



**Clinic Introduction Handbook for
Veterinarians**

Our Mission

To save the lives of homeless cats by providing access to high volume spay/neuter surgery in a safe and humane environment, collaborating with others, and mentoring like-minded organizations to increase spay/neuter in their regions.

*Volunteers are the shining stars of our program.
Without volunteers, the FCSNP couldn't help a single cat.
We rely very heavily on volunteers for clinic efficiency and safety.
More volunteers equal more cats saved. It's that simple.*

Dear Doctor:

Thank you for your interest in volunteering for the FCSNP. Our successful program has improved the lives of over thirty thousand cats since 1997. Volunteers are the core of our existence and the backbone of what we accomplish each and every day. Whether someone generously gives six days a year or one day a week, every bit helps us help more cats.

The mission of FCSNP is to provide access to spay/neuter for all cats. Our volunteer experience does not involve snuggling with soft, playful kittens or stroking a purring old cat. In fact, the volunteer experience is really not what you would call "warm and fuzzy". Nonetheless, our work is vital to saving lives. On the day you work, you save lives and invest in saving future lives.

What you will see at our clinic is high volume, high quality spay/neuter surgery. We do a lot of surgery, thus we do it well and efficiently. Our priority and our reason to be there each day, is to end feline homelessness through prevention via spay/neuter. As might be expected with the high number of cats coming through our clinic, cats arrive for spay/neuter that have unrelated problems that we can treat. For instance, we might treat an abscess, or surgically remove a damaged tail. We may remove a few infected teeth or be able to foster out a litter for later adoption. Being able to provide these extra services depends on the circumstances of that particular clinic day. We do the best that we can, but not all days allow us to do everything that we want.

For more information, please call or e-mail me, Dr. Christine Wilford. For more general information about the FCSNP, to make donations, to request brochures or to learn more about free roaming cats, contact the FCSNP at 206/ 528-8125 or visit the website at www.feralcatproject.org. Thank you again for your interest in the Feral Cat Spay and Neuter Project.

Sincerely,

Christine Wilford, DVM
President
FCSNP Board of Directors
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BACKGROUND

Since trap-neuter-return (TNR) has become a well-accepted compromise to deal with the plight of free roaming cats, the Feral Cat S/N Project was organized with a single purpose - to sterilize free roaming cats. We provide free surgical services to individuals that feed free roaming cats but may not be able to afford surgery for every cat they encounter. In 2003, we began altering tame cats/kittens at low cost for various rescue groups and grassroots rescuers in the Puget Sound region as part of our feral cat prevention efforts. In a pilot collaboration that has now become permanent, we can insure that kittens/cats are adopted into homes only after being altered. Neuter-before-adoption is a valuable, yet underutilized, tool to combat the epidemic of euthanizing over 40,000 cats in Washington state shelters each year. After nine years of free clinics, the Project has altered over 29,000 cats and kittens. In July of 2003, we opened our own freestanding clinic to increase our clinic capacity. We began at one day per week but are currently operating four days a week on average.

DUTIES

When participating in a FCSNP clinic, the surgeon's role is simple – perform surgery and be available, if emergent care is needed for cats attending the clinic. There is no client contact, no medical record to write and no handling of conscious cats. Typically the staff surgeon of the day performs the more difficult procedures, if any arise.

PROTOCOLS

We have some very specific protocols cultivated for our clinic. Most of these protocols pertain to volunteers other than the veterinarians. Many protocols are in place to keep the quality of service consistent at every clinic. Although there may be multiple ways to do a particular task, we often have a “set” protocol for it. This is most important for considering volunteers who are learning or have learned their veterinary skills at our

clinic. If they were to witness, for example, a different way to surgically prep a cat every time they volunteered, then they become frustrated at not knowing which is “right”. So we try to standardize as much as we can in order to keep things simple and clear. You may see us teaching only one method for this purpose. If you have a question about a protocol, please ask!

SCHEDULE

We schedule surgeons from 8:15 AM until all surgeries are complete. We reserve slots for 50+ cats per clinic with the target being about 45-50 cats. Females comprise approximately 65%. A full day will involve 25-30 spays. During pregnancy season (March / April) we schedule smaller clinics, because surgeries are more complicated and timely. Casual dress and comfortable shoes are appropriate (shorts in summer). The surgeon decides whether to take a lunch break or work straight through the day.

TRIAGE

On occasion, you may be asked by the lead technician to examine sedated cats to differentiate an inguinal from abdominal cryptorchid, to evaluate serious medical problems (usually trauma), assess dyspnea or something out of the ordinary. When in doubt, the technicians are well trained and educated about typical scenarios and decisions.

MEDICAL RECORDS

Anything unusual that occurs before, during or after surgery should be recorded on the medical record, such as pyometra, fragile uterus, difficult recovery, sneezing, etc. Any additional drugs or support should be documented, such as additional heat support, yohimbine reversal or CPR (dose/route/time administered). The technical staff can do all of the documentation at your request. The medical record should stay with the cat throughout the clinic until the cat is recovered enough to be discharged. A copy of the record goes with the caretaker. The original stays in the clinic.

The lay staff and volunteers are strictly forbidden to offer medical advice. They are allowed to transmit information from a veterinarian to a caretaker, if you desire. You are discouraged from dealing directly with caretakers and have no obligation to do anything other than spay/neuter while volunteering.

DISEASE TRANSMISSION

Studies have repeatedly shown the disease rate of free roaming cats to be almost identical to the disease rate of pet cats. In some cases, pet cats have higher disease incidences. Being a high volume surgery clinic, we bring lots of cats into a small space and stress them, kind of like a child going to daycare. We are aware of the potential for disease transmission between visiting cats. To combat this, our protocol is to keep each cat on top of its own fleece blanket to provide a barrier against fomites. Staff and volunteers are requested to wash their hands thoroughly, if they come in contact with any mucus, blood or feces. Hair is vacuumed up regularly at the prep area, and the clipper blades are brushed clean of hair. We realize the potential for infectious disease, but since 1997, we are not aware of any outbreak related to cats attending FCSNP clinics.

ANESTHESIA

Caretakers sign waivers giving permission for the surgery knowing that the cats will not undergo a comprehensive physical exam prior to anesthesia. Before any procedure is performed, each cat is anesthetized by staff with an IM combination of Telazol, ketamine, xylazine and atropine. We augment the injectable anesthesia with isoflurane/oxygen by mask, if needed, unless the cat has a significant URI. In this case, the cat may not be able to breathe through its nose sufficiently to live. Thus, placing it on a mask in surgery to get isoflurane and oxygen may actually cause its demise. Cats with significant URI may be operated only on injectable anesthesia to avoid suffocation caused by the anesthetic mask or we may decide to use a mouth gag

and use the gas anesthetic. We do not intubate for anesthesia.

MICROCHIP

Each cat entering the clinic is scanned for a microchip, in case it is a lost or abandoned pet. If a chip is discovered, no further procedures are performed. We make all efforts to contact the registrant of the microchip and recover the cat. Every bit of information and all steps made to find the registrant must be documented on the back of the original medical record (chip #, phone numbers, time, messages left, contact names made).

SURGICAL PREP

After induction, each cat receives a long-acting antibiotic injection prior to surgery. Each cat to be ear tipped that weighs four pounds is presumed to have diminished maternal antibody against rabies and is given a three year, killed virus rabies vaccine. Request for ear tip indicates to us that it is a free roaming cat or will be living a free roaming lifestyle and not likely to be a pet cat. Caretakers may purchase MLV FVRCP vaccines, FeLV tests or may bring their own combo tests. Advanced stage pregnant cats receive SQ fluids and injectable iron in the prep area. If you desire, you may request SQ fluids or iron can be given to other patients, as well.

SPAYS

We try to start anesthesia by 8:30 AM. We have trained staff in our surgical suite, an area set aside for spays and anything other than routine neuters. Cats are brought to each surgery table anesthetized and fully prepped. Newly autoclaved surgical packs and new sterile gloves are used for each cat and strict sterile technique is employed. Various styles of caps and masks are available for the surgeons. We use Monomend suture with a suaged-on needle. We have catgut on a reel for tying off the uterine stump in pregnant cats. This helps secure the sutures and save on opening an extra suture pack just for that purpose.

Abdominal incisions are closed with at least a two-layer closure, simple interrupted pattern on the abdominal wall and using an absorbable, continuous subcuticular pattern combined with surgical glue, if desired, for the skin closure. Two surgery tables are set up so that a new cat is ready and waiting as the surgeon finishes another. If a second surgeon is present, a third spay table can be set up in the surgical suite or the second surgeon can simply do neuters and triage. Surgeons should make an effort to keep incisions small while not compromising the quality of the surgery. We want the complete uterus and both ovaries to be removed. We've learned through experience that not tying the legs down actually loosens the cat, loosens the ligaments and allows better exposure of the ovarian stumps. This technique enables the surgeons to make smaller incisions, which reduces closure time.

PREPUBERTAL SPAY/NEUTER

Many caretakers are able to confiscate kittens from free roaming queens, but may or may not be able to catch the queens. Like the shelters in this area, the Project supports pediatric spaying and neutering as an important opportunity to reduce the homeless pet population. The Project will spay or neuter kittens as long as they are at least two pounds and seemingly healthy. If you are not comfortable with performing surgery on young kittens, please let us know. Kittens in apparent ill health should be postponed for future surgery.

“SPAY” SCARS

Female cats with abdominal scars will be explored to ascertain that they've been altered. We have seen actual cases with midline scars that we found were not altered, including one cat with a “spay scar” that had five feti. Since we “sign our name” with either an ear tip or tattoo that the cat is altered, and since we may not get a second chance to see the cat for surgery if we're wrong, we must confirm reproductive status of all female cats. Exceptions might be made for a handful of caretakers who would have

access to the cat in the future if it showed signs of estrus or pregnancy.

PREGNANT CATS

Pregnant cat season peaks during March and April, then tapers off. We abort all feti at all stages. If a surgeon wants to take full term kittens home to hand raise, they may, but no one else is allowed. We have euthanasia solution available to euthanize large feti, if needed. Late term queens are the most likely to have surgical complications. This is not a surgery that veterinarians perform often in private practice, so we have a few recommendations for technique. Cats will bleed to death from the uterine stump even, if the vessels are well ligated. The uterine stump must be securely ligated as well. We have seen fatal hemorrhage post operatively resulting from ligatures being improperly placed by the surgeons. (See diagram for ligature placement recommendations.) We request that each set of uterine vessels be ligated individually followed by two transfixing circumferential sutures around the uterine stump. Ligatures must be tight to provide adequate hemostasis and be secure. If you are uncomfortable doing these surgeries, please let us know. The staff veterinarian is always available to do them. We have Carmalt clamps wrapped and autoclaved separately, so when you need them, just ask. Using the small Kelly clamps on large uterine stumps ruins the clamp, causing it to crack at the hinges. So please utilize what we have in the proper manner. We attempt to spay the pregnant cats earlier in the day, if possible, so that we have longer to monitor them before discharge that day. These cats will receive iron injections to help replenish blood loss and SQ fluids to improve hydration post operatively. We may not express the bladder of a pregnant cat if the technician cannot distinguish between the feti and the bladder. We can help you express the bladder in surgery if it is a problem.

PYOMETRA

We do see the occasional case of pyometra. These are carefully spayed and given a

double dose of antibiotics when identified. Caretakers are advised to seek veterinary attention for a full course of antibiotics, if possible. We do not prescribe or dispense any medications.

NEUTERS

Routine neuters are performed by doctors in the prep room with a newly autoclaved hemostat per cat, cold sterilized blade and are not sutured. Inguinal cryptorchid surgeries are also performed in prep and may be closed with suture or glue, if needed. Abdominal cryptorchids are taken into the surgery suite for exploration. All adult cats that are apparently already altered will be examined for spines on the penis. If spines are present but no testicles are palpated, then the abdomen will be explored for bilateral cryptorchidism. Younger cats and kittens with undescended testicles will not be explored but will be requested to return in the future.

Large tom cats and older tom cats may bleed significantly from the tunics compared to smaller, younger cats. If bleeding appears to be problematic, you may suture the tunics with gut from a reel. Please do not open a suture pack for a neuter. We have to make the most of each donated dollar.

CRYPTORCHIDS

If you aren't very, very comfortable doing cryptorchid neuters, then please don't do them. We can refer them to a regular veterinarian. Our goal is to perform surgeries that require about 10-15 minutes. Anything that requires more time begins to cost us more than we've budgeted and is beyond our mission.

Inguinal cryptorchid neuters are fairly easy once you locate the testicle. That is often the challenge! Abdominal cryptorchid neuters can be difficult and very frustrating. In either case, do not remove the descended testicle until you've removed the cryptorchid testicle!! And once you've removed the cryptorchid testicle, do not forget to remove the descended one!

On occasion, we have bilateral cryptorchid cats. How do we differentiate these from

previously altered cats? We examine the penis. If there are spines on the end of the penis, then the cat is intact. If there are no spines, then the cat is previously altered.

SURGICAL INSTRUMENTS

Typical spay packs are doubled wrapped, autoclaved, contain a cloth drape, spay hook, needle holders, two Kelly clamps, two mosquito clamps and thumb forceps. We have optional instruments autoclaved separately in envelopes, including towel clamps, scalpel blade handles, scissors and Carmalt clamps, along with extra gauze sponges. If you need anything that you don't have, please ask the surgery tech to get it. We've invested in German instruments for the more important pieces (needle holders, Kelly forceps, mosquito clamps), and we usually have free or cheap Pakistani instruments for others (spay hook, neuter clamps). If any instrument is stiff, not locking, not cutting or just misbehaving in any fashion, please tell the surgical tech. The only way for us to know what instruments need servicing or replacing is if you tell us that there is a problem.

PAIN RELIEF

Buprenorphine is used for pain relief for each spay and other procedures besides routine neuters. The anesthetic cocktail provides pain relief for the routine neuters.

EAR TIPPING

Ear tipping is an international standard used to identify cats as sterile. Approximately one centimeter is removed across the top of one pinna making an obvious, deliberate defect in the ear's appearance, not to be confused with a fight wound. The ear tip should look "artificial" to differentiate it from a fight wound. A properly ear tipped cat is easily identified when viewed from a distance or within a trap or carrier, allowing the cat to avoid future anesthesia and unnecessary surgery. Regardless of age, each cat receiving free surgery at FCSNP is ear tipped via an ear-cropping scissor marketed for use on dogs. The scissor is designed to crush as it cuts thereby vastly reducing the

bleeding. Sharp blades or scissors are less desirable, because the sharp cut increases bleeding. After the ear is tipped, the scissors are wiped clean and kept in cold sterilization between cats. Feline experts confirmed that this protocol eliminates the possibility of blood-borne disease transmission.

TATTOOS

We perform many spays/neuters for cats that are not free roaming and thus, do not get ear tipped. Any female cat that is not ear tipped will be tattooed to designate that it is spayed. The tattoo is performed during prep and placed near the ventral midline where a spay incision would be placed.

“No ear tip” surgeries comprise our Feral Cat Prevention Program. We do not advertise to the general public, however, we will accept any cat that needs access to low cost (donation) surgery. (Even with our low cost, I still have clients who bring free roaming cats to Cats Exclusive for full price surgery rather than bringing their cats for free, high volume spay/neuter.) Many grass roots rescuers adopt out kittens, and we encourage spay/neuter before the adoption is complete. We also offer these services to rescue groups in the area to enable them to afford alter-before-adoption and channel more donations into adoption with their organization.

ISOFLURANE

Isoflurane is available to augment anesthesia for any procedure, but particularly for spays. Most cats receive injectable doses sufficient for prep but insufficient for abdominal surgery. We prefer to keep them “light” so that they recover to a safe plane of consciousness prior to discharge. When completing a spay and beginning to close skin, please ask the surgery technician to turn off the isoflurane (they’ll keep the oxygen going). This will start the recovery process earlier.

IF YOU NEED OR WANT SOMETHING...

Let us know if there is something to facilitate your surgery or your day. We may

already have it or be able to get it for you. Or we may have reasons that we don’t have it. But please ask!

MEDICAL PROBLEMS

Ear mites – We cannot cure ear mites in one day nor can we prevent reinfection once the cat returns to its presumably ear mite infected colony. Because ear flushes can induce vestibular problems on occasion, we prohibit any ear flushes at our clinic. An ear flush could be a death sentence: a free roaming cat cannot survive in the wild with vestibular problems. Severe ear mite infestations can look similar to abscesses behind both ears where the cat has scratched itself raw over time. We report this condition on the medical record and inform the caretaker, so that they can make a decision what to do with the cat and its care.

Upper respiratory infection – We see our share of URI, but it does not preclude us from doing surgery. Cats that cannot breathe sufficiently through their noses should not be masked w/ isoflurane but rather have only injectable anesthesia for surgery or use a mouth gag with gas. Sometimes foster homes will treat these cats and return them at a later date for surgery.

Ringworm - If we know ringworm cats/kittens are coming through the clinic, then we sequester them in one area, keep their carriers covered with a sheet and do their surgeries at the end of the clinic.

Afterward, we disinfect with bleach. We realize that because of the number of cats coming to our clinics that we are probably caring for ringworm carriers and cats with unrecognized ringworm, however, no one has ever notified us that any outbreak has occurred after one of our clinics.

Lice - When we see lice, we will treat with Advantage, if we have donated stock on hand.

Pectus excavatum – Each year we see several cats with significant pectus excavatum. If these are to be ear tipped, then we go ahead and take chances with surgery.

Most cats get through their surgeries uneventfully. If the cat is a tame/owned/adoptable cat, then we may

contact the caretaker and give them the option to forego surgery with us and have the surgery performed elsewhere. If the cat is already sedated before the PE is identified, then we usually proceed with surgery while monitoring the anesthesia and recovery very carefully.

Dyspnea - Cats with dyspnea prior to sedation should be triaged. If they are to be ear tipped, then we typically take our chances with surgery. If they are tame/owned/adoptable, then we may contact the caretaker and give them an option to have the surgery performed after the dyspnea has resolved or been diagnosed/treated by a regular veterinarian.

Diarrhea – Many cats arrive at the clinic with diarrhea. We have no medical history on most of these cats. Many free roaming cats develop diarrhea after being trapped because they've eaten food that is new completely new to them. Besides diet-related diarrhea, free roaming cats may also develop stress diarrhea. Because we cannot distinguish pathologic diarrhea from situational, we treat all as if they are infectious and take precautions to prevent transmission to other cats.

Hematuria – Female cats may develop bloody urine after having their bladders expressed prior to surgery. Typically we note this on the medical record and it resolves on its own. If the hematuria is noticed prior to bladder expression, then we make a specific note to that effect on the medical record. Some cats appear to have hematuria when in actuality, they have pyometra. That is identified during the spay.

Urinary obstruction – Sedated tom cats can be very full of urine and very difficult to express. This situation can mimic a urinary obstruction and should not be diagnosed as such. If there is any doubt, then make a note on the medical record. The caretaker can monitor urinations and take steps for treatment, if the cat cannot urinate after it is discharged from the clinic.

Matted coat – In cold weather, we do not shave any mats from any cat. In warmer weather, matted cats to be ear tipped may be shaved conservatively to make them more

comfortable and healthy. Cats not being ear tipped should not be groomed at all.

OPTIONAL PROCEDURES

Optional procedures are only considered for free roaming (ear tip) cats. Any tame cats, to be adopted or “owned” already should be referred to a regular veterinary practice for anything other than spay/neuter.

Polydactyle declaw – Free roaming cats with a claw seated deeply between normal toes may develop ingrown nails and subsequent infection. Each cat should be evaluated independently, but the deep nail may be declawed when indicated.

Tail amputation – We see several mutilated, necrotic tails each year. Tail amputation is fairly simple and appropriate for our mission for free roaming cats. If you are not comfortable or cannot be quick (< 10 -15 minutes), then please refrain. We can refer the cat to a regular practice.

Enucleation – A few times each year we see a free roaming cat with a ruptured, infected globe. If you are comfortable and quick at enucleations, then go right ahead. These cats are not to be “practiced” upon. We can refer them to a regular vet for surgery. Many cats will come in with microphthalmia or pthisis bulbi. These eyes are not candidates for enucleation at our clinic and should be left alone.

Abscess treatment – Mother Nature does a great job treating abscesses without us. However, if one crosses our path, we will typically help it along by opening large drainage holes ventrally, flushing with fluids and doubling our antibiotic injection.

Shaving the fur around the abscess helps prevent future blockage of drainage holes by surrounding hair. Typically these abscesses heal well with little intervention.

Umbilical hernias – Small hernias do not need repair, thus, we leave them alone. If an adult cat presents with a hernia, consider that it has survived an extended period without complications and likely does not need our intervention. Significant hernias can be repaired during spay surgery, if the surgeon is comfortable and proficient at performing the procedure. If you are not

comfortable or cannot be quick (< 10 -15 minutes), then please refrain. We can refer the cat to a regular practice.

FELV TESTING

Because of a 1% incidence of FeLV + test results in the first 500 cats seen at the FCSNP clinics, we cannot financially justify routinely testing for FeLV. Other TNR organizations across the USA and Europe have discontinued routine FeLV testing. Donations to us are concentrated on surgery for reducing homeless cat populations. Caretakers may want individual cats FeLV tested, in which case, we request a donation to cover our costs. If a test is positive, our policy is to repeat the test. If the test is positive the second time, we euthanize the cat. There are particular individuals that we know well that will keep and care for the cat as it needs. In those cases, we may return the cat instead of performing euthanasia.

COMPLICATIONS

Bloody ears – Bleeding post ear tip can be unsightly but is not a health risk to the cat. Ears are best left alone, but sometimes we'll have volunteers hold a cold pack wrapped in a towel to the ear, but only when the cat is still heavily sedated. The bleeding area should not be swabbed or cleaned, because that is likely to dislodge any clot that is trying to form.

Bleeding neuters - Neuters with excessive bleeding are typically large tomcats with very thick and vascular tunics. Their scrotums may distend with blood, and the bleeding will slow and subside. If the cats thrashes or moves around much early on, then the clot may become dislodged, making a very bloody scene. If the cats are still quite sedated, a volunteer can apply pressure or cold packs to the scrotum to encourage clotting. Dripping a bit of epinephrine on a bleeding tunic/scrotum may also ameliorate the bleeding.

Shock – Shock is characterized by weak femoral pulses, an increased heart rate and sometimes a low body temperature, depending on the cause of shock. Shock may develop if there is postoperative hemorrhage

or if there is a significant underlying medical problem. Shock should be treated as my algorithm indicates. See later in text. There are also flow charts posted in the clinic for reference during an emergent situation.

Pregnant cats – Pregnant cats are the most likely to suffer post op complications, particularly hypothermia or hemorrhage. See my algorithm below for treatment.

Hypoglycemia – Small kittens and thin adult cats may not have sufficient body fat or liver glycogen stores to maintain their blood glucose. Small kittens will be fed as soon as they've recovered enough to eat safely. Food should not be placed with any cat that is not conscious enough to eat safely. Karo syrup is available to rub on the gums of any cat/kitten that is recovering slowly and not awake enough to eat safely. Especially in the smaller kittens, it is amazing how rapidly they recover once supplied with a little glucose.

Hemorrhage – If a ligature has slipped or something was not ligated tightly enough, a cat may hemorrhage and die. Typical signs of this developing are that the cat initially begins to awaken from anesthesia, but doesn't recover completely or seems to become sedated again as it goes into hemorrhagic shock. If this has occurred, the cat's pulse will become weak, and the heart rate will be rapid. The gingiva may or may not become pale. If hemorrhage is suspected, then the cat must be reopened and explored. IV fluids may be administered through a needle taped into a vein, but the urgency should be to get the bleeding stopped. Anesthesia should be induced ONLY with gas anesthetic.

IV catheters – We do not use IV catheters for any treatments. Medications can be injected intravenously or intracardiac in an emergent situation.

RECOVERY

We use yohimbine to partially reverse cats having difficulty recovering from anesthesia. Yohimbine is not to be used as a convenience for the surgeon to leave earlier. It is only active on part of the anesthetic

cocktail. Do not expect the cat to become completely awake after yohimbine administration but you should see more arousal within a few minutes of its IV injection.

Karo syrup is available for very small or thin kittens and thin adults to increase blood glucose and enhance recovery. We feed small kittens asap after recovery.

Hypothermia can delay recovery from anesthesia. Thin cats, small kittens and full term pregnant cats are most susceptible to heat loss. We can supply heat via heating pads, hot packs and space heaters, if needed. Occasionally cats become too hot. We have fans and cold packs that we can use to cool them down.

Rough recoveries are unusual, but some cats simply have a tough time. Most settle down if their carrier/trap is covered. Some need to be moved to a quieter location, eg, the front office.

PROLONGED RECOVERY

The veterinary technicians monitor the cats during recovery. It is not unusual for some cats to experience prolonged recovery. Reasons for this vary, but there are basically two categories into which they belong: anesthetic-related problems and surgical complications. In an attempt to simplify, cats that just seem slow to awaken are more likely having anesthetic-related problems. Cats that seem to begin to recover normally, then become "sedate" again, are more likely surgical complications or hypothermia. Of course there are always exceptions to these statements, but they should help get you started on an approach to treatment.

One way to treat the cat while trying to differentiate anesthesia problems from surgical problems is to follow a simple algorithm that I designed through my life with a cardiologist and through clinic experiences over the years. Three pieces of information can take you a long way toward proper treatment.

PULSE - Always check the femoral pulses. Simply listening to the heart or feeling an apical pulse is not sufficient to assess the

cat. Is the pulse weak or strong? If the pulse is weak, I begin to worry about hemorrhage, shock or an underlying problem.

HEART RATE – A very slow or very rapid heart rate can be of concern. If the heart rate is slow (<120 bpm), consider giving a small dose of atropine (0.01 cc/ lb). If the rate is rapid (>160 bpm) but the pulse is strong, then see whether the cat is too hot. If the rate is high and the pulse is weak, then you may be dealing with shock.

TEMPERATURE – Hypothermia is common in recovering cats in private practice and in our clinic. Most cats recover uneventfully despite heat loss, but some need assistance. Hypothermia can be the sole reason for prolonged recovery. If the temperature is too high, then lowering it is indicated, but be careful not to cool the cat too much or too quickly.

RESPIRATORY EFFORT AND RATE -

Evaluate the depth, effort and rate of respirations. This may give you a clue to underlying thoracic disease or depth of anesthesia. Rapid respirations are more common with hemorrhage or anemia. Slower respirations are more likely deep anesthetic plane. Difficult respirations may indicate upper or lower respiratory disease.

MUCOUS MEMBRANE COLOR – Check the tongue (not the gums) for pallor, cyanosis, or injection. Pallor may indicate anemia, hemorrhage or shock. Cyanosis may indicate poor cardiac output or inadequate ventilation due to underlying disease or heavy sedation.

TREATMENT

Options available:

Oxygen

Atropine – increases heart rate and cardiac output

Yobine/yohimbine – reverses part of the anesthetic cocktail

Dopram – stimulates the CNS and respirations

Karo – increases blood glucose

IV fluids – provides hydration and vascular support
Heat/ cold support

Step 1: Weak pulse:

Reverse part of the anesthesia w/ Yobine.
Stimulate the cat with agitation / pain to encourage consciousness.

Bradycardia (< 120 bpm):

IV Atropine at approximately 0.01cc per pound. Estimation is completely fine, safe and appropriate.

Low respiratory rate:

Small dose of Dopram on sublingual surface/ gingival.

Oxygen administration by mask, if indicated (pallor or cyanosis).

Gentle regular chest compressions (1/ 2 secs) if inadequate respiratory rate.

Thin or small cat:

Glucose on the gingiva.

Hypothermia/ hyperthermia - Heating pads, hot packs, cold packs, fleece wraps.

Continue to monitor temp and adjust treatment accordingly.

Step 2: Administer treatments.

Monitor responses (parameters assessed above).

Continue supportive care (oxygen, chest compressions).

Manual stimulation - Move legs, rub cat, turn over often, pinch toes, pat hard, etc.

Step 3: Cat begins to awaken enough to eat a little.

Feed a small amount of cat food or Karo.

Recovery should continue steadily.

Step 4: Cat seems to awaken, then becomes sedate again. This may be a cat that is hemorrhaging.

Reassess vital signs and pursue what isn't normal: Temp, HR, pulses, RR. Pulses feel normal strength in a cat that is merely hypothermic, but pulse strength declines in a cat that is bleeding internally. If a cat is hemorrhaging, they must be opened up again immediately. Use only isoflurane and no injectable anesthetic.

ARREST and CPR

Pre-operatively: At anesthetic induction is the most likely time a cat will arrest. While it doesn't occur often, if does occur often enough that we have a protocol and our staff is trained to recognize and treat it. We have a very clear and simple protocol for dealing with these cases. Our technicians usually handle these events without help. However, you might become involved if the cat does not respond to standard treatment. Typically, arrest begins as only respiratory arrest, and if recognized early and proper support is provided, then the cats always survive just fine.

If the respiratory arrest isn't identified in time, then the cat may progress to cardiac arrest, in which case, we cannot resuscitate. We do not have a defibrillator. Realize that simply auscultating the chest for heart sounds is insufficient to determine whether there is cardiac activity, thus, we start CPR even if we do not hear a heartbeat. Cats with underlying health problems frequent our clinics, so it is possible that sedation could push a compromised cat "over the edge". While we hate to see this occur, we anticipate it will happen from time to time. If a cat has entered an apparent arrest, there are specific steps to take. DO NOT intubate any cat for simple respiratory arrest. Intubating wastes valuable time that should be spent performing chest compressions to support respiration and circulation. Basic resuscitation is this: if bradycardic or no heartbeat detected, then give atropine (1/2 cc per 10 lbs) IV or IC. Continue gentle chest compressions to provide ventilation. The heart rate should increase within a few moments. As chest compressions are being performed, oxygen can be masked or set in front of the nose/mouth. Tissue perfusion will occur without intubating, and adding oxygen improves tissue perfusion. Stimulate the cat by moving the legs, pinching the toes, plucking the scrotum, turning the cat over, slapping its chest, etc. Periodically stop chest compressions to see if voluntary respirations return. Usually it takes a pause of about 30-45 seconds to stimulate a voluntary breath. If breathing is not

returning, then use yohimbine to reverse part of the anesthesia. We have a dose chart in surgery, but it's roughly 0.5 cc/ 10 lbs IV SLOWLY. Partial reversal is usually evident within a minute or two. Chest compressions should continue until voluntary respirations return. If respirations still have not returned, then administer Dopram on the sublingual surface or IV from the chart hanging in the clinic. As long as there is a detectable heartbeat, continue chest compressions, stopping periodically to watch for spontaneous breathing. These cats recover fully with support and time.

CRASH KIT

There is a red, plastic crash kit located in surgery. Most emergencies can be handled by CPR, oxygen, atropine, yohimbine and occasionally, Dopram.

CPR – Any arrest or apparent arrest should get immediate chest compressions. Add oxygen when possible. Do not intubate. Chest compressions should be moderate, not vigorous or you may damage the lungs.
Atropine – Atropine can be administered IV, intracardiac or IM if nothing else is available. It should be used to raise the heart rate when bradycardia (< 120 bpm) is present. Effect should be seen within seconds of IV or IC administration and within minutes of IM administration.
Yohimbine – Yohimbine is the brand name of yohimbine. We use it to reverse the xylazine portion of the cocktail in cats that are slow to recover post operatively or in cats that have arrested and need to have a lighter anesthetic plane. The dose is determined by body weight and should be given slowly IV.
Dopram – Dopram is used to stimulate breathing in cats with respiratory arrest. The dose is based on weight and can be administered IV or sublingually on the oral mucosa – topically. Overdose can cause problems, so start with the low end dose. Response should occur within 1-2 minutes. Dopram does not substitute for oxygen administration and chest compressions when indicated.

Endotracheal tubes - On the occasion that a cat may vomit/aspirate (hasn't happened to date), intubation may be appropriate. My staff is excellent at monitoring for vomiting and holding the cat upside down to prevent aspiration. If vomiting is going to occur, it is typically soon after induction, in prep and before surgery.

Anaphylaxis - Anaphylaxis is conceivably a risk from a vaccine administration, however, all cats are sedated when vaccinated. An anaphylactic reaction would be quite difficult to recognize.

IV catheters - IV catheters are not provided. A respiratory arrest does not need IV support. A cardiac arrest will not benefit from time spent installing an IV catheter. If urgent vein access is needed for rapid IV fluid administration, then a needle can be taped into the vein. (I actually learned this in vet school.) If a cat is hemorrhaging, it needs to be explored immediately. We do not have blood products to administer. A cat would need to go to an emergency clinic for this level of care. It is beyond our mission and beyond the expectation of our clients.
Epinephrine - Epinephrine will not start a heart that has stopped. Epinephrine is not the drug of choice for bradycardia or respiratory arrest (atropine is). Epinephrine is much more likely to trigger dangerous arrhythmias than atropine, so use of epinephrine should be avoided during CPR.

Dexamethasone – We do not stock dexamethasone. If we were to need it for treating anaphylactic shock, then the cat would need fluid administration prior to dex administration. Dex is not useful for respiratory or cardiac arrest, nor for hemorrhagic shock post operatively. Steroids have been shown to be useless and in many cases, contraindicated for CNS trauma/events.

Any situation more complicated than these is not in our realm of treatment options.

UNEXPECTED DEATHS

If any cat unexpectedly dies at the clinic, Dr Wilford will perform a necropsy, unless the cause of death is outwardly obvious. The surgeon of the day may perform a necropsy,

but Dr. Wilford may choose to repeat it. The cat should be bagged and refrigerated until the post can be performed. If the caretaker or owner wants the cat's body, then we'll make it available after the necropsy, unless the cause of death is outwardly obvious. If there are any questions at the time, the lead tech should call me immediately.

END OF THE DAY

When all surgeries are completed, and all cats are clearly recovering well (lifting their heads, moving around), then the surgeon is free to leave. Caretakers are instructed to keep cats overnight and release the following day or after several days, if possible.

COMMUNITY SUPPORT

The support of veterinarians and technical staff in this community has been solid, impressive and unequalled. In 2004, the Washington State Veterinary Medical Association showed its support of FCSNP

by awarding Dr. Wilford the Veterinarian of the Year, Achievement Award as co-founder and Board President for her work with FCSNP.

Without our various surgeons, the FCSNP could not succeed. Every veterinarian who has sacrificed a few or many hours is greatly appreciated. Because we are a non-profit clinic and rely on donations for funding, we do, of course, greatly appreciate any surgeons willing to donate their time or offer their compensation as a donation to FCSNP. We are a 501c3 non-profit organization and a Washington State registered charity. Donations are tax deductible.

For more information, please call or e-mail Dr. Christine Wilford. For more general information about the FCSNP, to make donations, to request brochures or to learn more about free roaming cats, contact the FCSNP at 206/ 528-8125 or visit the website at www.feralcatproject.org.

Thank you again for your interest in the Feral Cat Spay and Neuter Project.