEST RESTRAINT IS THE LEAST RESTRAINT – always handle the animal as gently as he or she will let you.

A. Types of restraint

1. behavioral – calming or settling an animal
2. chemical – use of pre-euthanasia drugs to tranquilize, sedate, immobilize, or anesthetize an animal
3. physical – use of specialized equipment such as nets and restraint gates to restrain an animal's movement

B. Safety devices – use to prevent biting or scratching injury

1. stiff leash (rabies pole, control stick, catch pole, snare pole) DO NOT TRY TO RESTRAIN WITH THIS DEVICE as doing so can result in injury to worker
2. remote syringe – administer pre-euthanasia drugs from a distance
3. "bite gloves" – will prevent scratches but NOT bites
4. muzzle – use only when necessary

C. Restraint devices – use to safely restrain animal

1. restraint gate – very effective safety device for restraining aggressive dogs
2. towel collar – wrap around small dog's neck to provide safe and gentle restraint
3. mechanical or blanket squeeze cage – very effective for feral/fractious cats, raccoons, or other trapped small animals
4. bite shield – isolate and inject through this device
5. cat net – very effective for restraining cats or bats. Examples include Freeman Cage Net, Campbell EZ Nabber, and Wellborn Cat Catcher
6. cat tongs or animal grasper – useful for removing fractious or feral cats from cardboard boxes
7. muzzles – use with frightened, fractious, injured, or tranquilized animals
   a) metal mesh
   b) leash or soft rope
   c) nylon – soft or hard

Euthanasia Equipment

A. Clippers – use a quality brand with a quiet motor
   1. Oster brand model A-5
   2. Andis brand model AG (uses A-5 blades)
   3. Laub or Oster brand cordless (uses A-5 blades)
   4. blade – #40 surgical
   5. keep blade and clippers clean and lubricated
   6. always shave the animal's leg to make the vein more visible

B. Tourniquets – makes the vein easier to see
   1. fingers or thumb
   2. "Nye" tourniquet (rubber blade and metal clamp)
   3. surgical tubing and clamp
   4. water

C. Syringes – use quality product; may be re-used
   1. 1 ml (Leur lock or standard hub)
   2. 3 ml (Leur lock or standard hub)
   3. 6 ml (Leur lock or standard hub)
   4. 12 ml (eccentric, non-locking hub for IV)
   5. 20 ml (eccentric, non-locking hub for IV)
   6. rinse out after each use

D. needles – use quality product; USE ONLY ONCE
   1. 25-gauge, 5/8-inch
      a) IP newborn and tiny species
      b) IV puppies and cats
   2. 22-gauge, 3/4-inch
      a) IP kittens, cats, and puppies
      b) IV small dogs
      c) IM tranquilizer, sedative, or PreMix
   3. 20-gauge, 1-inch
      a) IV medium and large dogs
      b) IP with thicker solutions

4. 18-gauge, 1 1/2-inch
    a) IC for dogs
    b) IV livestock
5. 14- or 16-gauge, any length
    a) draw sodium pentobarbital from bottle
    b) IC for pigs

E. sharps container (be aware of biohazard disposal laws and requirements)

F. syringe pole – recommend spring-loaded remote syringe-type – Safety Stick®

G. stethoscope to verify death

H. soothing touches
1. cardboard cat carriers for IP cats
2. blanket for restraint of frightened small dogs
3. towels to cover cage doors or to cushion animals going under anesthesia
4. music for animals and staff

Appendix 1: Owner-Witness Euthanasia

A. Advantages

1. pet is with owner and, as a result, is often more comfortable
2. owner is assured that pet dies with dignity and freedom from pain, and will often become a life-long supporter of the animal shelter
3. ET uses skills to prevent further suffering

B. Disadvantages

1. can be stressful if something goes wrong
2. requires a calm, clean, and comfortable euthanasia area
   a) regular euthanasia area
   b) owner-witness euthanasia area designed to look like a veterinary exam room
      - white formica-type counter tops
      - stainless-steel table
      - sink and equipment in view
   c) owner-witness euthanasia area designed to look like a living room
      - couch or chairs
      - carpeted floor (animal is placed on a blanket on the floor)
      - no equipment in view

C. Procedure

1. owner-witness euthanasia should be done voluntarily by ETs
2. meet with pet owner in a private area to discuss what is going to happen to the pet
3. if necessary, place an IV catheter in vein prior to injection – use saline or sterile injectable water
4. give owner the option to be alone with pet for 5 to 10 minutes to say goodbye
5. never let owner restrain pet
6. use stethoscope and corneal reflex as indicators of death rather than needle in heart procedure
7. check cardiac standstill (outside the owner's presence) before giving the owner the carcass

Appendix 2: Euthanasia Area

A. Furnishings

1. sink and water supply
2. sink or wall-mount eye-wash station
3. variable-height euthanasia table
4. blankets or towels to cover cages/carriers after animals have been injected (IP) to provide a quiet, dark, and safe place for the animal while it is going under anesthesia (this greatly reduces excitatory reactions)
5. lock box for day-use drug supply, syringes, and needles
6. shelves to store equipment and supplies
7. adjacent area for unconscious animals
8. surgical light or bright, shadow-free lighting for IV
9. restraint gate – install in euthanasia area to restrain fractious dogs
10. walk-on floor scale to weigh animals

B. Environment and etiquette

1. quiet, comfortable, well-lighted, heated, and ventilated
2. calming colors on walls
3. mural on wall or ceiling depicting outdoor scene
4. security peephole on euthanasia area door so people can check that nothing critical is going on before knocking or entering
5. soft and calming music
6. remove dead animals before bringing in a live animal
7. clean up excrement prior to bringing in next animal
8. clean and disinfect table after each use
9. keep non-essential personnel out of euthanasia area
10. do not allow interruptions

Appendix 3: Euthanasia Certification, Scheduling, and Bail Out Policy

A. Certification

1. set up as in-house program
2. components of in-house certification program
   a) formal training – 16-hour formal training course
   b) written exam at conclusion of formal training
   c) practical training – complete 10-20 hours of hands-on training with qualified in-house trainer
   d) practical exam – euthanize 5-10 animals before a panel
   e) continuing education – complete up to 5 hours of private study or training each year
   f) yearly re-certification practical exam

B. Scheduling routing euthanasia

1. establish routine, set schedule: first thing in the morning or last thing at night
2. have as many ETs as possible and spread out the task
3. use regular teams of ETs who work well together
4. schedule each team as few times a week as possible

C. Bail out policy – permit ETs to "bail out" on scheduled euthanasia shift due to emotional distress

1. cool-off period – give ETs a 10-15 minute cooling off period after euthanizing
2. establish a euthanasia support group
3. deal with Compassion Fatigue as a training component

Appendix 4: Zoonotic Disease and the Shelter Worker

David A. Balz, PA-C

(adapted from original material and used by permission)

Shelter workers come into contact with many animals during their daily routines. Many of these animals will be sick or parasitized. Under normal circumstances, most of these illnesses are not contagious to humans. There are, however, hundreds that are capable of making humans sick. They range from fairly irritating little problems like "ringworm" caused by a fungus (*Trichophyton canis)* to life-threatening viruses such as Rabies.

When you, as a shelter worker, become sick and seek medical attention, be sure to point out what type of work you do and, in particular, mention any animals that may have had similar symptoms. If the problem is not cleared up promptly, or worsens, seek the care of an *infectious disease specialist.* These doctors can be found at most larger hospitals and university medical centers.

Some of the more common or more dangerous *zoonoses* are listed below. (This list is limited. There are hundreds of others.)

1. **Ringworm** (Dermatomycosis)

   Human and animal appearance is similar. A circular area with a raised red outer edge with clearing center. No hair growth will occur in the center of the infection.

   Occurrence: Dogs, cats, cattle, and horses. Common in warm humid climates and thrives with skin irritation and crowded conditions.

   Transmission: Direct contact with infection or indirect from fomites.

2. **Viceral Larva Migrans** (e.g., Toxocara canis)

   A roundworm infection that is usually mild, characterized by mild fever, cough, and skin rash. If it involves the eye it can lead to blindness.

   Occurrence: Dogs, cats, and raccoons.

   Transmission: Ingestion of larvae in dirt or undercooked meat or through contaminated skin lesions.

3. **Cutaneous Larval Migrans** (e.g., Ancylostoma [hookworm], Strongyloides)

   A skin infection with papules at the site of entry, serpentine lesions, very pruritic, usually self limiting in weeks to months.

   Occurrence: Warm moist climates with sandy soil contaminated with dog and cat feces.

   Transmission: Direct contact with soil contaminated with dog and cat feces.

4. **Giardiasis** (Giardia lamblia)

   An intestinal infection usually with pain, bloating, diarrhea, fatigue, and weight loss.

   Occurrence: Worldwide. Most common intestinal parasitic infection in the developed world. Usually from humans, but also from dogs, cats, rodents, beavers, and non-human primates.

   Transmission: Ingestion of cysts. Commonly waterborne. Direct fecal-oral and on food.

5. **Toxoplasmosis** (Toxoplasma gondii)

   Ranges from asymptomatic to fever, lymphadenopathy, myalgia, pneumonitis, and central nervous system disturbances. Infection during pregnancy can produce a variety of fetal disorders up to and including fetal death. Dormant disease can be reactivated if the person becomes immunosuppressed.

   Occurrence: Worldwide. Reservoir is cats. Most species of birds and mammals can be intermediate hosts.

   Transmission: Cats excrete oocysts for about 10 days when first infected. Intermediate hosts (including humans) become infected by ingesting or inhaling the oocysts. (Dust from cleaning cat boxes for example.)

   Recommendation: Pregnant or likely to be pregnant shelter workers should have a titer done for Toxoplasmosis. If it is positive – indicating previous infection and therefore immunity – they may work without restrictions. However, if the titer is negative they should not work with used cat litter or sweep cat areas (situations where there will be dust containing cysts). They may handle cats, food and water.

6. **Cat Scratch Disease** (Rochalimaea henselae - presumptively)

   Benign, non-recurring infection beginning with an erythematous papule at the site of scratch or bite, then regional lymphadenopathy, usually painful and suppurative. Sometimes progresses to fever, chills, myalgia and rarely to pneumonia, hepatitis, and encephalitis.

   Occurrence: Worldwide. Reservoir is cats, especially young cats.

   Transmission: Usually from a bite or scratch, but can be from inoculation of an existing wound from contact with *fomites* (e.g., cat toy, food bowl).

7. **Tetanus** (Clostridium tetani)

   Intermittent to continuous tonic muscular spasms leading to terminal asphyxia.

   Occurrence: Worldwide. Humans and horses are at greatest risk.

   Transmission: Contamination of wounds with spores from soil or the intestinal flora of humans and herbivores. Immunization is 100% protective.

8. **Leptospirosis** (Leptospira interrogans)

   Febrile systemic disease without rash that can lead to aseptic meningitis among others.

   Occurrence: Worldwide. Reservoir is many domestic and wild mammalian species.

   Transmission: Contact with urine from a carrier animal either directly or in water. Infectious agent can penetrate intact mucus membranes or abraded, damaged skin.

9. **Lyme Disease** (Borrelia burgdorferi)

   A two-stage disease starting with a circumscribed rash, fever, regional lymphadenopathy, malaise and myalgia. Later stage – arthritis of large joints, meningitis, encephalitis, and cardiac involvement.

   Occurrence: North America, Russia, Australia, and Europe primarily during the warm months when ticks are active. Reservoir includes field rodents, rabbits, and deer.

   Transmission: Bite of a tick. Several species of ticks are thought to be capable of transmitting the disease and show a preference for specific host species, including rodents, large domestic and wild mammals, dogs, and humans.

10. **Psittacosis** (Chlamydia psittaci)

    Febrile respiratory tract disease, sudden in onset with chills, cough, epistaxis, and chest pain, sometimes leading to myocarditis.

    Occurrence: Worldwide. Affects more than 100 species of birds, which are the reservoir. Most common in crowded, stressed birds in captivity; less common in wild birds.

    Transmission: Usually inhalation of agent from the dry droppings of infected birds. (There is one recorded case of a human associated with cat that transmitted the disease.)

11. **Rabies** (RNA virus - Lyssavirus Rhabdoviridae) various strains

    Starts with apprehension, headache, fever, vague sensory changes progressing to optic and auditory hyperesthesia, then to spasmodic contractions of the swallowing muscles (hydrophobia), salivation, delirium, convulsions, and death from respiratory failure.

    Occurrence: Worldwide with some exceptions. Several different forms in animals, and strains are related but not specific to species of origin (bat rabies strain can infect humans and dogs).

    Incubation periods vary with species, severity of wound, location, and amount of virus received. Approximate incubation times for some species – humans 5-365 days or more (usually 2-8 weeks), dogs 10-60 days, cattle 25-150 days, wild animals 10-180 days. Fatality rate for practical purposes is 100%.

    Transmission: Bite of an infected animal that is shedding the virus in its saliva. Airborne transmission has been documented in bat caves. Rare cases of transplant death when the donor had unknowingly died of rabies.

12. **West Nile Virus** (RNA virus – Togaviridae flavivirus)

Ranges from a mild subclinical illness to a febrile illness of short duration to encephalitis. May be a severe debilitating illness with prolonged recovery, but only rarely fatal in otherwise healthy humans.

Occurrence: Summer months, widely found throughout the world, epidemics occur in Israel and South Africa.

Transmission: Mosquito borne. Birds are the reservoir, especially corvad species in the United States (jays and crows). There is considerable lack of information on other possible vectors or hosts.

Prevention

1. Practice good personal hygiene. Wash hands frequently with disinfectant soaps, scrubbing vigorously. Do not touch your face, especially the nose and mouth. Change soiled clothing promptly. Wash your hands before and after using the bathroom.
2. Wear personal protective items (e.g., gloves, goggles, respirators) when appropriate.
3. Keep animals healthy, inoculated, and free of parasitic infestations. Keep their pens, cages or kennels clean and free of feces and urine.
4. Keep your own immunizations up to date. Tetanus is generally good for 10 years, but significant injury requires a booster. Anyone working with animals should receive at least the basic series of rabies vaccination. If exposed to rabies vector species on a regular basis, a booster every two years and/or a rabies titer is the current recommendation.

Ref: *Zoonoses Recognition, Control, and Prevention* by Hugh-Jones, Hubert, and Hagstad, Iowa State University Press/ Ames, 2000

Appendix 5: Vortech Pharmaceuticals' Material Safety Data Sheet

MATERIAL SAFETY DATA SHEET

I. Material Identification

Trade/Material Name: FATAL-PLUS® C-II

Sodium Pentobarbital Injection CII

Other Designations: NDC Numbers: 0298-9372-68 (Powder)

0298-9373-68 (Solution)

CAS: 57-33-0

Chemical Names: 1. 2,4,6 (1H, 3H, 5H) - Pyrimidinetrione, 5-Ethyl-5 (1- Methylbutyl) - Monosodium Salt

2. Sodium 5-Ethyl-5-(1-Methylbutyl) Barbiturate

Manufacturer: Vortech Pharmaceuticals, Limited

Summary: Pentobarbital Sodium is a barbiturate used as a hypnotic and sedative that is toxic if ingested in larger than therapeutic quantities. Wear a NIOSH-Approved respirator, goggles, and gloves when handling. Use only with adequate ventilation. Wash exposed skin with soap and water. Sweep up spilled material for recovery and flush swept spill area at once with detergent and water. If the spilled material cannot be recovered, incineration is the recommended disposal procedure.

II. Ingredients and Hazards

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Pentobarbital Sodium	57-33-0	39% Solution ≥ 98% Powder	OSHA PEL-Not estab. ACGIHTLV-Not estab.

III. Physical Data

1. FATAL-PLUS® POWDER NDC #: 0298-9372-6

Appearance/Order: White, odorless crystalline granules, or powder. Hygroscopic.

Melting Range: Approx. 127 Degrees C. **Boiling Point:** N/A

Vapor Density: N/A **Vapor Pressure:** N/A

Solubility: Freely soluble in water and alcohol. Practically insoluble in ether.

MATERIAL SAFETY DATA SHEET

(Pentobarbital)

Molecular Weight: 248.26 **Specific Gravity:** N/A

Molecular Formula: $C_{11}H_{17}N_2NAO_3$ **Evaporation Date:** N/A

PH: A 10% solution in H_20 has a PH of 9.6 to 11.0.

1. FATAL-PLUS® SOLUTION NDC #: 0298-9373-68

Appearance/Order: Blue solution. Distinctive odor.

Boiling Point: N/A **Evaporation Rate:** N/A

Vapor Pressure: N/A **Specific Gravity:** (H_20=1): 1.040

Water Solubility: Soluble

Vapor Density (Air=1): N/A

IV. Fire and Explosion Data

Flash Point (Method): N/A **Limits:** LEL%: N/A **UEL%:** N/A

Extinguishing Media: Water Spray, Dry Chemical, Carbon Dioxide, or Foam, as appropriate for surrounding materials and fire.

Unusual fire or explosion hazards: Emits toxic and corrosive fumes.

Special Fire-fighting procedures: Wear self-contained breathing apparatus and protective clothing.

V. Reactivity Data

Stability: Stable

Conditions to Avoid: N/A

Incompatibility: Incompatible with acids, acidic salts, and choral hydrate.

Hazardous Decomposition or Byproducts: When heated to decomposition, it emits toxic and corrosive vapors of nitrogen oxides and sodium oxides.

Storage: Store in airtight containers.

VI. Health Hazard Information

This product is not considered a carcinogen by N.T.P., I.A.R.C. Monograph, or OSHA.

SAKS: Highly toxic by oral administration.

OSHA: Toxic by oral administration.

Primary Entry Routes: Inhalation, ingestion, and absorption.

MATERIAL SAFETY DATA SHEET

(Pentobarbital)

Acute or Chronic Health Hazards:

High acute oral, subcutaneous, intraperitoneal, intravenous, parenteral, intracerebral, intraduodenal, and intramuscular toxicity. Possible teratogen. Overexposure may cause reproductive disorder(s) based on tests with laboratory animals. Overexposure may lead to tolerance and physical dependency.

Signs and Symptoms of Exposure:

Sleepiness; mental confusion; unsteadiness; coma with slow, shallow respiration; flaccid muscles; hypotension; cyanosis; hypothermia or hyperthermia; and absent reflexes.

For additional information refer to product label.

Medical conditions generally aggravated by exposure: N/A

Emergency and First-Aid Procedures:

Product on Skin: Immediately wash with water and soap. Remove contaminated clothing while washing. Contaminated clothing should be washed or dry-cleaned before reuse. Get medical attention if necessary.

Product Inhaled: Remove patient from exposure, keep warm and at rest. If breathing is difficult, give artificial respiration. Get medical attention if necessary.

Product Ingested: If conscious, induce vomiting by giving IPECAC syrup or two glasses of warm water. Then tickle the back of the throat with a tongue depressor. After vomiting stops, give patient one or two tablespoons of activated charcoal in a glass of water. Get medical attention immediately.

Product In Eye: Immediately flush the patient's eyes with large amounts of water for fifteen (15) minutes. Lift upper and lower lids occasionally. Get medical attention if necessary.

Safety Precautions: Avoid breathing the dust. Avoid contact with eye and skin. Wash thoroughly after handling.

Protection Information: Use with adequate ventilation to prevent dust build up. Wear a NIOSH-approved respirator, gloves, goggles, and other appropriate protective equipment to prevent exposure when handling the product.

VII. Spill and Disposal Information

Shovel large quantities of spilled material into drums. Sweep up spill areas with detergent and water. If the material cannot be recovered, the preferred method of disposal is incineration in a facility that complies with federal, state, and local regulations.

Handle all pharmaceutical products in a way that avoids contact with the inhalation of dust, fumes, mists, and/or vapors associated with the product.

VIII. Special Protection Information

Goggles: Safety goggles

Gloves: Disposable, surgical latex gloves

Respirator: NIOSH-approved respirator

Other: Clothing – disposable protective apparel (protect exposed skin)

Workplace Conditions: Ventilation: Local exhaust recommended

Standards and Regulations:

Dot:	Shipping Name:	Poisonous Solids, N.O.S.
	UN NO:	UN 2811
	Hazard Class	6.1
	Packaging Group	III
	Hazard Label:	Harmful – Stow away from foodstuffs.

IATA: See DOT requirements.
IMO: See DOT requirements.

The information contained herein is believed to be complete and accurate. However, it is the user's responsibility to determine the suitability of the information for their particular purpose. Vortech Pharmaceuticals, Limited, assumes no additional liability of responsibility from the use of or reliance on this information.

Appendix 6: Controlled Substance Use Log

LOT # _____ DATE RECEIVED: _____ EXPIRATION DATE: _____

DATE	ANIMAL RECORD NUMBER	SPECIES	WEIGHT (lbs.)	WASTE (ml)	AMOUNT USED (ml)	BALANCE (ml)	SIGNATURE OF CET

Appendix 7: Sample Controlled Substance Use Log

LOT #: 4455-4 DATE RECEIVED: January 1, 2002 EXPIRATION DATE: 8-03

DATE	ANIMAL RECORD NUMBER	SPECIES	WEIGHT (lbs.)	WASTE (ml)	AMOUNT USED (ml)	BALANCE (ml)	SIGNATURE
1-1-02	Beg. balance	–	–	–	–	250	
1-1-02	D - 6425	dog	100	0	10	240	
1-1-02	C - 2321	cat	10	0	3	237	
1-1-02	D - 6499	dog	70	6	13	224	
1-1-02	D - 6420	dog	25	0	3	221	
1-1-02	X - 1012	rabbit	8	0	6	215	
1-1-02	C - 2330	cat	2	0	1	214	
1-2-02	C - 2331	5 kitten	10	0	5	209	
1-2-02	D - 6424	8 puppy	70	0	21	188	
1-2-02	D - 6392	dog	110	0	15	173	
	continues						
1-6-02	C - 2360	cat	12	0	5	0	

Appendix 8: Controlled Substance Drug Inventory Record

DATE RECEIVED	DATE OUT	WHERE PURCHASED	LOT #	EXPIRATION DATE	BALANCE	SIGNATURE

Appendix 9: Sample Controlled Substance Drug Inventory Record

DATE RECEIVED	DATE OUT	WHERE PURCHASED	LOT #	EXPIRATION DATE	BALANCE	SIGNATURE
11-10-01		ABC Co.	4455-1	8-03	250	
11-10-01		ABC Co.	4455-2	8-03	500	
11-10-01		ABC Co.	4455-3	8-03	750	
11-10-01		ABC Co.	4455-4	8-03	1000	
11-10-01		ABC Co.	4455-5	8-03	1250	
	11-25-01		4455-1	8-03	1000	
	12-05-01		4455-2	8-03	750	
	12-15-01		4455-3	8-03	500	
	1-1-02		4455-4	8-03	250	
1-05-02		ABC Co.	3344-6	10-04	500	
1-05-02		ABC Co.	3344-7	10-04	750	
1-05-02		ABC Co.	3344-8	10-04	1000	
1-05-02		ABC Co.	3344-9	10-04	1250	
1-05-02		ABC Co.	3344-10	10-04	1500	
	1-06-02		4455-5	8-03	1250	
	1-15-02		3344-6	10-04	1000	
1-20-02	Routine inventory			4 BOTTLES	1000	

Appendix 10: Dosage Skill Practice

Dosage Formula for IV / IC: weight ÷ 10 = dose

Dosage Formula for IP/ PO: weight x 3 ÷ 10 = dose

Calculate the proper IV dose for the following weights:

72 lbs. _____ 38 lbs. _____ 3 lbs. _____ 158 lbs. _____ 11 lbs. _____ 56 lbs. _____ 5 lbs. _____

Calculate the proper IP dose for the following weights:

½ lbs. _____ 12 lbs. _____ 15 lbs. _____ 6 lbs. _____ 8 lbs. _____ 1 lb. _____ 3 lbs. _____

11 lbs. _____

Calculate the proper dose for the following scenarios:

1) 62 lbs. Pit Bull, male, friendly: IV _____

2) 3 lbs. kitten, female, upper respiratory infection – snotty nose: IP _____

3) 11 lbs. cat, male, feral: in net IP _____

4) 13 lbs. cat, male, feral: PreMix IM _____; sodium pentobarbital _____; route _____

5) 40 lbs. Sheltie (obese): IV _____

6) 14 lbs. raccoon, probable distemper, barely conscious: PreMix IM _____; sodium pentobarbital _____; route _____

7) 38 lbs. Cocker mix, hit by car, broken back, unconscious, pupils fixed and dilated, pale gums:

   How would you euthanize? _____

8) 17 lbs. Poodle mix, kidney failure, heart failure, liver failure, conscious but lethargic:

   owner witness: _____

   no owner witness: _____

Appendix 11: Glossary

(brand names are capitalized)

acepromazine maleate Tranquilizer for dogs, cats, and horses.

analgesia From the Greek meaning, "no pain." A drug that produces relief from pain (e.g., aspirin, acetaminophen, ibuprofen).

anesthesia From the Greek meaning, "no feeling."

anesthetic A drug that produces loss of feeling or sensation, especially loss of pain. See also local anesthetic and general anesthetic.

aqueous solution A liquid with a water-like consistency. See also **viscosity**.

AVMA Panel on Euthanasia American Veterinary Medical Association 2000 Report on Euthanasia is the sixth report on euthanasia methods.

barbiturate A drug that directly depresses the central nervous system (e.g., amobarbital, butabarbital, hexobarbital, methobarbital, pentobarbital, phenobarbital, secobarbital, talbutal).

behavioral restraint Restraint accomplished by imposing one's will on an animal to calm or settle.

bolus or IV-push An injection accomplished in a smooth and rapid manner. It is best to bolus IV sodium pentobarbital.

CET Certified Euthanasia Technician or Certified Animal Euthanasia Technician; a person who has completed a state-required training curriculum.

chemical restraint Administration of a suitable drug through various means, such as a syringe, pole or remote syringe, dart, tablet, or oral squirt.

chloroform Inhalant (gas) anesthetic once used for euthanasia of very young animals, birds, and reptiles. This is a hazardous chemical. Known hepatotoxin and suspected carcinogen. Considered unacceptable due to human risk.

Compassion Fatigue Also called "secondary trauma," is work-related secondary exposure to extremely stressful events. Compassion fatigue is an occupational hazard of caring service providers. It is not a disease, but a set of characteristics common to those who work with those who have been traumatized.

Controlled Substances Act of 1970 Part of the Comprehensive Drug Abuse Prevention and Control Act of 1970. Identifies and categorizes certain drugs with a potential for human abuse. Tightens controls on purchase, storage, and administration to combat illicit diversion. Controlled substances are divided into five categories (schedules).

DEA (Drug Enforcement Administration) a federal agency charged with enforcing the *Controlled Substances Act* of 1970 and the *Comprehensive Drug Abuse Prevention and Control Act* of 1970. Established in 1973. The DEA is part of the U.S. Department of Justice.

DEA 41 Form for disposing of outdated, obsolete or unwanted controlled substances
DEA 106 Form for reporting theft or significant loss of controlled substances
DEA 222 Form for ordering Schedule II sodium pentobarbital

dissociative anesthetic Induces anesthesia by interrupting the flow of information from the unconscious to conscious parts of the brain rather than depressing all brain centers (e.g., ketamine).

euthanasia From the Greek meaning, "good death." A dignified, quiet, and painless death without fear, stress, apprehension or pain. Also, ending the suffering of an animal through painless means.

euthanize Verb: To provide an animal with a good death.

eye reflex

palpebral Stimulus: touch the corner of the eye. Response: eyelid blinks.

pupillary Stimulus: shine a light into the eye. Response: pupil constricts.

corneal Stimulus: touch the cornea (outer surface of the eyeball). Response: eyelid blinks and eyeball pulls back into the socket.

feral A domesticated animal forced by circumstances to live as a wild animal; will resist handling or approach.

fomite An inanimate object that, once contaminated, becomes a source of infection.

fractious A tame or domesticated animal that resists handling or approach.

gas anesthesia A vaporized form of anesthetic delivered as a mixture of gas and oxygen to be inhaled by the animal (e.g., halothane, isoflurane, ether).

general anesthetic A drug that causes loss of sensation throughout the body by acting on the brain.

grain Apothecary measure for drugs. 1 grain = 65 mg

hypoxia Gradual reduction of oxygen as in a chamber. Symptoms are drowsiness and lack of coordination followed by nausea and unconsciousness.

immobilizing agent A drug that renders an animal unable to move.

intracardiac (IC) Injection into one of the chambers of the heart or into one of the large vessels leading to or from the heart.

intrahepatic (IH) Injection into the liver.

intramuscular (IM) Injection into a muscle.

intraperitoneal (IP) Injection into the abdominal cavity, but not into an organ.

intravenous (IV) Injection into a vein.

ketamine Rapid-acting dissociative anesthetic approved for use in humans, sub-human primates, and cats. Mix with xylazine to produce PreMix.

legend drugs (veterinary prescription legend drugs) Available from a licensed veterinarian or by prescription only. Not classified as a controlled substance by the federal Comprehensive Drug Abuse Prevention and Control Act of 1970.

local anesthetic A drug used to eliminate sensation in a specific part of an animal. Acts only where it is injected (e.g., lidocaine).

narcotic A drug that produces drowsiness and depression of feeling.

paralytic agent A drug that immobilizes an animal by making the animal unable to use its muscles. Animal remains conscious.

physical restraint The use of devices such as nets, squeeze cages, or gates to restrain an animal's movement.

PO A route of administration; oral; literally *per os*, Latin for "by mouth." A route of administration for tranquilizers and anesthetics.

PreMix Ketamine/xylazine compound for pre-euthanasia anesthesia.

reflex An involuntary reaction to a stimulus.

restraint Any means of immobilizing an animal. The best restraint is the least restraint. See also chemical and physical restraint.

rigor mortis From the Greek meaning, "rigidity of death."

sedative A drug that calms mainly through inducing drowsiness (e.g., xylazine).

stress The way the body reacts to change. "The effect of physical, physiologic, or emotional factors (stressors) that induce an alteration in an animal's homeostasis or adaptive state" (AVMA 1993).

SQ (subcutaneous, sub q.) An injection under the skin, but no deeper.

succinylcholine chloride (Sucostrin®, U-Tha-Sol®) Neuromuscular blocking agent, paralytic agent. Paralyzes all skeletal muscles, including those of breathing. No anesthetic action; animal is fully conscious and dies by asphyxia (suffocation). Condemned for euthanasia. No longer used to kill animals.

T-61® (euthanasia solution) A combination of local anesthetic, paralytic agent, and narcotic. IV use only. Must be injected slowly; may cause excitation. No longer available in the United States, but widely used in Canada and elsewhere.

Telazol® Animal capture and pre-euthanasia drug for dogs and cats.

terminal gasp (gasp reflex) A reflexive deep breath taken by a euthanized animal either before or after the animal's heart has stopped, caused by a spasm of the diaphragm.

tranquilizer A drug (e.g., acepromazine) that calms or quiets an animal with minimal dulling of the senses. Tranquilizers may mask or distort normal body language making animals less predictable. Tranquilized dogs should be muzzled before handling.

tricaine methanesulfonate (MS-222®) A drug that depresses the central nervous system. Suitable for euthanasia of fish and amphibians.

toe pinch reflex Stimulus: pinch the toe pad. Response: leg withdraws.

viscosity The state or quality and degree of being liquid; the more viscous or viscid a solution, the thicker and more resistant it is to flowing freely.

xylazine Sedative, muscle relaxant, and analgesic for dogs, cats, and horses.

zoonoses Diseases transmittable between humans and animals.

Managing Compassion Fatigue In the Twenty - First Century

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