



Critical Considerations of Peri-Parturient Period (PPP) Management of Livestock



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Introduction

India is considered as one of the highly populated country of livestock. This tremendous population is managed by our marginally educated and poor farmers, those having lower assets and lesser skills of animals rearing. During entire course of animal's rearing, transition period may consider as one of the most devastating life span which ultimately reflects the gross output potential through livestock. Thus, cross over such a devastating period is deciding factor of future benefits through livestock rearing. The transition period in dairy cows lies within last three weeks before parturition to three weeks after parturition [1]. This 40-45 days period characterized by tremendous metabolic and endocrine adjustments that the cows experiences from late gestation to early lactation [2]. One of the most important physiological change occurring during this period is the decrease in dry matter intake around parturition and the sudden enhancement in nutrients requirement for milk production [3,4]. As a result of these critical changes, most of the infectious diseases and metabolic disorders occur during this period [3,5]. Milk fever, ketosis, retained fetal membranes (ROP), metritis and displacement of the abomasum primarily affect cows within the first few weeks of lactation [3]. Physical and metabolic stressors of pregnancy, calving and lactation contribute to the decline in host resistance during the peri-parturient period [6]. During peri-parturient period the T-cells populations exhibit a significant decline, which contribute to the immune-suppression in dairy cows at calving [7]. This immune-suppression during the peri-parturient period leads to enhanced susceptibility to mastitis and other infectious diseases [6]. Other diseases those are not clinically apparent during the first two weeks of lactation such as laminitis, ovarian cysts, endometritis etc. can be traced back very soon that occurred during early lactation [5].

Metabolic disorders generally associated with peri-parturient period

Some metabolic disorders are critically linked before parturition and soon after parturition. Thus, this entire duration of approx 40-45 days should be carefully monitored. Some important metabolic disorders are mentioned below:

1. Metabolic diseases typical to first 2 wk of lactation such as Milk fever, ketosis, retention of placenta, abomasal displacement etc.
2. Metabolic diseases occurring beyond this period such as Laminitis etc.
3. Infectious diseases occurring during the first 2wk of lactation such as Mastitis, John's disease, salmonellosis etc.

Comparative nutritional demanding profile of gestation v/s peri-parturient period (PPP)

Nutritional demands for peri-parturient period is far greater than gestational demand of any animals and if we compare comparative nutritional requirements, it shows much larger numerical Figure 1 as compared with gestational demands.

Figure 1:

	Gestation Demand	Peri-Parturient Demand
ME (Mcal)	0.82	11.0
CP (gm)	117	140
Calcium (gm)	10.3	23
Phosphorus (gm)	5.4	9.0
Magnesium (gm)	0.2	1.0

Critical considerations for management of peri-parturient period

Successfully prevention of peri-parturient diseases and increased potential for successful reproduction revolves around five critical control points:

1. Maximizing dry matter intake
2. Enhancement of rumen papillae growth
3. Suppressing negative energy and protein balance
4. Maintaining minerals balance
5. Boosting of immune status

Maximizing dry matter intake: As the animals reaches towards advanced pregnancy i.e. peri-parturient period (PPP), suffers from lower DMI due to various physiological and metabolic changes. During advanced pregnancy, larger size of developing fetus creates a constant pressure on rumen and rumen size gets shorten and ultimately results very drastic reduction in DMI (may reaches upto 1.5% of 100kg body weight) and body condition score (BCS).

Thus, preventive strategies should be followed to enhance DMI such as, palatable diet with proportionate ratio of roughage and concentrate (roughage: concentrate: 60:40) along with condensed source of energy should be provided to full fill energy requirement of animal, even though lesser feed intake.

Enhancement of rumen papillae growth: Rumen papillae play a very important role in absorption of nutrients and ultimately meet the requirement of animals. Intake of food is not useful until or unless it is ready of absorption and meet the requirements at tissue level. Thus, papillae developments should be achieved by incorporation of palatable roughage in ration of animals.

Suppressing negative energy and protein balance: Due to reduced dietary intake during advanced pregnancy, animal generally suffers from low DMI because of depressed physiological status of animals. Lesser DMI results declined BCS and lesser availability of metabolically active micro and macronutrients. Thus, strategies such as condensed source and by-pass nutrient such as by-pass fat and proteins should be provided to sustain BCS of animal and maintain its energy and protein balance.

Maintaining minerals balance: During onset of lactation of any species, there is drastic lose of minerals especially calcium, phosphorus and other metabolically active micro-minerals from body reserve through colostrum and milk which ultimately creates a significant deficit of minerals in body reserve pool. It may create milk fever and other metabolic disorders, resulted lose of future productivity.

Thus, strategies should be applied for to maintain minerals reserve pull in optimum concentration during lactation phage, especially during early lactation such as (+)ve DCAD and low concentration of Calcium during entire pregnancy period.

Boosting of immune status: Peri-parturient period is most critical phage of once life time. It is a phage of life which creates a heavy demand on animal and explores animal prone to various metabolic and physiological status of animals. It also creates a very sensible effect on animal's immune status.

Thus, dietary innervations such as immune-modulators such as Mn, Zn, Cu etc. micro nutrients having antioxidant enrollments, should available in routine ration to enhance immune status of animal and to resist animals from invading microbial load.

Importance of peri-parturient management

Livestock rearing by farmers are generally for milk and meet purpose or in nut shell to maximize profit through their progeny development. Profitability of livestock rearing is solely depending upon efficient rearing. For successful animal's farming, peri-parturient period occupies a head on space and decides net profitability through high input of costly assets.

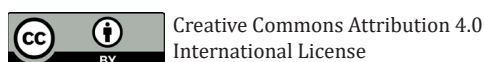
Thus, to facilitate smooth PP period, one should critically manage their livestock otherwise income would affected directly through lose of production in form of milk production or vitality of both mother and neonates.

Summary

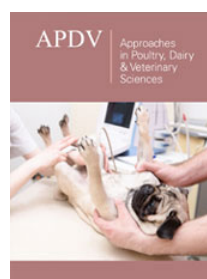
To get maximum profitability and sustainable production through livestock rearing one should continue monitor health status and physiological status of animal, especially during peri-parturient period. For efficient cross over such a drastic period having devastating effects on health of animals and milk production, farmers should efficiently managed animal's dry matter intake, rumen papillae development, minerals balance and immune status.

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