

PSITTACINE PEDIATRICS

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With advances in the art and science of aviculture, an increased emphasis is being placed upon the proper care of neonates and an understanding of the disorders which are often encountered both in the nest and in the handfeeding nursery. As in any area of aviculture, the field of psittacine pediatrics is plagued by the inaccuracies of folklore. Husbandry techniques for nestling psittacines are advancing and becoming more practical and less of a burden to the human foster parent.

This paper will outline one method which has been used successfully for hand raising hundreds of psittacine chicks, a large percentage from hatching. While this method is successful, it is not the only way and is not magical. Every aviculturist must develop techniques which fit their schedule, facilities, species and resources. Problems found in parent raised nestlings will also be addressed.

PROBLEMS ENCOUNTERED BY PARENT RAISED PSITTACINE NESTLINGS

Psittacine parents, like any animal are variable in their ability to successfully raise young, especially when inexperienced. Chicks may be abandoned or damaged by the adults necessitating artificial incubation and/or handfeeding.

Abandonment or abuse may occur if the hen lays another clutch of eggs before fledging of the chicks. This problem is most common in prolific, domesticated species such as cockatiels and lovebirds. Chicks may be plucked or pecked in an attempt to encourage them to leave the nest.

Disturbance by visitors, wild animals, or other birds (if colony breeding) may result in abandonment or abuse. This is especially true when dealing with inexperienced or nervous parents. Visitors should be limited during breeding season. Nest boxes should be checked on a regular basis to accustom birds to human activity around the nest. Addition of shavings, or cleaning the nest box during nesting, can result in abandonment. Boxes should be cleaned prior to nesting. Pulling (removing from the nest for hand rearing) part of a clutch may result in abandonment of the remaining chicks or eggs.

Habitual bad parents may repeatedly break eggs, kill chicks at hatching or at an older age, or mutilate babies by plucking or

biting toes. In pairs that are repeatedly abusive the chicks must be fostered or handfed.

A nest box that is too hot, wet, or dirty may result in abandonment. The presence of pests such as snakes, rats, mice or ants may also drive parents away from nestlings.

Asynchronous hatching and the resultant age disparity in siblings may necessitate pulling nestlings or eggs. Most psittacines lay one egg every two days. Many birds may start incubation with the first or second egg. Some species, especially macaws, may lay the last egg several days later. After hatching of the first chick or chicks younger eggs may not be well incubated or may be contaminated with fecal matter by older chicks. Younger birds may not be able to compete for parents attention and not be fed enough. Older chicks may trample hatchlings.

Missing eggs and/or chicks may be attributable to poor parenting or pests. Egg eating by parents may reflect dietary deficiency of calcium or protein, or bad habits. If egg shells are too thin parents may eat or discard broken eggs. Eggs and/or chicks may be eaten by snakes or rodents.

FOSTERING

Fostering is a practical alternative to handraising, especially by the inexperienced aviculturist. Fostering under a different species is practical and can be quite useful with reliable small species (conures, budgies) being used to foster larger species for the first few days or weeks.

For best results eggs, rather than hatchlings should be placed in the nest. Acceptance is better and the chance of spreading disease is reduced. Fostering of eggs or babies should be timed to coincide with the hatching time of the foster parents eggs. Fostering of chicks, especially of different species, or chicks which are too large, can result in abandonment. Some exceptional parents may accept chicks at any age. Eggs should not be added to a nest in excess of a normal clutch size.

Inexperienced or habitually bad parents may not provide adequate food for babies, especially hatchlings. Babies may be supplemented in the nest if parents dont feed adequately. If parents habitually underfeed the chicks must be pulled.

Overfeeding is rarely a problem. Parents fill up the crop more than the handfeeder and may keep the crop full at all times. Feeding foreign material rarely occurs if adequate supplies of soft foods are available to feed chicks. Chicks in the nest seem to be able to tolerate more solid food at a younger age than handfed chicks.

INJURIES IN THE NEST.

Nestlings may be injured if frightened parents jump into the nest. Broken legs, lacerations, etc may occur. Proper nest box design and limiting visitors will reduce this problem.

Spraddle legs may occur if nest material is not deep enough and chicks must sit on the hard floor or if parents sit too tight. Deviations from the hip or stifle are difficult if not impossible to repair. Chicks may be propped up in deep litter which supports the legs or the legs taped together for support.

Metabolic bone disease may result in fractures, spinal deformities or spraddle leg. This may be due to calcium deficiency, calcium/ phosphorus imbalance or vitamin D3 deficiency. This is most common in African grey parrots. Supplement of oral calcium and vitamin D3 at the first signs of fracture or deformity as well as providing support may avert serious deformation.

Bite wounds may be inflicted by siblings in feeding frenzies. These occur most commonly on the crop and can result in fistula formation.

Injuries at fledging may occur in birds making their first attempts at flight. Injuries occur more often in flights than in cage breeding. Concussions are common when birds fly into walls or wire. They may be found on the floor dazed or exhibiting neurological signs (especially cockatiels). These birds should be placed in a cool environment to hasten vasoconstriction. Corticosteroids may be helpful. Fledglings, especially cockatiels, have hooks on the end of the claws which often catch on wire resulting in leg fractures. These hooks should be clipped prior to fledging. Chicks which are unable to get back to the box may get wet, chilled or be abandoned. Skin over the keel bone may be injured due to crashing to the floor.

Nest materials may also present a hazard to the nestling. Nest material may be eaten resulting in impaction or slow gut transit time. This is uncommon in parent raised babies. Fibers in nest material may entwine digits resulting in swelling and eventual sloughing of the digit if not discovered in time for removal of the fiber. Fibers should be carefully teased out with a small hook and scissors. Bandaging with DMSO and furacin ointment will speed recovery of damaged digits. Constriction of the digits resembling fiber constriction, has been reported in eclectus and other parrots. The etiology of this disorder is unknown.

DEATH IN THE NEST

Environmental hazards may result in death of nestlings. If the nest is too hot the nestlings may be abandoned or die of heat prostration. Fans or sprinklers and the provision of shade, may help to bring down environmental temperatures. Cold is also a

hazard especially for birds which lay early in the season during a warm spell followed by cold weather. Insulation of nest boxes or the use of heat lamps may help increase box temperatures. Birds should be discouraged from breeding in very cold weather as egg binding is also more common in cold weather. Nest boxes must be constructed so that they will not floor in heavy rains or leak.

Bacterial infections in parents, especially pharyngeal and crop infections, may be transmitted to young. Diagnosis of problems in the young will allow treatment of parents prior to the next breeding. Candidiasis is a very common problem in chicks which may often be traced to the parents or the soft foods.

Viral infections are uncommon if new additions to the flock are quarantined. The exception to this is papovavirus infections in which an asymptomatic adult bird passes the virus to the nestling resulting in its acute death. Pacheco's parrot disease or psittacine herpes virus may also be shed when carrier birds begin nesting.

Chlamydiosis is frequently found in psittacine breeding collections especially in cockatiels. Any investigation of nestling mortality should include screening for chlamydia.

Giardiasis can result in heavy mortality in nestling cockatiels and budgies.

PEST CONTROL

Mites and roaches can usually be controlled by the addition of 5% sevin dust to nest material with no harm to chicks or adults. Ants are more difficult to control but may respond to 10% sevin dust.

Rodents frequently inhabit bird breeding areas due to the easy access to feeds. Elimination of nesting places and trapping will help limit the populations. Poisons must be used carefully to prevent accidental exposure of birds to poisons. Suspended cages limit rodent access.

Cages suspended on poles may reduce interference by snakes. In areas where snakes are very common, especially rat snakes, very small birds must be kept in screened cages or indoors. Cages built of small mesh wire will exclude snakes large enough to eat bigger birds.

PARASITIC PROBLEMS

Parasites are more common in birds housed in flights than in suspended cages, especially flights with dirt floors. Most internal parasites are more common in southern climates. Birds should be wormed prior to each breeding season and perhaps more often if a problem warrants.

Ascarids are very common in cockatiels, Australian parakeets, and conures. Capillaria is a common problem in Macaws and is very difficult to control if birds are kept in flights. Giardia is an important problem in cockatiel and budgerigar aviaries. Intestinal coccidia are uncommon in captive psittacines.

HANDFEEDING AND THE PSITTACINE NURSERY

HANDFEEDING JUSTIFICATION

The aviculturist must decide when it is appropriate to pull chicks for handfeeding and may have many reasons for doing so. Many eggs are artificially incubated and the young must be handfed or fostered. In very humid climates, or times of heavy rainfall, eggs may be pulled to hasten moisture loss in an incubator. Nestlings may be pulled which would otherwise die in the nest or to reduce the burden on a sick parent or reduce clutch size. A quick return to egg laying, double or triple clutching, may be hastened by pulling chicks or eggs. Birds are handfed to produce a tamer pet bird or a calmer bird for future breeding.

THE PSITTACINE NURSERY

Hatchling psittacines are altricial and as such cannot regulate their body temperature. Hatchlings should be kept in a brooder at 90 - 94 F. Weak hatchlings may initially be kept at slightly higher temperatures. Chicks with early pin feathers should be in a brooder or room kept at 86-90 F. Birds with partial pin feathers to fully feathered should be kept in a warm room (78 - 86 F). Humidity should be 50% or higher.

If environmental temperatures are too high the chick may exhibit panting, unrest, hyperactivity or poor growth rate. The bird's skin may appear reddened and dry. Temperatures over 100 F may result in death. Cold environmental temperatures may result in death, poor gut motility, crop stasis or other digestive disorders, failure to feed or beg, inactivity or shivering. Low temperatures may increase the incidence of respiratory disease.

HANDFEEDING FORMULAS

Aviculturists have developed a myriad of handfeeding formulas over the years, some excellent and some disastrous. Several formulas are now available commercially. Table #1 The lack of personal experience with these formulas precludes comment as to their effectiveness.

For several years we have used a formula based on a commercial monkey food.(a) This formula is designed to be palatable, balanced, and simple to prepare. Simplicity is necessary as formula should be prepared fresh for each feeding in order to eliminate the chance for contamination. Vitamin and mineral supplementation is not necessary. The instructions for preparation of this formula are in table #2. Long storage times or repeated reheating can lead to contamination.

Formula should be about the consistency of yogurt. A more watery formula is recommended in the first few days. This may be practically achieved by feeding hatchlings the watery food on the top of the formula mixture or the first few meals may consist of watered oatmeal. It should be kept in mind that some individuals and some species may have different requirements.

Fasting for the first day after hatching is not required for normal yolk adsorption. Weak or sick chicks however may absorb yolk more slowly than normal chicks. In most chicks the yolk is completely absorbed within 3 to 4 days after hatching.

Feeding with food in the crop should be avoided whenever possible. If food remains in the crop for several feedings or large amounts are in the crop when it would usually be empty the cause of the disorder should be investigated. In some cases the birds are being overfed and you should cut the volume per feeding, especially if the bird is fully feathered and near weaning. (Note: Some people feed very frequently and never allow the crop to empty and are successful).

Birds are fed 4 times daily from hatching until the eyes open, after which time they are fed 3 times daily until weaning. In order to maximize growth while cutting the number of daily feedings the crop is well filled. For example amazon, macaw or cockatoo chicks should be able to eat 7 cc's of formula by 7 days of age.

Sick birds should be kept separate and always fed last with utensiles stored separately.

Most chicks should be pulled from the nest before three weeks of age. Older chicks may not adapt well to the nursery environment and may resist handfeeding. These chicks should be fasted for 12 to 24 hours to hasten acceptance of handfeeding. For best results chicks should be pulled prior to or at the time of emergence of pin feathers on the wings.

(a) Purina High Protein Monkey Chow, Ralston Purina Company, Checkerboard Square, St. Louis, Missouri 63164

FEEDING UTENSILES

Handfeeding can be accomplished using a variety of utensiles the most common being syringes, tubes or spoons. All have advantages and disadvantages.

The use of syringes for handfeeding is fast sanitary and a known volume of food can be administered. Syringe size can be increased as birds grow. Catheter tip syringes (35 or 60 cc capacity) are useful for feeding large chicks. Syringes are easily disinfected and should be soaked in a disinfectant solution between each use. Ideally a separate syringe is used for each bird. A syringe should NEVER be refilled after feeding a bird until it is cleaned, this is a common way to transmit disease by contamination of the formula.

The feeding response is initiated by gently touching the commissures of the beak while holding the head. When the bird starts a bobbing action the glottis closes. The food can be pushed rapidly into the crop at this time without fear of getting food into the trachea.

Attachment of a rigid or flexible tube to a syringe enables rapid feeding of a known volume directly into the crop. This is especially desirable in birds nearing weaning which resist head restraint required for syringe feeding. Many birds can be trained to swallow the tube voluntarily. Tubes take more time to disinfect and may be difficult to adequately clean. Crop rupture is a hazard especially with a rigid tube. A large soft rubber tube is preferred as it is very difficult to introduce into the trachea. Care should be taken not to place the tube into the proventriculus as it is very easy to rupture.

Spoon feeding may result in a tamer bird but has few other advantages. It is time consuming and messy. Food which dribbles down the neck becomes dried and feathers must often be plucked in order to clean the bird. Disinfection is simple but contamination of the food by repeatedly dipping the spoon into the food is a common problem. Spoon feeding is facilitated by bending the sides of the spoon up.

STUNTING OR FAILURE TO THRIVE

Stunting, poor growth rate or failure to thrive is common among hand fed birds. It is most common in the first 30 days of life. Most of these signs are corrected with time and adequate feeding and most birds will reach full adult size if stunting is reversed early enough.

The most common sign of stunting is inadequate growth rate. Birds should double hatching weight by 5 to 7 days of age. Daily weighing may be helpful but it should be kept in mind that stunted birds also gain weight daily but in inadequate amounts. The trained eye is the best judge of condition.

Stunted birds appear thin and disproportionate with the head appearing too large for the body. Toes are a better indicator of adequate weight than breast muscle in very young birds. Toes, wings or backs should not be excessively thin. Eye opening may be delayed in a stunted or sick nestling. The normal age for eye opening varies greatly for different species. The skin on a stunted chick will appear thin and wrinkled without adequate amounts of subcutaneous fat.

Abnormal feathering patterns may be seen on the head and the emergence of body feathers may be delayed. As feathers emerge on the head they may form a point from the nares narrowing toward the back of the head, resembling a mohawk haircut. These feathers are often disordered rather than lying flat and uniformly pointing toward the back of the head. Feathers in other areas may emerge slowly and have stress marks.

A globose head with an elongated slender beak is occasionally observed in a full sized stunted chick and is usually not corrected with time. This abnormality is suspected to be due to metabolic bone disease, or protein deficiency or excess at a young age. Beak deviations are common in stunted birds.

Inadequate feeding is the most common cause of stunting. The fear of overfilling the crop often results in underfeeding and inadequate caloric intake. Food which is too watery may also result in inadequate caloric intake.

Enteric candidiasis can result in malabsorption. Any poor doing bird should be cultured for candida and/or gram negative bacterial infections.

HOUSING AND BEDDING

Cleanliness is especially important with hatchlings as their immune system is immature and they are not able to withstand some of the common bacteria which the adults are resistant to. Cleanliness to the point of sterility is not necessary. Ideally hands should be washed between feeding each bird but this is not practical when feeding large numbers of birds.

Hatchlings can be conveniently housed in plastic freezer containers and larger birds kept in dish pans. These containers are easy to move around and clean. Bowls with rounded bottoms should be avoided as leg deformities may result when birds lean on the sides.

Hatchlings are kept on paper toweling which is changed at each feeding. The paper towels can be crumpled and shaped like a nest to keep hatchlings from rolling around or falling over on their backs. Birds which are kept on solid bedding material (paper toweling, diapers, tissues, etc.) tend to become covered with fecal material even if bedding is changed with each feeding. Older birds stay

cleaner when they are kept on corn cob bedding, shredded paper or shavings but may ingest bedding. In large chicks ingested corn cob passes through the gut, but in small chicks it may be retained in the crop or ventriculus. Brands of corn cob which are ground to a small size are less likely to cause impactions. Shredded paper may become wrapped around the legs of nestlings so they must be checked at each feeding. Shredded paper over corn cob bedding reduces the amount of corn cob eaten by the chicks and provides clean, easy to maintain bedding.

Measures should be taken to control insects, especially roaches, which may spread disease from bird to bird. Dust, from corn cob bedding, can be minimized by the use of fans and air filters. Dirty pans are an ideal site for fungal growth and should be emptied and disinfected often.

BACTERIAL FLORA OF NEONATAL PSITTACINES.

The normal intestinal flora of psittacines consists primarily of gram positive bacteria including *Lactobacillus*, *Staphylococcus epidermidis*, *Streptococcus* sp., *Corynebacterium* sp., and *Bacillus* sp.

Gram negative bacteria such as *E. coli*, *Klebsiella* sp., and *Pseudomonas* sp., are commonly considered pathogens and are often associated with disease. Low to scant growths of *E. coli* in an asymptomatic bird may not warrant treatment.

Culture of the feces of new babies as they are brought into the nursery, and appropriate therapy for pathogens will often prevent illness and disease outbreaks in the nursery. Gram negative bacterial infections, often with accompanying candidiasis, are the most common disorder of neonatal psittacines, but underlying viral, protozoal, chlamydial or fungal diseases must not be discounted.

While crop washes are sometimes advocated as a means of providing normal flora to a new hatchling, a potential for the spread of disease also exists, and the beneficial effects have not been proven. Supplementation of *Lactobacillus* or similar products do not provide the species specific flora needed for gut colonization.

DIGESTIVE DISTURBANCES

Crop impaction or sour crop are names commonly used to describe digestive disorders in young psittacines. Most diseases of young psittacines result in slowed gut transit time which is reflected by a crop that empties slowly. In the case of complete gut stasis the crop will fail to empty. Food which remains for an extended time in the crop will sour, due to bacterial fermentation, resulting in sour crop. As the young bird becomes dehydrated fluids will be pulled from the crop resulting in hardening of the crop contents or crop

impaction. When this occurs, the bird must be treated as if it has a systemic disorder not merely a local problem in the crop.

CROP DISORDERS

Primary crop disorders include impaction, mycotic ingluvitis, crop atony or partial blockage by seeds, bedding material, fruit pulps or other foreign bodies. Foreign bodies should be palpated to determine size. If the particles are not very large the bird may be able to pass them without detriment. Large foreign bodies, such as wood shavings, may be removed via the esophagus with forceps in large birds, or by ingluvotomy. A layer of paper toweling between small chicks and corn cob bedding will prevent ingestion.

Solid and liquid portions of some formulas may separate, and the water may be absorbed leaving doughy food in the crop. Water should be added and the food broken up by massage and it will usually be passed. If sour, the food should be removed by suctioning it out with a tube. Warm water is first flushed into the crop, then crop contents are broken up and aspirated. Milking the crop manually to remove food may result in aspiration.

Mycotic ingluvitis or candidiasis often co-exists with intestinal candidiasis which can result in malabsorption.

Crop atony may result from over stretching of the crop. Some species are particularly susceptible (2 - 4 week old Macaws, Queen of Bavaria Conures, Pionus). These birds should be fed smaller volumes but as a result may mature more slowly. Providing physical support for the crop by using a sling may help restore proper crop tone.

The crop may be burned by the administration of food which is too hot. A scab will appear on the skin covering the crop several days later and leakage can be expected in an additional 2 to 4 days. If the burns are mild they may heal without treatment or surgery. Fistulas may form with some burns requiring surgical repair. In very severe burns the crop will slough.

Crop ruptures are usually due to tubing however ruptures of the esophagus near the mouth may occur in birds which are syringe fed. Subcutaneous foods must be removed and the bird supported with steroids, fluids and antibiotics. The prognosis for these birds is poor.

Systemic problems may be reflected by slow crop emptying time. Gut stasis is a common finding in most infectious diseases in nestlings. Dehydration or low environmental temperature may also result in gut stasis. Failure to defecate, or passage of only urates may be observed in a bird with gut stasis. Treatment with injectable antibiotics and fluids is indicated.

ENTERITIS

Bacterial and parasitic infections may be presented as enteritis with diarrhea. Loose stools from excessively watery diets may mimic diarrhea. Normal stool color is brown in nestlings with watery urates. Bloody or black stools indicate hemorrhagic enteritis and are usually associated with gram negative infections and/or coccidiosis. Handraised chicks have darker colored, looser stools than chicks in the nest.

Intussusceptions may occur in large nestlings and usually originate at the ileo-colic junction. These are most often seen in imported chicks. Intussusceptions may progress until loops of jejunum pass through the rectum. The prognosis in these cases is very poor. Etiology is often salmonellosis or other gram negative bacterial infections. Coccidia may also be associated with intussusception.

Diarrhea in cockatiels and budgerigars is commonly associated with giardiasis.

DIETARY CAUSES OF SLOW CROP EMPTYING

Foods that are too cold may result in delayed crop emptying as well as foods which are too thick, contain inadequate water, are too high in fat (too much peanut butter) or possibly too high in protein.

Air gulping or swallowing air may occur with or without feeding. It appears to be habitual and is common in cockatiels but also occurs in very young birds of any species. Air gulping results in inadequate food intake as the crop fills with air and looks full. If transilluminated the air can be easily seen in the crop. Feeding at a steady, rapid rate, so the bird doesn't have time to fill the crop with air, will help minimize air gulping. Feeding small amounts and waiting for swallowing should be avoided. Feeding response must be initiated prior to feeding. Tube feeding may be required. Burping and adding more food to the crop may help get adequate amounts of food into the bird. Care must be taken when burping so as not to induce aspiration of food.

MISCELLANEOUS CONDITIONS

Pasted vent may occur due to fecal accumulation or dirty bedding especially if the bird is on toweling or diapers. Constipation is unusual and may be confused with gut stasis. Constipation may be relieved by feeding oatmeal with applesauce and bananas or by administration of mineral oil.

Aspiration of food results in sudden death if large portions of food are deposited into the lungs. If smaller volumes of food are

aspirated pneumonia develops over several days. Antibiotic therapy should be instituted but prognosis is always grave. Aspiration pneumonia rarely occurs if proper feeding techniques are used. Food can be delivered quickly after initiation of the feeding response as the glottis is closed. For quick feeding the birds must be trained to accept the food when the syringe or a small amount of food is placed in the mouth. The feeding response may be accompanied by jumping and pumping in some species, however, some are passive and simply allow you to pour the food down the throat. Aspiration is more likely to occur if food is dribbled slowly into the mouth because the bird needs to clear its mouth to breath.

Coughing after feeding is common and related to the aspiration of minute amounts of food. This is usually associated with vocalization during feeding and rarely presents a problem.

Corneal scratches from nest mates, and foreign bodies under the lids are the most commonly observed eye problems in nestlings. Mycoplasmas are commonly implicated in conjunctivitis of cockatiels chicks but this is poorly documented.

Papovavirus is the most common viral disease encountered in the handfeeding nursery. Normal adult birds may shed the virus infecting their chicks. This disease is highly contagious and with an incubation period of approximately two weeks it can be widespread before it is detected. Pox is rare in domestically raised birds but a common problem in some imported species.

Oral plaques in nestlings most often indicate oral candidiasis but may also be associated with hypovitaminosis A, bacterial pharyngitis, pox or accumulation of food.

SKIN COLORATION AND APPEARANCE

Normal skin should be pink with a yellowish tint. Yellow coloration is more prominent in some species. The skin should be opaque, soft, smooth and pliable.

Dry, reddish, or wrinkled skin may indicate overheating or dehydration. Dehydrated birds will often have prominent skin vessels. White skin and very pale extremities indicate a bird which is cold, shocky, anemic, or very ill. Birds which have inadequate fat reserves or stunting have very thin, transparent skin.

REGURGITATION

Shrinkage of the crop at weaning is a natural process. As the bird matures regurgitation of a small amount of food immediately after feeding may occur signaling the need to reduce handfeeding volume and offer solid food.

Foreign bodies in the crop, crop mycosis, or systemic or enteric

infections may result in regurgitation.

Visceral gout usually results in vomiting prior to death. Gout can result from aminoglycoside therapy but is uncommon if drugs are used properly. Dietary imbalances such as excessive protein or Vitamin D3 may result in gout. Papova virus infection in the chronic form can result in gout or cystic kidneys.

LATERAL BEAK DEVIATIONS

Most birds which are syringe fed are feed on the same side of the mouth at each feeding with no ill effects. A low percentage of birds, especially macaws however, develop lateral beak deviations, primarily of the beak tip. This may be due to the vigorous nature of the feeding frenzy in macaws which may result in damage the that side of the beak.

Some beak deviations, especially those that are deviated from the cere, may be associated with upper respiratory infection when the birds is very young. Beak deviations are much more common in individuals which have been stunted or otherwise ill than in robust birds and are often accompanied by other developmental abnormalities such as globose heads and long narrow beaks.

Beak deviations may result in malocclusion which is unsightly and may require frequent beak trims but is usually not harmful otherwise. Total correction is difficult if not unachievable. Some correction may be achieved, if started very early, by application of gentle digital pressure to the opposite side of the beak at each feeding.

Leg deformities may be associated with inadequate litter, or slippery surfaces. Birds should not be placed on a table where feet will slide apart. They should be placed on toweling. Very tightly woven material should not be used as bedding as the bird may spraddle. Keeping small birds in a bowl with a rounded bottom may result in lateral deformity of the tarsometatarsus. Birds should be housed in containers with straight sides.

WEANING

Weaning is a very stressful time for a young bird and is a time when asymptomatic problems may surface. Weaning should not be attempted too early but conversely, extended periods of handfeeding are likewise detrimental.

Eliminate the midday feeding first then morning and finally the night feeding. A variety of soft foods should be offered at weaning time including; fresh corn on the cob, peanut butter and jelly sandwiches on whole wheat bread, apples, oranges, soaked monkey chow, peanuts, and parrot pellets for large species. Small species will usually accept spray millet, peanut butter and jelly sandwiches, oranges, apples, parakeet mix, shelled sunflower, and

cooked sweet potatoes.

Weight loss of up to 10% is considered normal. Weight loss of 15 to 20% may be encountered and may be dangerous. Handfeeding should be resumed in these birds. Weaned birds which become ill may revert back to begging to be handfed.

TREATMENT

When signs of illness are observed fecal material for culture should be collected and the bird started on antibiotics and antifungal therapy. To wait for culture and sensitivity may result in death. Oral antibiotics are indicated in digestive disorders of suspected bacterial origin and are preferred as long as gut stasis is not evident. If gut stasis occurs parenteral antibiotics must be used. Antifungal therapy should always accompany the use of antibiotics due to the high incidence of candidiasis in handfed chicks. Nystatin oral suspension is commonly used in neonates and is not harmful even in hatchlings. Nystatin should always be given after feeding as birds will often refuse food after tasting nystatin.

Oral rehydration therapy (ORT) should be initiated and may be used in conjunction with parenteral administration of fluids. Dilute cereal preparations can be used successfully for ORT. Gerbers oatmeal with applesauce and banana (in the jar) diluted with water, should be the only food administered to birds with total gut stasis or a very slow crop. This solution provides calories, potassium and other electrolytes present in the fruit juices and fluids which are readily absorbed by the baby. Another form of oral rehydration therapy is the use of the fluid from boiled rice.

ORT solutions should be used alone initially then added to the normal diet as the ill bird recovers and is able to tolerate the normal diet.

In total gut stasis, or a very slow crop, the normal diet should be removed by tube to prevent souring. Antibiotics and antifungals are added to the empty crop. The drugs are allowed to remain in the crop for a short period of time in order to have a local effect the ORT solutions are fed. If the solution is not passed within 2 to 3 hours the crop must be emptied, fluids and antibiotics administered parenterally and the process repeated. The prognosis at this time is very poor.

Proper diet and husbandry techniques are the basis for success in any handfeeding program and will limit the disease problems encountered by the aviculturist. In order to provide adequate treatment for immature birds the veterinarian must be aware of what a normal neonate should look like and how it should be cared for.

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Table #1

COMMERCIALY AVAILABLE HANDFEEDING DIETS FOR PSITTACINES

Roudybush's hand-feeding diet - Roudybush, P.O. Box 331, Davis, CA 95616

Nutristart - Lafeber Company, RR 2, Odell, IL. 60460

Topper Bird Ranch Diets - 20833 Roscoe Ave. Canoga Park, Ca. 91306

Table #2

HANDFEEDING FORMULA MADE WITH MONKEY CHOW

- A. 1 quart Purina High Protein Monkey Chow + 1 quart hot water - Allow to soak 30 minutes to soften the biscuits.
- B. Cook on stove top to a soft boil or microwave 8 minutes on high.
- C. Add 3 heaping tablespoons of smooth peanutbutter, 1/2 jar creamed corn (4 1/2 ounce jar), 1/2 jar oatmeal with applesauce and banana (4 1/2 ounce jar).
- D. Add ice cubes as needed to cool (approx 5 large cubes).

E. Smooth with blender, hand mixer, or by hand. Add extra water if formula is too thick.

F. Run washed hand through the formula to check for hot spots.

G. If time is short the monkey chow can be soaked in advance in refrigerator for a few hours. Any food remaining should be discarded and NOT held for later feedings.

Table #3

SELECTED DRUG DOSAGES FOR HANDFED BIRDS

CHLORAMPHENICOL - 75 mg/kg TID. Most often used in palmitate form for treatment of the individual bird (0.1 ml / 30 gm TID). For flock treatment chloramphenicol powder (from capsules) may be added to prepared formula at the rate of 1500 to 2000 mg/gallon.

CHLORHEXADINE - Can be added to formula at the rate of 5 cc/ gallon of prepared formula. Used in flock treatment of mild candidiasis when enteric viral infections are suspected.

CHLOROTETRACYCLINE - For flock treatment of chlamydiosis add 200 mg/ gallon of prepared formula.

DIMETRIDAZOLE - 3/8 teaspoon per gallon of prepared formula.

GENTAMICIN - 10 mg /kg once or twice daily IM or SQ. Make sure the chick is hydrated. Chicks with total gut stasis must receive parenteral fluids. Gentamicin powder - 1/8 teaspoon per gallon of formula.

GENTIAN VIOLET POWDER - 1/2 teaspoon per 5 gallons of formula.

KETOCONAZOLE - 2 to 4 ground tablets per gallon of formula.

NITROFURAZONE - 1/2 tsp/ gallon of prepared formula (9.3% powder). For flock treatment of bacterial enteritis or coccidiosis.

NYSTATIN ORAL SUSPENSION - In very small birds give one or two drops following each feeding. In older birds give 1 cc/300 gm, once or twice daily or add 30 ml/gallon formula.

TRIMETHOPRIM X SULPHA - .1 cc/ 30 gm TID in the very small bird or BID in older birds or added to the formula at the rate of 25 ml/gallon.