AVIAN NEONATOLOGY & PEDIATRICS

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Before facing real medical, or better "neonatological & pediatrical" problems, one needs to focus on the normal development process of the avian chick. If one does not understand the difference between a normal chick and a chick that is starting developing problems, his/her reaction it will often be too late to be successful.-

One simple (but probably the most important way and also the earliest indicator of a problem) way to check a chick's conditions is to control its growth and weight gain rates. A typical mistake that most aviculturists, and some veterinarians do, is to believe that a chick is not doing well because is under the normal "published" growing rate for the species. Experience is telling us that this can be a sign in species with a little adult size variability, but it is generally not very important, especially when dealing with very variable species, like the Blue and gold macaw.

What is much more important is to study the complete growth rate of a chick and compare its shape with the published ones, and not to give a big importance to the weight itself. As a rule, in the first weeks, we like to see a minimum of doubling weight within 7 days. More is better, but less is likely to be a problem.

Other good "indicators" of regular growth and good health, that must be taken into consideration, when assessing the physical condition of a neonate are:

- Regular body proportions (not-stunted chick);
- Normal posture for the species;
- Hydration status;
- Skin color, texture and fat deposits;
- Regular feathers development;
- Normal shape of the beak (check for symmetry, prognathism or brachygnathism);
- Tone and thickness of the crop;
- Presence of foreign material (bedding) in the crop;
- Feeding response (according to species behavior);
- Normal production and appearance of feces.

Routine checks of the chicks in the nursery.

Avian neonatology involves not only the medical check of young patients which are sick, but also the control of flocks of birds in a nursery settings. Routine check-ups will allow the clinician to have a (more or less) detailed history of every chick and identify earlier any deviation from normality, so that potentially ill birds be isolated form the other chicks in the nursery, as soon as possible.
The routine we set up in our Institution is a simple microbiological culture from cloaca and crop of all incoming birds. If a chick is showing a suspicious culture result, we run a sensitivity test, but this does not mean that we'll start an antibiotic treatment, as this will take place only if the chick is also showing symptoms. The only culture result that will lead to a treatment anyway, is the finding of fungi and yeast. When a chick is showing a poor growth rate, and especially in presence of potentially pathogen bacteria, we also run some blood test, according to the size of the bird and the relative amount of blood we can safely collect.
Water and food used in the nursery are also routinely tested for pathogens.
When chicks reach a size that allows for it, feathers and blood are finally collected to test for Circovirus and Polyomavirus.

Generally speaking in our institution we run the microbiological cultures in two different ways, depending on the origin of the babies:

1. Chicks coming from the incubators, that originate from parents known to be healthy and free of the major infectious diseases, are considered “clean”. Our experience tells us that a immediate after-hatching microbiological check will lead to misinterpretation of results. In fact, quite often day old chicks don’t show any bacterial growth, due both to the limited size of the sample and the fact that no bacterial growth has developed yet, in those young birds. After years of trials, our protocol is to test any incoming bird from the incubator at three – four days of age. This will give the highest chances to identify the presence of potentially dangerous pathogens, before they become a real problem.

2. On the other hand, chicks coming from the nests, and partially parent-reared, are considered “potentially dirty” and will not go into the same room with the incubator chicks. These birds will be tested at their arrival to the Nursery, and will leave the quarantine rooms only when all the chicks in there will be considered healthy.

How to identify a healthy, or a sick chick.

Sick chicks are generally easier to identify than adult birds, as they do not need to hide their symptoms, yet. Obviously there are typical clinical symptoms to be aware of, such as not growing, slow crop emptying, swollen abdomen, generalized edema, stunting, dryness/dehydration, abnormal feces, non-production of feces, CNS signs, deviated limbs, non-bright eyes, etc. But there are differences related to species and also to age, that may be more difficult to notice. For example: very young healthy cockatoos and macaws, do not react very different when manipulated by humans, but when they are near to fledging age and are kept in the big buckets, macaws will lay on their back and use their feet to keep away strangers, while cockatoos will spring up as if they want to attack with their beak.

In our experience, any chick that is deviating from the normal behavior for the species may have a problem and should be carefully monitored.

Different problems of Parent- and Hand-reared chicks.

Although there are diseases and accidents that may be encountered in both hand- and parent-raised chicks, these two classes of patient show different problems, at least on a percent base.
Normally chicks raised by experienced and healthy parents grow quicker and do not have developmental or infectious problems.
Anyway, and especially when parents are new breeders, chicks in the nest should be checked frequently for problems with parents or siblings, or environmental conditions. Generally breeding parrots may become extra-protective when the nest is inspected, and this can lead to active accidents, such a parental aggression, or passive problems, like stepping on young chicks. These problems may be avoided having the adult birds accustomed to regular aviary and nest inspections.
Psittacine chicks from the same clutch, are not normally born the same day, so problems related to different size may arise.
Also, chicks in the nest may suffer from a badly built, or a wrongly positioned nest, which may be too hot, or too cold, or also too wet, etc.
Further, badly managed parents may produce chicks which are weak, because they suffer from calcium or other microelements deficiencies.
On the other hand, chicks from the incubators are totally depending on keepers experience, hygiene, and finally "feeling". When these birds are well kept, and all the nursery management is running smoothly and if the personnel is well experienced, these chicks can be very healthy and may be a good source of birds free from some of the typical infectious diseases that affect the adult bird population. But if a perfect combination of a healthy breeding stock, experienced nursery personnel and strict hygiene is not possible, these chicks are prone to develop a lot of problems, either infectious, developmental and behavioral.

The critically ill neonate

Young chicks can die very quickly, when seriously ill. For this reason a symptomatic treatment must be started immediately after discovering a sick chick. In most cases test results will be available after when is clear whether the treatment is successful, or not. Despite this assumption, diagnostic samples must be collected before starting a treatment and this for two reasons:

1. treatment can be changed according to results;
2. a presumptive diagnosis is already available for chicks with similar symptoms.

The typical critically ill chick will appear dehydrated and cold, it will not be able to lift the head properly, very likely its abdomen will look locally or totally swollen. Further symptoms that are very common with sick chicks are inability to pass feces, slow or not emptying crop, crop with gas and swollen eyes (both).
All these cases require a immediate and aggressive antibiotic treatment, plus a quick restoring of the fluid balance, further, to avoid secondary invasion, or overgrowth of fungi and yeast, an antifungal treatment is always indicated.
Typical first choice antibiotics are Enrofloxacin and Marbofloxacin, but since an increasing number of resistant isolates has been observed with fluoroquinolones, third generation cephalosporins, like Ceftriaxone and Cefotaxime, have become rather common, too.
Most commonly fluids will be administered SQ, and this can be safely done also in very small chicks (10 grams BW), but selected cases may require IV, or IO fluid administration. Fluid deficit can be determined by the clinical aspect of patient:

- loss of skin elasticity corresponds to a 5% dehydration;
- skin tents and loses its brightness: 10 - 12% dehydration;
- the chick is depressed, or comatose, there are signs of shock: 12 - 15% dehydration.

Fluid requirement for replacement can be calculated with the following formula:

Normal BW x (% deficit x 0,001) + maintenance requirements (50 ml/kg/day).

For example, to a 31 gr. chick with 12% fluid deficit will be given: 35 x 0.012 + 1,75 = 2,17 ml.
Food will be administered normally, if the chick is able to pass it and there is no risk of vomiting, otherwise the formula will be reduced by 20 - 50 % in volume.

If there is a crop stasis, crop can be washed with warm saline or RLS, with or without a few drops of a povidone disinfectant (Betadine®). Some saline may be left in the crop, after it has been carefully washed, but in the authors' experience better results are achieved by administering some infusion of fennel seeds. This "fennel-tea" can also be used as a replacement for reconstituting the feeding formula, for the first days after the resolution of the stasis.