

Neonatal Kitten care



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NEONATAL KITTEN CARE TRAINING PROGRAM

The neonatal kitten care training program has been developed as a response to the need for trained individuals to care for abandoned kittens found in San Francisco each year. Many of these kittens are either euthanized or left to die on the streets because there have not been adequate resources available to help them.

The neonatal kitten care program is used to teach volunteers basic information regarding the care of a newly found abandoned kitten, and the ongoing care required for its sustenance and growth. The skills developed by volunteers would minimize the need for extensive veterinarian involvement.

Caring for abandoned neonatal kittens is time consuming, and at times, difficult work. However, participating in a process that turns fragile abandoned newborns into healthy adoptable kittens, is an enriching experience. It is my hope that many individuals will want to participate in this process, and that together, we can substantially reduce the numbers of abandoned neonatal kittens that die needlessly from lack of care.

Joan E. Bush

NEONATAL KITTEN CARE

General Information

The term neonatal refers to kittens from birth to three weeks of age. Kittens are very fragile during these first weeks. They are totally dependent upon their mother for protection, warmth, and nutrition.

Healthy newborns cared for by their mother are a vision of contentment. They spend 90% of their time sleeping against her warmth, and 10% of their time eagerly nursing.

Most mother cats normally take excellent care of their litters. They are meticulous about keeping the nest and each kitten clean. They are extremely protective of their newborns, and will move them to a new location if they are threatened.

Abandoned neonatal kittens present a very different picture. Cold, hungry, and unprotected, they cry plaintively for their mother. Denied the warmth of her presence, they eventually become comatose. Abandoned neonatal kittens, unable to sustain their body temperature, slip into a coma and die.

Birth Weight

A healthy kitten will weigh three to four ounces at birth. Kittens should begin to gain weight rapidly a few days after birth, and should double their weight by one week. A continuous weight gain of approximately 1/2 ounce a day is one indication of a healthy kitten.

If a kitten drops 10 percent of initial birth weight during the first 48 hours of life, and does not start to regain by 72 hours, the kitten is not doing well and should be closely monitored.

The following chart will give you an indication of what is considered normal weight ranges for a kitten.

AVERAGE KITTEN WEIGHT

Age in Days	Weight
1	2 1/2 - 4 3/4 oz.
5	3 - 7 oz.
10	4 1/2 - 9 3/4 oz.
15	6 - 11 3/4 oz.
20	7 1/2 - 14 1/2 oz.
25	8 - 16 3/4 oz.

Colostrum

The first milk that a kitten receives is colostrum. Colostrum is a protein substance high in antibodies that protect the kitten from illness during its first few weeks of life. The kitten absorbs these proteins through the intestines during the first 24 to 36 hours after birth. The degree of immunity received through colostrum depends upon the antibody level in the blood of the mother cat. A kitten that does not have colostrum in this time frame is seriously immuno compromised, and therefore extremely vulnerable.

Temperature

The average rectal temperature of a one day old newborn is between 92 and 97 degrees F. The kitten's temperature at 2 to 21 days old will be 96 to 100 degrees F.

The neonatal kitten does not have the ability to constrict its skin blood vessels. Because of this, the kitten cannot retain body heat and is dependent on the mother cat to keep warm.

Eyes and Ears

All kittens are born with closed eyes and closed ear canals. They can neither see nor hear during the first few days of life. They find their way to their mother by sensing the heat generated by her body. Kittens find their way to a nipple by sense of smell and tactile sensations.

The ear canals will begin to open at 5 to 8 days of life. Eyes begin to open at 8 days and are completely open at 14 days. When kittens are three weeks old, they will have developed complete sight and sound orientation.

All kittens are born with blue eyes. Their true colors usually appear when they are three weeks old.

EMERGENCY CARE

General Information

One of the most important aspects of caring for a kitten is keeping good records. You will want to chart the kitten's initial weight, take notes on the kitten's general appearance, and accurately chart the feeding schedule with the time and amount of formula fed.

The more detailed your notes, the more information you will have available to you for decisions you may have to make regarding a kitten's health.

Keeping the kitten and its environment clean is essential. If you do not wash your hands before and after working with a kitten, you could transmit viruses and bacteria to healthy cats or kittens. The utensils you use for feeding and medicating must also be thoroughly cleaned and sterilized.

If you will be caring for a neonatal kitten in your home, it is helpful to have the supplies you will need before hand. The following is a list of items you will need:

Nursing Bottles	Cotton Balls	KMR
Gram Scale	Q Tips	Heating Pad
Room Thermometer	Pedialyte	Baby Rectal Thermometer

Danger of Chilling

The greatest single danger to the neonatal kitten is *chilling*. A kitten that is separated from its mother will not live long. Apart from her warmth, the kitten has no way to maintain a normal body temperature. Prolonged exposure to cold results in a drop of body temperature (hypothermia). As the kitten's body temperature drops the blood sugar level of the kitten falls below normal (hypoglycemia). The kitten's internal organs begin a systematic shutdown. The colder the temperature the sooner the kitten will lapse into a coma and die.

Most kittens that are found outside have already lost essential body heat. If a kitten feels cold to the touch, hypothermia has set in. A kitten's condition is critical at this point.

Although it is vital to warm a kitten, care must be taken to avoid warming too rapidly. Dehydration, shock, and death can result from warming too quickly.

Warming a Chilled Kitten

You can use the following techniques to warm a chilled kitten. When you are outside and find a newborn:

Place the kitten under your coat or sweater. An armpit makes an excellent temporary incubator.

Gently begin massaging the kitten to restore circulation.

When you are at home:

Wrap a hot water bottle in a towel and place it next to the kitten.

or

Place a heating pad down one side of a cardboard box and half way underneath the box. Place towel in the bottom of the box. Place the heating pad on the low temperature setting. Make sure the heating pad does not cover the entire bottom of the box the kitten must have room to move away from the heating pad if it is too hot.

or

A small "Pet Taxi" (a plastic pet carrier) with a heating pad place down the back and partially under the bottom is an excellent incubator. Place the heating pad to the low temperature setting. Place a towel in the bottom of the plastic carrier. Make sure there is sufficient room for the kitten to move away from the heat.

The temperature in the area the kitten is kept must be maintained at 85 to 90 degrees F. during the first week of the kitten's life. The temperature should be lowered 5 degrees F. each week until 70 degrees F. is reached. A reliable room thermometer is essential to insure the temperature is maintained at a correct level.

Emergency Supplement

Food is essential to the survival of the newly found kitten. However, a kitten is unable to digest food when it is chilled or cold. **Never feed a kitten that is chilled or cold - this will kill the kitten.**

Administering .01 cc of "Karo Syrup Light" orally or by rubbing it on the gums of a hypoglycemic kitten will raise the blood sugar level of the kitten, and help stabilize the kitten while you are warming it. If you do not have karo syrup, you can mix a solution of water and sugar in equal parts and administer .01 cc to the kitten. Nutro-Cal is also effective when used for hypoglycemic conditions and administered at .01 cc. Nutro-Cal can be purchased at most pet stores.

You will serve the kitten its first formula once its body temperature has returned to normal and its internal organs are once again functioning normally.

Dehydration

Dehydration is an excessive loss of water and electrolytes (minerals such as chloride, sodium, potassium). It is caused by insufficient milk intake, prolonged vomiting or diarrhea and hypothermia. A dehydrated kitten requires immediate veterinary care.

The best way to detect dehydration is to pick up a fold of skin along the kitten's back. When you release the skin it should spring back into shape. If it remains a ridge, the kitten is dehydrated.

If a kitten is severely dehydrated it should receive a subcutaneous injection of fluids (a balanced electrolyte solution). It is not difficult to learn how to give subcutaneous fluid injections, and it will often save a kitten's life. The fluid should be **warm** not hot when given.

For less severe cases of dehydration an electrolyte solution can be given orally. Pedialyte is an electrolyte solution used for human babies that are dehydrated. It is sold at drug stores and grocery stores in the baby section. Administered at 1 cc three times a day to a kitten Pedialyte helps maintain the kitten's electrolyte balance while the source of the dehydration is being corrected.

NUTRITIONAL CARE

General Information

Neonatal kittens have only a minute amount of subcutaneous fat. Frequent feedings are required to maintain adequate blood sugar levels and provide energy for metabolism. Sufficient intake of formula must also offset the large amounts of dilute urine and water loss resulting from immature kidneys. Frequent feedings spread out over a days time will help prevent overloading of the kidneys and digestive system.

Cow's milk is an inadequate substitute for the milk received by a kitten from its mother. The calcium-to-phosphorous ratio and lactose levels are too high in cow's milk. The energy, fat levels, and protein are too low to provide adequate growth in a kitten. Human baby formula is also not a good substitute as it provides less than 50% of the protein and fat required for a kitten's growth.

There are a number of commercial feline formulas on the market that closely match the nutrients received by kittens in their mothers milk. You can purchase these products at most pet stores, or through a veterinarian.

Milk replacer products available in the Bay Area are KMR (Pet-Ag), Just Born (Famam), and Nurturall (Veterinarian Products Laboratories). These products are available in liquid and powder form.

The following chart will enable you to quickly assess the kitten's daily nutritional needs.

KMR

Age in Weeks	Average Weight	CC of KMR per Day	Feedings per Day
1	4 oz.	32 cc	6
2	7 oz.	56 cc	4
3	10 oz.	80 cc	3
4	13 oz.	104 cc	3

According to this chart, a 4 oz. kitten would be served approximately 5 cc of formula 6

times a day.

The two other commercial milk replacers, Just Born and Nurturall, have daily feeding schedules printed on their products.

Small and weak kittens do best if they are fed every four hours for the first four days. If they are unable to take the amount of formula scheduled for each feeding, the number of feedings should be increased, and the amount of formula decreased at each feeding.

It is important to understand that formula intake is limited by the size of the stomach. A kitten's stomach should feel full but not extended after being fed.

Bottle Feeding

Most pet stores sell nursing bottles for kittens. Often the hole in the nipple of these bottles is too small. You want to make the hole large enough to allow milk to drop slowly from the nipple when the bottle is inverted. Pediatric baby bottles also work, especially for older kittens.

Warm the formula to approximately 100 degrees F. The formula should feel warm on your wrist at this temperature.

Place the kitten on its stomach to bottle feed. This is done to avoid having milk run into the kitten's windpipe. Try to angle the bottle so that air does not go into the stomach. Encourage suckling by keeping a slight pull on the bottle. ***Never squeeze the bottle to force formula out.*** This action could result in the kitten inhaling formula into its lungs which could cause pneumonia.

You will usually see bubbles forming around the kitten's mouth when it is full. ***Always burp the kitten after each feeding.*** Kittens can actually die from too much gas formation in their stomachs.

Feeding Routine

There is one more aspect of the feeding routine that must not be over looked regardless of the feeding method you use. ***After each meal the kitten must be stimulated to urinate and defecate.*** Massaging the kitten's anal area with a warm, damp, cotton ball will provide this stimulation.

It will be necessary for you to continue this after each meal until the kitten can eliminate

on its own, usually at three weeks of age.

When the kitten reaches three weeks of age, you can begin training to eat from a dish. You can purchase a commercial gruel, or make one of your own from formula mixed with a high quality wet kitten food.

Feeding Problems

There are two common feeding mistakes that can cause health problems for a kitten, *overfeeding* and *underfeeding*.

Overfeeding

Overfeeding a newborn kitten can cause serious health complications. The kitten's immature kidneys have a very limited capacity and are unable to handle excessive amounts of fluid. Overloading the digestive system causes diarrhea. Diarrhea causes dehydration which can kill a kitten if it is not corrected.

The kitten's stool should be firm and yellowish in color. A loose yellowish stool is a sign of mild overfeeding. Greenish stool indicates food is passing too rapidly through the kitten's system. Grayish stool with a foul odor indicates inadequate digestion of formula and it is the most serious form of diarrhea.

It is important to correct overfeeding conditions as soon as you become aware of them. Make sure you have computed the correct amount of formula for each daily feeding. If you are administering the correct amount, and the stool is loose and yellow, you can dilute the formula with 1/3 water. When the stool appears yellow and firm you can return to feeding the full strength formula.

If the kitten continues to have diarrhea, and it appears greenish, dilute the formula with 1/3 water and administer three drops of kapectate every four hours. Return to the full strength formula when stool appears normal.

Grayish stool is the result of consistent overfeeding. At this point the kitten is not receiving nutrition and is dehydrated. Once again, dilute the formula with 1/3 water. Administer 1 cc of Pedialyte (a balanced electrolyte solution available at drug and grocery stores) three times daily. Administer kapectate at three drops per ounce body weight every three hours until diarrhea has stopped.

Although overfeeding is commonly responsible for severe diarrhea, it is not always the

cause. Kittens with gray or white stool should be examined by a veterinarian.

Underfeeding

Underfeeding is life threatening to the newborn. A kitten that is underfed is restless and cries excessively. It will eventually appear listless and apathetic.

A kitten that is underfed will eventually become dehydrated and chilled. If this has happened you will have to warm and rehydrate the kitten if it is to survive (review procedure for warming a chilled kitten on page 7).

To be sure you are feeding the correct amount of formula refer to the kitten's weight chart on page 5.

Keeping accurate records of the kitten's weight is extremely important. Having weighed the kitten initially you will be able to tell if the kitten has gained weight steadily during the first seven days. The kitten should be weighed daily for the first two weeks, and then weighed every three days until one month old.

EXTERNAL PARASITES

General Information

Most kittens born outside are infested with lice or fleas. It is essential to remove these parasites as soon as possible. Fleas in particular are a serious health threat. Fleas ingest blood from the kitten for nourishment. **A kitten can die from anemia due to blood loss from flea infestation.**

One other troublesome parasite of kittens is ear mites. If the mother cat has ear mites, her kittens become infected while they are still in the nest. Ear mite infestations that are not attended to can lead to bacterial infections of the ear canal. Ear disfiguration can also result from severe ear mite infestation.

Earmites are very contagious to other cats, kittens, and dogs.

Fleas

Fleas are by far the most common external parasite found on kittens. The use of a simple flea comb will expose the degree of flea infestation. In severe cases it is difficult to comb

through the kitten's hair. The comb becomes blocked with flea fecal material composed of digested blood. When this material is brushed onto a wet piece of paper, the paper will turn a reddish brown color. A flea comb will also pick up salt-like white grains, which are flea eggs. Visually you will be able to see fleas moving rapidly across the kittens body.

If a kitten is severely infested with fleas it is best to bathe the kitten in a mild Pet Shampoo. The following procedure will help you give a successful bath:

1. Heat the room you will be bathing the kitten in to 85 degrees F.
2. Place cotton in the kittens ears.
3. Instill artificial tears or Terramycin ointment in the kitten's eyes.
4. Begin shampooing kitten at the neck and work towards the tail.
5. Rinse well to remove all soap.
6. Wrap kitten in a towel and pat dry.
7. Use a hair dryer on *low* heat and completely dry the kitten.

Remember that *chilling* is a serious threat to kittens. You want to make sure the kitten is completely dry and warm before removing it from the bath room. You also must be very cautious when using a hair dryer. It is easy to burn a kitten's skin if you do not pay close attention to the blow drying process.

Lice

Lice are often found on kittens that are malnourished and run down. They feed on the skin scales of kittens. Lice are pale colored and move very slowly through the kitten's hair. They attach their white grain like eggs to the kitten's hair shafts. The eggs are very difficult to brush off.

Kitten lice are not transferable to humans.

Follow the same bathing procedures for the removal of lice as you do for fleas.

Ear Mites

Typical signs of ear mite infestation are head shaking, pawing and scratching at the ear. These are reactions to the ear mites moving on the skin surface of the inner ear and piercing the skin for food.

You can detect an ear mite infestation by looking into the kitten's ear and observing a dark brown waxy material. This material has a coffee-ground look to it and possibly will be accompanied by an unpleasant odor.

The first step in treating an ear mite infestation is to clean the ear. If the ear is not clean the ear mites will be sheltered by debris and make it difficult for the ear medication to reach them.

Moisten a cotton ball with mineral oil and wrap it around your little finger. Gently insert it into the ear canal and wipe the surface to remove debris.

You can use a Q-tip moistened with mineral oil to clean the creases of the ear and the vertical portion of the ear canal. You must be careful to swab the vertical portion of the ear canal with the applicator held vertically and downward. The ear canal turns horizontally before it ends at the ear drum.

After you have cleaned the ear canal you will be ready to insert medication to kill the ear mites. A miticide preparation is used and the directions for use are on the bottle. The miticide will not kill the ear mite eggs that have been deposited in the ear canal so repeated treatments of miticide twice weekly for three to four weeks will be required or as directed by a veterinarian.

INTERNAL PARASITES

General Information

The most common internal worm parasites found in kittens are roundworms, hookworms, and tapeworms. The gastrointestinal parasites, Giardia and Coccidia, are commonly found in kittens.

Roundworms

Kittens become infected with roundworms through their mother's milk. Larvae that are inactive in the mother cat are somehow activated by pregnancy and migrate to the mammary glands.

A majority of abandoned neonatal kittens have roundworm infestations. Infected kittens may lose their appetite, appear depressed, have diarrhea, become anemic, and pass mucus or blood in their stool. Roundworms may also be visible in the kitten's feces.

Hookworms

Hookworm infestation is also passed to the kitten through the mother's milk. As with roundworms, the larvae of the hookworm is activated during pregnancy and passed to the kitten via the mammary glands.

An acute infestation of hookworms in kittens can cause anemia, and potentially kill the kitten from loss of blood. The stool of the kitten will appear very black and possibly bloody.

Tapeworms

Tapeworms are not life threatening. A kitten becomes infected by ingesting a flea that is infected with a tapeworm. You may notice white rice looking segments around the kitten's anus.

Kittens are usually treated for tapeworms at six weeks of age.

Giardia

Giardia is a protozoa (an organism composed of a single cell) parasite of the small intestine tract. Giardia interferes with the absorption of nutrients and fluids by the intestines. This malabsorption leads to severe diarrhea. A yellowish, foamy, soft stool can be an indication of Giardia.

Coccidia

Coccidia is a protozoa parasite of the small intestine and the beginning of the large intestine. Kittens can develop dysentery from Coccidia and die. The kitten's stool will contain mucus and blood.

Treatment

There are medications available to cure the various internal parasitic infections of kittens. Stool samples must be examined by a veterinarian to determine what medications are to be used.

If a kitten you are caring for has persistent diarrhea, and you are not overfeeding, you can suspect an internal parasitic condition may be causing it.

NEONATAL KITTEN DISEASE

URI

A majority of abandoned neonatal kittens rescued from outdoors have upper respiratory infections. The severity of the URI is dependent on the virus causing it, and the general health of the kitten. A mild case of URI resembles a human cold with runny eyes and sneezing. However, severe cases of URI can cause high fever, loss of appetite, dehydration, and eye ulcers.

Because there are other serious diseases that also begin with mild URI symptoms it is essential that all kittens with URI be isolated until the cause and severity of the URI can be determined

URI is *extremely contagious* and easily spreads from one kitten to another. It is transmitted by direct contact with infected eye or nasal discharge, contaminated cat litter pans, food and water bowls, air borne droplets, and by human hands and clothing.

The following list can be used to help a kitten recover from a mild case of URI:

1. Provide a warm draft-free environment.
2. Keep eyes and nose clear of discharge by using a moistened warm cotton ball.

3. Use a room vaporizer to ease nasal congestion, or steam up the bathroom and have the kitten stay in it for 15 minutes several times a day.

In kittens, mild cases of URI can develop very quickly into more serious conditions. If a kitten stops eating, develops thick yellowish-green discharge from the eyes or nose, or has difficulty breathing, it needs veterinarian attention.

URI is not sensitive to antibiotics. Antibiotics are administered to prevent secondary bacterial invaders.

URI is a common cause of conjunctivitis in kittens. Conjunctivitis is an inflammation of the membrane lining of the eyelids. The kittens eyes will usually be pasted shut. Cleaning the eye with a warm moist cotton ball and applying Terramycin four times daily usually clears up the conjunctivitis. If the conjunctivitis is caused by the herpes virus, a longer period of treatment will be required using different medications.

FELV

The feline leukemia virus can be contracted in utero or through the mother cat's milk. Maternal infection may cause "fading kitten" syndrome - a condition in which neonatal kittens grow weak and die rapidly.

FELV suppresses the kitten's immune system and allows other diseases to develop. The signs of illness are apathy, fever, loss of appetite, weight loss, and pale mucus membranes caused by anemia.

A blood test is required to diagnose FELV.

FIP

Feline infectious peritonitis is a fatal disease. It is responsible for a small percentage of kitten mortality. Early signs of FIP (listlessness, loss of appetite, weight loss, depression, and mild upper respiratory infection) mimic other diseases.

FIP is also suspect in cases of "fading kitten". Kittens at **first** may appear healthy, but grow weak and die in a few days. Kittens may experience difficulty breathing and die within a few hours from circulatory collapse and congestive heart failure.

FUNGAL DISEASE

General Information

Ringworm is the most common skin disorder of the kitten. This fungi invades the superficial outer layers of the skin, nails, and hair.

The classic signs of ringworm are circular areas of hair loss with scaly skin at the center, and an advancing red ring at the margin.

Ringworm fungi are contagious to humans as well as other animals.

Treatment

Treatment for Ringworm may require oral and topical antifungal drugs given with direction of a veterinarian

Spores must be eliminated from the premises to prevent further re-infection. Clothing and animal bedding can be washed in Clorox bleach. Vacuuming will remove infected hair from the premises.

KITTEN MORTALITY

Many factors play a part in kitten mortality. Kittens born on the streets are subjected to influences that can significantly reduce their chances of survival. When they are born to malnourished or ill mothers, their risk of congenital or inherited defects is heightened. Poorly nourished kittens have little defense against disease and infection.

Despite the best efforts at emergency care, proper nutrition, attention to cleanliness, correct diagnostic and medical treatment, and detailed record keeping, some kittens die.

The death of a kitten can be an emotionally disturbing experience to a volunteer who has cared for the kitten. It is important to understand and accept that some kittens will not survive. What we can do for these kittens, is surround them with warmth and care, and make their passing as comfortable as possible.