



## Feeding of Newborn Puppies

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Hand-rearing of newborn puppies is nothing new. Dog breeders have been doing it for centuries, using feeding equipment designed for human infants and a great variety of makeshift devices, from doll-bottles to eye-droppers. For many reasons, these makeshifts have been only moderately successful. Nipples designed for human babies are too large for small pups and are too firm for larger ones, requiring stronger sucking than a newborn pup can do. Doll-bottles are usually too small and too poorly made to be satisfactory. Feeding with an eye-dropper results in milk entering the pups' lungs, and should always be discouraged. Fortunately there is a good way to hand-feed newborn pups – a simple, easy, quick, clean, scientific way – and that is by the use of a tube passed directly into the pups' stomachs.

Stomach-tube feeding of newborn animals is a comparatively new technique, patterned after methods used for premature human babies. Dr. Leon Whitney's Complete Book of Home Pet Care, published in 1950, contains a photograph of a pup being fed with a urinary catheter. We have been using the tube-feeding method since 1954, and have lost only two pups out of more than a hundred raised! In addition to orphaned pups, we have administered supplemental feeding to hundreds of nursing pups, and undoubtedly have saved many that would have died. These included pups that were weak at birth, pups in very large litters, and pups with cleft palates that were unable to nurse.

The principle of feeding a pup with a stomach-tube is very simple. A soft, flexible tube of suitable diameter is placed over the back of the pup's tongue and merely pushed down its throat until it enters the stomach. Then a measured amount of formula is injected through the tube, after which the tube is withdrawn. After a little practice, one person can do this alone very easily and quickly. The pup is placed on its stomach on a table, its mouth is opened with one hand, and the other hand passes the tube directly over its tongue and down its throat. It takes less than a minute to feed each pup.

Only two precautions must be observed in using the stomach tube. First, force must *never* be used. The tube should slip down the pup's throat quite easily; if it doesn't, it is not the right size tube or it is not being used correctly. Second, the tube must never enter the windpipe, for to accidentally inject milk into a pup's lungs would, undoubtedly, be to kill it. It is easy to tell if the tube is in the esophagus (right) or the windpipe (wrong). If the tube is accidentally passed into the windpipe, which very seldom happens, only two or three inches of the tube will pass before it meets resistance. If it is in the esophagus, six or more inches of the tube can be passed into the pup with ease, as the soft tube coils up in the stomach. If there is any doubt, the tube should be withdrawn and passed again before feeding. I repeat, force should *never* be used.

Equipment for stomach-tube feeding is inexpensive and easy to obtain. We use Pharmaseal Laboratory's K-31 Expendable plastic premature-infant feeding tubes, and 10 or 20-cc plastic disposable syringes with the needles taken off. Both are available through a surgical supply house, drugstore, or a veterinarian. Size 8-French tubes are suitable for all pups except very tiny toys; size 5-French are for those. One tube and syringe often lasts long enough to raise an entire litter.



These tubes are fifteen inches long and have a black mark eight inches from the tip. As a simple safety precaution, the tubes should be passed down the puppy's throat nearly to this mark. It is impossible to pass eight inches of tubing into a pup's lungs, so this precaution insures that the tube is in the stomach.

It has not been found necessary to clean the tube between feeding each pup in a litter. After the feeding, the tube and syringe are taken apart, washed thoroughly in hot soapy water, rinsed well, and allowed to dry.

Pups should be fed four times a day and no more. Although they would nurse more often, they would take only a very small amount each time. Overfeeding causes diarrhea and dehydration, and kills far more pups than does underfeeding. Dudley Baker, in the August 1963 issue of Dog World magazine published an excellent article on milk formulas for puppies. By far the most satisfactory for use are the commercially prepared, powdered, bitches' milk. These products are easy to use, correct in their content, always fresh, as they are mixed before each feeding. Incidentally, milk fed through a stomach-tube need not be warmed, but may be fed right from the refrigerator.

In an emergency, or if commercially prepared bitches' milk is not available, pups may be fed one of the following mixtures: eight ounces of homogenized milk plus two egg yolks, or five parts evaporated milk mixed with one part water. Either mixture is less convenient and far more expensive to use than the commercial product. These formulas must be kept refrigerated, and mixed well before use.

Each of the above-described formulas, as well as the commercial products, contain about one calorie per cubic centimeter (abbreviated "cc", the numbered units on the syringe). A puppy needs about 60 calories per pound of body weight a day for the first week of life, 70 calories per pound daily for the second week, and 80 to 90 calories per pound thereafter. This volume is to be divided by four, for four daily feedings. It is simple to gauge the volume to feed, by the condition of the pup. A quiet, rapidly growing puppy with a normal stool is adequately fed. A pup with diarrhea may be overfed, and one that cries intermittently for no apparent reason may be hungry. The mathematical formula can be used to estimate the requirements at first, but one soon learns how much a pup can hold. The abdomen of a young puppy enlarges somewhat after feeding, but never should appear bloated, nor fed so much as to cause milk to overflow through their noses.

The first stool of a newborn pup is firm, dark and scanty, representing the contents of the intestinal tract before birth. Subsequent bowel movements should be soft, yellowish, and formed. A pup that is fed four times a day will have four to six bowel movements a day. Stimulation of urination, and defecation after each feeding, is accomplished by gentle rubbing of the anal region with a piece of cotton.

Diarrhea in pups is a serious complication, as it causes rapid dehydration. It often indicates over-feeding, chilling, or a bacterial infection. It is particularly serious when accompanied by continuous crying. Treatment of diarrhea should be started at the first sign. The milk formula is diluted 50% with water, and antibiotics are added. As the condition subsides, the amount of water in the formula is gradually reduced to normal.



Constipation in puppies, indicated by reduced frequency of stools, can mean dehydration, underfeeding, or an unsuitable formula. Correction of the cause and addition of a teaspoonful of sugar to eight ounces of formula will help the problem.

A newborn puppy attempts to regulate its environmental temperature by crawling close to its mother and litter-mates when cold, and crawling away when too warm. A satisfactory heat source for orphan pups is an ordinary electric heating pad, turned on low and protected with a waterproof covering. The pad must fill only a portion of the box so that the pup can crawl onto it if cold and off it if too warm. Light-bulbs and heat-lamps are likely to cause overheating, as the pup is unable to escape from the heat.

Of course, it is absolutely necessary to keep the pups clean at all times. Folded newspaper makes a satisfactory and easily-changed bedding. Dirty puppies may be washed in warm water and dried with a towel. Each pup should be kept in its own individual box or compartment.

Puppies can be started on solid food at three weeks of age, and should be weaned at four weeks. "Instant" baby-cereal, the high-protein variety, may be mixed with milk formula for their first food. Pups are able to swallow solids before they will eat from a bowl, so the weaning process of hand-raised pups can be hastened by spoon-feeding cereal for a few days.

A word about death losses of new-born pups. Much has been written on the myth of "acid milk" and the cold, crying pup that probably has a bacterial infection. We recognize still another situation, the "limp puppy syndrome." These pups are found lying on their sides, quiet and warm. When picked up, their heads loll. Their movements are feeble, they do not squirm, and they may look very flat. If they are not treated, or are discovered too late, they get cold, may cry a little, and then die. This condition is most common in puppies between 48 hours and seven days old. It almost never occurs in all the puppies of any litter, but a bitch with pups such as these may lose a pup or two in each of her litters. The cause is thought to be starvation. The pup is prevented from nursing by more vigorous litter-mates, by constant licking by the bitch, or by getting lost behind the bitch or in the bedding. After just an hour or two, the pup's meager resources are depleted, its blood sugar level falls far below normal, and it becomes too weak to nurse if it does have the chance. The remedy for this situation is simple and dramatic. The affected pup is given a stomach full of milk formula through the tube. Improvement is evident, often in fifteen minutes. The entire litter in such cases should be watched closely for relapses, and fed with the tube at the first sign of trouble. Such pups need not be taken away from the dam, but close observation and quick action may be needed to save all of them.

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