



# REARING MOTHERLESS KITTENS

The most important measures to give motherless kittens the chance of a healthy life



Kittens have to be raised by hand time and time again. There are many reasons for this: death or illness of the mother, insufficient milk production, non-acceptance of the kittens by the mother, foundlings, etc.

Rearing motherless kittens by hand is a costly, arduous endeavor which requires a lot of patience and should only be used as a last measure. Generally speaking, any surrogate mother is better than hand-rearing. Placing kittens with a foster mother is always a better option than them being raised by humans. A female dog can also serve as a surrogate mother, provided she accepts the kitten.

If no surrogate mother can be found, this guide is here to provide you with the basic knowledge necessary for successful hand-rearing. Please note that this guide does not replace the support of a veterinarian. However, if no specialist is available (e.g. abroad or in emergencies), it should help you avoid basic mistakes and provide the kitten with the best possible care given the circumstances.



## MEDICAL DATA

Gestation period	63 to 65 days
Weight at birth	75 to 100 grams
Body temperature	day 1 to 3: 37.0 to 38.2°C; from day 4: rising to up to 39.2°C
Eyes	open after 10 to 14 days
Ear canals	open after 14 days
Teeth	baby incisors start to breakthrough after 2 to 3 weeks complete set of baby teeth after 8 weeks change to adult teeth after 4.5 to 6 months

## WARMTH & FEEDING

### Warmth

Kittens are not able to regulate their body temperature in the first days following birth. It is therefore important to monitor their temperature and, if necessary, to provide the kittens with extra warmth. The most suitable things for this purpose are a nesting box with a lid and warm blankets, heating pads and heat mats, hot water bottles, cherry pit pillows or infrared lamps. But be careful: Kittens can overheat or get burns very quickly. Never place heat sources in direct contact with the body. Heat sources are best wrapped up in a towel (e.g. hot water bottles, but not lamps due to fire hazard) or placed at a safe distance from the kitten (e.g. infrared lamps).

Check the temperature of hot water bottles and/or heat pads regularly. If the temperature decreases, this could actually draw heat from the animal instead of warming it up. If in doubt, check the kitten's temperature using a rectal thermometer.

Ideal ambient temperature:

Week 1:	30°C
Week 2:	28°C
Week 3:	26°C
from week 4:	room temperature



Prepare a nest with high edges to make sure that the kitten cannot fall out. A box lined with blankets or towels is a good example. You can even use nappies to line the box. However, be careful with terry cloth towels as kittens cannot retract their claws during the first weeks and could therefore get them stuck in the cloth.

### Feeding

Regular intake of liquids and nutrients is essential, as kittens can rapidly dehydrate and become hypoglycemic. The following recommendations are just approximations; the specific amount will depend on a variety of factors. For example, in very dry climates, the required intake of liquids is much higher than in humid regions. The ideal air humidity level is at around 55 to 60%.

### Formula milk

No milk substitute can optimally replace the milk of the mother cat (also known as colostrum or first milk). Colostrum milk is the first milk produced by the mammary glands. Just like milk produced later, colostrum milk contains the necessary nutrients, but is particularly rich in antibodies which serve as protection for the kittens in the first weeks of their lives. These antibodies can only be absorbed by the kittens in the first 4 days of their lives, after which the intestine is no longer able to do so.

In the first 3.5 to 4 weeks of life, the feeding of cat formula is therefore indispensable. Milk substitute powder for kittens is an adequate alternative. If not available, formula milk for dogs can also be used. However, depending on the product, essential amino acids (e.g. taurine) may be missing, so this should only be used as an emergency solution for a few days until formula milk for cats can be procured.

The rearing milk is available as a powder, which is mixed with boiled water according to the dosage recommendation on the packaging. It is important to follow the recommendations, as milk that is too thick can cause constipation. We recommend pureeing the milk or mixing it in a shaker. When doing so, make sure that no lumps form, otherwise the milk will have to be sieved. The milk prepared in this manner should be fed to the kitten within one hour at a temperature of about 37°C.

## PRACTICAL TIPS



1. Many products are available premixed in a can (e.g. KMR, Royal Canin). These products usually have a long shelf life.
2. After opening the can, the contents can be poured into small ice cube trays or bags or even into serum tubes and frozen in portions. The same procedure can also be used for milk prepared with powder. This means that fresh small portions are always available and there is no need to prepare them separately. Tip: Do not fill the freezing containers to the very top because the fluid will expand when frozen.
3. Cow's milk (only in emergencies!): Commercially available 'cat milk' from pet stores or supermarkets and cow's milk are not suitable because they are difficult to digest, have inferior nutritional value for kittens and can cause diarrhea. If formula milk for rearing kittens is not available, goat milk is preferable to cow's milk. If only cow's milk is available, the following two recipes can serve as a temporary alternative:

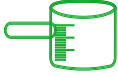
- 70g skimmed milk
- 15g low-fat quark
- 8g lean ground beef
- 3g egg yolk
- 3g vegetable oil
- 1g dextrose
- 1g mineral and vitamin powder with 20% calcium

Blend and pour through a sieve then heat to 37°C.

### Emergency recipe:

- 90ml condensed milk
- 90ml water
- 120ml whole milk yogurt
- 3 large or 4 small egg yolks

Blend and pour through a sieve then heat to 37°C.



## FEEDING QUANTITY & TIMES

The basic rule for hand-rearing is that a kitten should always be fed when hungry. Kittens usually signal when they are hungry by squealing or crying or by obviously looking for a teat.

### Rule of thumb:

- Daily ration: 15ml of formula per 100 grams of body weight for the first three weeks of life; 20ml per 100 grams of body weight thereafter. The feeding amount can be easily checked by weighing the kitten before and after feeding (1ml=1g).
- Feeding frequency: Approximately every two hours for the first two weeks, then every three to four hours. Please note that the bottle feeding frequency also applies at night! Once the kitten eats food from a plate or solid food (regularly from the 4th week), the bottle no longer needs to be given at night.
- Quantity and frequency may vary depending on the quality of the formula milk.

Weak kittens must be cared for intensively and fed on an hourly basis. Once they are stable, feeding every two hours is sufficient, even in the first week of life.

If the kittens don't drink well or lose weight during three consecutive feedings, they should ideally be fed through a feeding tube. This must be done by a veterinarian and is often a lifesaver, otherwise they run the risk of hypoglycemia and dehydration.

Note: If the kittens have previously received mothers' milk, a lot of patience is often required to convince them to drink the new milk. Mixing in a little dextrose helps in this situation. Weakened animals should first have a few drops of concentrated dextrose solution (approx. 20%) dribbled into their mouths. Swallowing is not essential, as the dextrose will be absorbed directly through the mouth's mucous membranes. After a few minutes, the blood sugar level will rise slightly and the little ones will find it easier to drink. But be careful: Don't repeat this procedure too many times, as sugar has a satiating effect and will cause the kittens to drink less.

**'Weak kittens must be cared for intensively and fed on an hourly basis.'**



## KITTEN FOOD



After about 3.5 to 4 weeks, you should offer the kittens additional kitten food (mousse or broth). You can then start to gradually reduce the amount of milk depending on the amount of kitten food consumed. If no kitten food is available, you can also temporarily use baby puree for human infants (e.g. rice with chicken) from a jar. To start with, let the kitten lick the food or mousse off your finger, then lead it to the dish slowly and gently. The kitten should eventually work out by itself where it can find more of the delicious food. Warming the food slightly can also work wonders for picky kittens. Initially mixing the kitten's food with formula milk will also increase the chances of acceptance.

Once the kittens eat from their dish independently, you can continue to offer formula milk in bowls until the kittens are 8 weeks old. By then, the kittens should have switched completely to cat food so you can stop providing formula milk.

### Vitamin paste

In addition to milk, you can offer the kitten a pea-sized amount of vitamin paste (e.g. Felovite or Calopet) for licking, starting from the first day.



## DRINKING BOTTLES & ALTERNATIVES

Bottles with a rubber teat are suitable as drinking bottles. A bottle is often already included in the formula milk packages, but this is not always ideal, as it may be difficult to pierce a suitable hole into the teat (e.g. with a knitting needle, nail scissors). The hole shouldn't be too big, otherwise there is a risk of choking. Ideally, you should purchase a bottle with a teat that already has a suitable, small hole. If the rubber teats become porous, they must be replaced immediately, otherwise individual pieces of rubber can be bitten off and cause a life-threatening intestinal obstruction.

Alternatively, the milk can be given slowly, drop by drop, using a pipette or disposable syringe (without a needle!). The syringe should glide smoothly to allow a small dosage. As soon as a syringe has to be used in a jerky way, it should be discarded, otherwise there is a risk that too much milk is squeezed out at once causing the kitten to choke. Plastic teat attachments (also called luer locks) placed on the syringe are perfect. They are about the size of a cat's teat, slightly more flexible and less sharp-edged than the base of a syringe.

Please note that not all kittens have a sucking reflex. In this case, easy-glide 2ml syringes are particularly suitable for feeding, as you can perfectly dose the amount that the kitten takes in.

## FEEDING POSITION

Put a warm blanket on your lap and place the kitten on it. Gently stroke the kitten to start with, as this will help it to relax. Do not, under any circumstances, place the kitten on its back, even you have seen images of this on the internet. In this position, there is a very high risk of choking. Sitting or standing is the recommended position, though lying down on its belly is also ok.

Observe the kitten's sucking reflex, adapt to it and administer the milk accordingly. The upper part of the kitten's body should be elevated, and the head should be slightly raised for a few minutes after drinking.

### Important: frequent and long massages!

In the first 20 days of life, after each feeding, the abdominal and anal area must be massaged with a moist warm cloth, using gentle pressure to stimulate digestion and urination. This measure is essential for survival, with the basic rule being: the longer, the better! A mother cat will clean her kittens for hours, continuously stimulating them in this way. Many motherless kittens do not survive the first four weeks of life only because they were massaged too briefly or not at all.



## BODY WEIGHT

A kitten's body weight should increase daily by about 10%. In the beginning, especially in weakened patients, the body weight will often remain the same or only increase very little. This should improve rapidly. If the weight remains constant or even decreases, this is a clear warning sign and we strongly advise you to consult a veterinarian immediately. In all cases, you should weigh the kitten two to three times a day. If possible, use a digital scale able to measure the weight of the kitten to the nearest gram. For convenience, the kitten can be placed in a basket (e.g. bread basket) for weighing. Make sure you always record the weight, date and time in a journal.

### Overfeeding

Besonders bei geschwächten Tieren muss man am AnBe very careful when you first start feeding a kitten, especially if it is weak. To start with, give it a small amount of little 'WHO juice' (see recipe below), then very small portions of the formula milk. Stop immediately if the abdomen starts to bulge! Many weakened patients die within the first couple of days due to overfeeding, which causes their metabolism to collapse.



## DEFAECATION & DIGESTIVE DISORDERS

General rule: In the best case, a milk-fed kitten will defaecate two to three times a day. However, there are also animals that defaecate only once a day, but a larger amount. Kittens that have not eaten for a longer period of time will start defaecating after approximately one day (about 20 hours after feeding).

### Digestive disorders

Kittens often suffer from digestive problems such as diarrhoea, bloating or constipation. Digestive problems can easily be prevented by replacing all or part of the water added to the formula milk powder with a mild fennel tea (as available for infants). Fennel tea is particularly effective against bloating. Chamomile tea can also be used; it has both an anti-inflammatory and an antispasmodic effect.

### Diarrhoea

If a kitten suffers from diarrhoea, it helps to administer a Ringer's solution with glucose several times a day. Boiled water with glucose from the pharmacy or drugstore, flavoured or unflavoured (e.g. Dextro Energy), will also help. Mix everything in a ratio of 2:1, add this mixture to the milk in a ratio of 1:1 and then feed it warmed up (to approx. 37°C). In addition, administer a probiotic (e.g. Synbiotic, FortiFlora, Bioflorin) twice a day. If there are no probiotics available, you can also add some black tea, chamomile tea or blackberry leaf tea to the milk (instead of water), but do not let it brew for too long.

You can also use other commercial isotonic solutions (Isostar, Powerade, Gatorade, etc.) as a substitute for the Ringer lactate/glucose mixture. If these are also not available, the so-called 'WHO Juice' will help. You can easily mix it yourself using common household ingredients:

### WHO juice (homemade electrolyte drink)

- 1 litre water
- ½ litre apple juice
- 4 teaspoons honey
- 2/3 teaspoon table salt
- ½ teaspoon baking powder

Bring everything to a boil, let it cool.



### Constipation

If the kittens are constipated, a few drops of liquid paraffin in a vial or as a clyster (enema) will help. You can use a syringe with the teat attachment mentioned earlier on. Under no circumstances should liquid paraffin be added regularly to the milk replacement, as this binds fat-soluble vitamins which then cannot be absorbed. Coffee cream does not work very well because it only contains fats that are resorbed, thus not helping to make the faeces more slippery.





## PARASITES

When a kitten is exclusively hand-reared, it will not enjoy the protective function of maternal colostrum milk. Such kittens are therefore particularly susceptible to infections of all kinds. And depending on the health condition of the mother, certain pathogens may already have been transmitted to the kittens in the womb.

There are pastes containing antibodies of the most common diarrhoea pathogens which can be fed as a replacement for colostrum. Another possibility is to take blood from the mother (if still possible) or another healthy cat and then administer the serum to the kittens. However, this is only possible during the first four days of life and should be done by a veterinarian.

The kittens should be treated for parasites as follows:

### Deworming

Cats should be dewormed at 2, 4, 8 and 12 weeks (e.g. with Panacur paste), then once a month up until 6 months of age, and thereafter according to the risk of infection.

### Ectoparasites

Most available products have not been approved for use on kittens under eight weeks of age. If you only find a few fleas, carefully remove them with a flea comb or by hand.

A couple of fleas will not harm the kittens. It's only when there is a heavy infestation that it could cause anaemia. Use flea products on healthy animals only and follow these instructions:

1. Apply one spray of a flea spray with the active ingredient Fipronil (e.g. Effipro or Frontline) to your hands (you may use gloves, if you prefer), distribute it evenly and then brush it onto the fur.
2. After that, carefully comb the kitten's entire body with the flea comb on a regular basis (at least once a day). If necessary, spray the flea comb with some flea spray.
3. Change all textiles in the cat box on a daily basis and wash them at a minimum of 75°C. In case of a heavy parasite infestation, we recommend using an ambient spray. Leave it to take effect for a few minutes. You can then put the textiles in with the normal laundry.



## VACCINATIONS



Healthy kittens should be vaccinated in time to protect them against common viruses.

As a general rule, only healthy animals should be vaccinated, otherwise severe and even fatal reactions to the vaccination can occur.



### **Viral rhinotracheitis / Panleukopenia**

Basic immunisation is usually done from the 8th week of life, ideally with a body weight of 1 kilo. If there is a high risk of infection, it is recommended that an additional first vaccination be given as early as the 6th week of life. Thereafter, this combined vaccination should be repeated annually for the first four to five years of life. In older animals, the interval between the vaccinations can be larger.

### **Feline leukaemia virus**

Basic immunization and subsequent vaccination is only recommended for cats with outdoor access. After a successful, negative blood test, this can be administered like the viral rhinotracheitis / panleukopenia vaccination from the 8th week of life, ideally with a body weight of 1 kilo. This should also be repeated annually for at least the first four to five years of life.

## NEUTERING

Cats should be neutered by a veterinarian at the latest at the age of five to six months. Neutering makes sense for reasons of animal welfare and for the well-being of the animal and does not restrict the cats in their well-being. Ideally, the animals should also be chipped when they're being neutered.

## CONCLUSION

Hand-rearing kittens takes dedication. For a successful outcome you will need a lot of time, knowledge, and love. Sadly, the risk of failure is high, as the absence of a mother and mother's milk cannot always be adequately compensated by a human. In addition, there are major hazards such as digestive problems, dehydration, supercooling or overheating, starvation or choking.

Simultaneous veterinary supervision is always recommended. If this is not possible (e.g. abroad), but you follow the rules in this guide and show enough patience, time and perseverance, these little creatures will have a good chance at a healthy life. The feeling you get when you see the little kittens grow and start to play is indescribably beautiful and will make up for all your troubles.



We wish you  
great success!





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