Evaluation of female reproductive tracts in cattle and buffaloes

by

Dr J. Ghosh, Ph.D., (Vety Gynae & Reprod)
Molecular Biology Laboratory
NIANP, Bangalore

Model training course
Topics of talk

• Why to evaluate
• Steps of examination
  - History
  - Physical examination
• Defining uterine tones
• Per rectal method of pregnancy diagnosis
• Palpation of uterine disorders
• Palpation of ovarian structure
• Dealing Anestrous cases
• Repeat breeders
• Description of evaluation sheet
Why to evaluate?

- Pregnancy diagnosis
- Estimation of gestational age
- Physiological & pathological status

Complete examination allows to know

- The current status of animal
- Give an idea of upcoming events such as
  - Estrous
  - Ovulation
  - Parturition/abortion
  - Uterine involution
- Rational approach to therapy
- Prognosis for a condition of genitalia
Physical examination must be reconciled with

- History
- Additional laboratory test

History should include

- Parity
- Age
- Cyclic history: (Cycle length, anoestrus, nymphomania)
- Calving dates and comments: (Dystocia, twins, retained placenta, surgical or mechanical intervention, viability of calf)
- Breeding dates and method comments: (AI/NS, estrus detection method, semen supplier and quality, previous record of bull fertility including venereal disease)
- Previous treatment: (Drug, dosages and route, treatment intervals, clinical; outcome, drug withdrawal times)
- Nutritional program: (Periparturient supplementation, dry period feeding, body condition during calving, milk production level)
Methods of physical examination

Per rectal examination:
- Latex gloves preferred
- Lubrication must

Three step retraction:
- Cervix
- Broad ligament
- Ventral inter cornual ligament

Examine step by step
- external genitalia
- Cervix
- Uterine horns
- Ovaries
Different uterine tones

<table>
<thead>
<tr>
<th>Stool Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estrus</td>
<td>Turgid, contracted uterus often curled</td>
</tr>
<tr>
<td>Diestrus</td>
<td>Relaxed</td>
</tr>
<tr>
<td>Edematous</td>
<td>Turgid but without muscular contraction</td>
</tr>
<tr>
<td>Flaccid</td>
<td>A limp soft, thin walled no contraction</td>
</tr>
<tr>
<td>Thickened</td>
<td>“Doughy”, pathogenic</td>
</tr>
<tr>
<td>Fluctuant</td>
<td>Intra luminal fluid</td>
</tr>
</tbody>
</table>
Pregnancy Diagnosis

- Membrane slip: 30 days to term
- Amniotic vesicle: 30 to 65 days
- Placentomes: 75 days to term
- Palpation of fetus:
- Uterine artery: branches of pudendal artery palpable through the iliac shaft
## Palpation parameters and gestational age in cattle

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Size (finger width)</th>
<th>(cm)</th>
<th>Gestational age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amniotic vesicle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.5</td>
<td>42 (days)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.5</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5.5</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>7.5</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>4+</td>
<td>9.0</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10.5</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Fetal poll to snout distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.5</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.5</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5.5</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>7.5</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>4+</td>
<td>9.0</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10.5</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Placentomes</td>
<td>-</td>
<td>-</td>
<td>75+ days</td>
</tr>
<tr>
<td>Fetus</td>
<td>Mouse</td>
<td>2 (months)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small cat</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Large cat</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Fremitus</td>
<td>Unilateral</td>
<td>120+ days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bilateral</td>
<td>210 + days</td>
<td></td>
</tr>
</tbody>
</table>
Palpation of uterine disorder

Answer the questions:

- Whether uterus is completely involuted?
- Whether animal is cycling?
- Are there any palpable structure in uterus?
  - Uterine inflammation
  - Uterine or utero-ovarian adhesion
  - Abscess
  - Tumor
  - Fetal remnants

Palpation of ovaries

- Follicles
- Corpus luteum
  - Smooth ovary
  - Ovarian cysts
  - Ovarian bursa
  - Misc. conditions
Anestrous

No symptom of estrous

Pregnancy

Physiological
- Assess congenital defect
- Whether reach to the age
- Attained the weight
- Assess body condition
- Assess genital development

Pathological
- Assess body condition
- Assess uterine palpable structure
- Assess ovarian activity

Pre pubertal
- Fortify with nutrition
  - Macro and micro nutrients
- Monitor body score, genital development & ovarian activity 10–15 days interval

Post partum
Repeat breeding

Served 3 times with bull semen of proven fertility not conceived

1\textsuperscript{st} Service  = 60/100
2\textsuperscript{nd} Service = \{60 + (40 \times 60/100)\} = 84/100
3\textsuperscript{rd} Service = \{84 + (26 \times 60/100)\} = 99.6/100

One has to make sure

1) Proper estrous detection
2) Insemination time
3) Proper technique of AI
4) Good quality semen supply
5) Female does not have reproductive problem

About 0.4% cows remained to be conceived considering 60% conception rate
Days

0  Ovulation
1  Fertilization
2  Entry in uterus
4  Hatching
5 - 7  Elongation
8  Maternal recognition of pregnancy
9  Early attachment
20  Binucleate cells appear
22  Mutual interdigitation at cotyledon
25  Definitive placental attachment
30
40  Placental lactogen
45  Plama progesterone
45  Plasma progesterone
50  High in pregnant
60

% Embryonic loss

20 %
15 %
20 %
10 %
5 %
Data sheet for per rectal evaluation of reproductive condition

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Attributes</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Species:</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Breed:</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Approximate age:</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Parity:</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>No of calving and age at first calving(no calving for heifer)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Body condition score: (1 – 5)</td>
<td></td>
</tr>
</tbody>
</table>
| 7     | Categories (tick any):                                                    | a) not coming to heat  
b) coming to heat but not conceiving            |
| 8     | Any other information like feeding history body condition at calving/ complain of the farmer |                                                                         |

Contd…. 
<table>
<thead>
<tr>
<th>Sl No</th>
<th>Attributes</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Animals not coming to heat</td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Anytime shown mounting or any other estrous behavior (tick any)</td>
<td>I) Mounted other cows II) Allowed other cows to be mounted III) Bellowing or increased physical activity</td>
</tr>
<tr>
<td></td>
<td>If yes recent date</td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Any secretion around buttock</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If seen recent date</td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Type of secretion if observed (tick any)</td>
<td>I) Clear glassy, II) Cloudy II) White</td>
</tr>
<tr>
<td>d)</td>
<td>Abortion/calving if any, date</td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td>Problem during calving</td>
<td>I) Dystocia, II) Retention of placenta III) Prolapse, IV) any other specify</td>
</tr>
<tr>
<td>f)</td>
<td>Treatment record for reproductive problem or any other diseases.</td>
<td></td>
</tr>
</tbody>
</table>
### Data sheet for per rectal evaluation of reproductive condition

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Attributes</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>For animals coming to heat not conceiving</td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Date and time of last estrus symptom</td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Duration (h, beginning to end)</td>
<td></td>
</tr>
</tbody>
</table>
| c)    | Type of secretion                                              | I) Clear glassy
        |                                                                 | II) Cloudy
        |                                                                 | III) White
| d)    | How many times repeated out of which how many times served (AI/NS) |                                              |
| e)    | Duration of each cycle                                         | I) 1<sup>st</sup> cycle
        |                                                                 | II) 2<sup>nd</sup> cycle
        |                                                                 | III) 3<sup>rd</sup> cycle
        |                                                                 | IV) 4<sup>th</sup> cycle
<table>
<thead>
<tr>
<th>Sl No</th>
<th>Attributes</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Clinical examination report</td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>External genitalia: Vulva and vestibule</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Characteristics of epithelium and any visible lesions)</td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Cervix (Palpate and Insert thumb finger)</td>
<td>I)Hard/ soft II)Open or closed</td>
</tr>
<tr>
<td>c)</td>
<td>Uterus (note the tone and enlargement, detect presence of structure and presence of conceptus)</td>
<td>Lt horn: Rt horn:</td>
</tr>
<tr>
<td>d)</td>
<td>Oviduct (require special skill and palpable when enlarged)</td>
<td>Rt: Lt:</td>
</tr>
<tr>
<td>e)</td>
<td>Ovaries (Detect the follicle/ CL/ any other abnormal structure)</td>
<td>Rt: Lt:</td>
</tr>
<tr>
<td>12</td>
<td>Final diagnosis and remarks</td>
<td></td>
</tr>
</tbody>
</table>

Signature of the Doctor
Principles of Hormonal Therapy
Hypothalamic-Pituitary-Testicular Axis

Key (abbreviations)
GnRH: gonadotropin-releasing hormone
LH: luteinizing hormone
FSH: follicle-stimulating hormone
T: testosterone
DHT: dihydrotestosterone
ABP: androgen-binding protein
E₂: estradiol
+: positive influence
−: negative influence

Diagram showing the interactions between the hypothalamus, pituitary, testicle, and sperm.
<table>
<thead>
<tr>
<th>Hormones</th>
<th>Major source</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>GnRH</td>
<td>Hypothalamus</td>
<td>Stimulates LH and FSH synthesis and secretion</td>
</tr>
<tr>
<td>Oxytocin</td>
<td>Post pituitary</td>
<td>Milk let down, parturition and gamete transport</td>
</tr>
<tr>
<td>LH</td>
<td>Anterior pituitary</td>
<td>Follicle development, ovulation, corpus luteum function - steroidogenesis</td>
</tr>
<tr>
<td>FSH</td>
<td>Anterior pituitary</td>
<td>Follicle growth, spermatogenesis and estrogen synthesis and secretion</td>
</tr>
<tr>
<td>Prolactin</td>
<td>Anterior pituitary</td>
<td>Lactogenic and luteotropic in some species</td>
</tr>
<tr>
<td>hCG (human)</td>
<td>Human placenta</td>
<td>LH like activity</td>
</tr>
<tr>
<td>eCG (equine)</td>
<td>Equine placenta</td>
<td>Predominant FSH like function</td>
</tr>
<tr>
<td>Placental lactogen</td>
<td>Placenta</td>
<td>Mammary development, fetal growth and metabolism</td>
</tr>
<tr>
<td>Progestogens</td>
<td>CL &amp; placenta</td>
<td>Establishment and maintenance of pregnancy</td>
</tr>
<tr>
<td>Estrogen</td>
<td>Follicle &amp; placenta</td>
<td>Female sex development, growth of genitalia, mammary gland dev., LH &amp; FSH secretion</td>
</tr>
<tr>
<td>Androgen</td>
<td>Testes</td>
<td>Male behavior, development and spermatogenesis</td>
</tr>
</tbody>
</table>
## Characteristics of gonadotrophic hormones

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Molecular weight (dalton)</th>
<th>Carbohydrate (%)</th>
<th>Sialic acid (%)</th>
<th>Half life</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH</td>
<td>28 – 34,000</td>
<td>12 - 24</td>
<td>1-2</td>
<td>&lt;30min</td>
</tr>
<tr>
<td>FSH</td>
<td>32 – 37,000</td>
<td>25</td>
<td>5</td>
<td>2h</td>
</tr>
<tr>
<td>hCG</td>
<td>38,000</td>
<td>32</td>
<td>8.5</td>
<td>11h</td>
</tr>
<tr>
<td>eCG</td>
<td>68,000</td>
<td>48</td>
<td>10.4</td>
<td>26h</td>
</tr>
</tbody>
</table>
Principle and goal of treatment

• Understand normal function of the product including side effect

• Purpose of use:
  - Therapeutic
  - Managemental
  - diagnostic

• Choice is based on:
  - Stage of cycle
  - Age
  - Cost

• Choice of product should be based on
  - Stability
  - Potency
  - Ease of administration
  - Duration of effect
  - Withdrawal time from meat and milk
  - Known side effect
Determination of dose:

- By personal trial
- Published data including manufacturer instruction
- Empirical calculation based on body weight
- Volume of distribution
- Half life of the material
- By graded dose and monitoring the response in blood

Physiological Vs Pharmacological response
Relationship between dose, conc., & response to hormonal therapy

- Desired dose
- Administered dose
- Plasma & tissue Conc.
- Treatment response

Medication error:
- Product degradation
- Owner compliance
- Administration errors

Factors affecting:
- Rate & extent of absorption
- Body size and composition
- Distribution in body fluid
- Binding in plasma and tissues
- Rate of elimination

- Physiological variables
- Pathological factors
- Hormone interactions
- Development of tolerance

- Hormone-receptor interaction
- Functional state of animals
- Side effects
<table>
<thead>
<tr>
<th>Hormon</th>
<th>Comercial product</th>
<th>Indication</th>
<th>Dose and Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>GnRH</td>
<td>Gonadorelin (Fertagyl®, Intervet)</td>
<td>In cow: Follicular cyst, delayed ovulation or anovulation; acyclicity, improved chance of pregnancy</td>
<td>Gonadorelin: 0.5mg i/m, s/c or i/v, Buserelin: 10 – 20g preferably i/m</td>
</tr>
<tr>
<td></td>
<td>Buserelin (Analogue, Receptal®, Hoechst)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSH and LH</td>
<td>pFSH</td>
<td>Super ovulation in female</td>
<td>Cows: i/m 5–6 mg twice daily</td>
</tr>
<tr>
<td>eCG</td>
<td>Folligon®, Intervet</td>
<td>Cattle:  • Super ovulation  • Impaired spermatogenesis  Sheep &amp; goat: Combination with P4 to advance breeding season  Pig: Combination with hCG to stimulate cyclicity onset  Dog: To induce estrus during physiological anestrus</td>
<td>Route: i/m or s/c, Cattle: 1500–3000IU, Sheep &amp; goat: 500–800IU, Pig: 1000 IU, Dog: 50 – 200 IU</td>
</tr>
</tbody>
</table>
### Hormone products, indication and administration

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Comercial product</th>
<th>Indication</th>
<th>Dose and Route</th>
</tr>
</thead>
</table>
| hCG | Chorionic Gonadotrophin (Univet) Chorulon ® (Intervet) (Cystovet ®, Leo laboratory) | **Cow:** Follicular cyst, delayed ovulation or an ovulation, acyclicity, improved chance of pregnancy  
**Horse:** Induce ovulation  
**Pig:** Hasten onset of cyclicity after furrowing  
**Sheep & Goat:** Cyst  
**Dog:** Curtail E2 phase, cyst  
**Cat:** Induce ovulation | Route: i/m or i/v  
**Cattle:** 1500–3000IU  
**Horse:** 1500–3000IU  
**Pig:** 500–1000IU  
**Sheep & goat:** 100–500 IU  
**Dog:** 100–500 IU  
**Cat:** 100–200 IU |
| Oxytocin | Oxytocin®, Intervet, Leo laboratory | Milk let down, uterine prolapse, expulsion of retained placenta, uterine involution, uterine trauma, hemorrhage, caesarian operation | Route: i/m or i/v  
**Cattle:** 10IU  
**Horse:** 10IU  
**Pig:** 5IU  
**Sheep & goat:** 2–5IU  
**Dog & cat:** 1–5IU |
## Gonadotrophin combination with other hormones

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Comercial product</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>hCG+P4</td>
<td>Nymfalon®, Intervet</td>
<td>In cow: Follicular cyst, delayed ovulation or anovulation; acyclicity, improved chance of pregnancy</td>
</tr>
<tr>
<td>hCG+E2 benz hCG+E2+Vit E</td>
<td>Ovocept®, Leo laboratory Gonafollin® Berk</td>
<td>Anestrus, silent heat in cow and sow</td>
</tr>
<tr>
<td>eCG+hCG</td>
<td>PG 600, Intervet</td>
<td>Induction of estrous in sow and gilt Can be used for overcoming postpartum anestrus</td>
</tr>
<tr>
<td>Hormone</td>
<td>Commercial product</td>
<td>Indication</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Oestrogens</td>
<td>Estradiol Benzoate Intervet 5mg/ml oily solution</td>
<td>Horse: Ripening cervix before induced foaling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cattle: Endometritis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dog: Treatment of misalliance within 4 days of matting</td>
</tr>
<tr>
<td>Progestogens (Natural)</td>
<td>PRID, 2.5g progesterone +10mg capsule of estradiol ester (Ceva Ltd, Watford)</td>
<td>Synchronization of estrous, treatment of non-observed estrus</td>
</tr>
<tr>
<td></td>
<td>Oily preparation (Intervet)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hormone</td>
<td>Comercial product</td>
<td>Indication</td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Progestogens (Synthetic)</td>
<td>Allayl trenbolone (Regumate Equine®, Hoechst) 2.2mg/ml</td>
<td>Horse: Suppress cyclicity</td>
</tr>
<tr>
<td></td>
<td>Altrenogest (Regumate procine, Hoechst)</td>
<td>Cattle: Endometritis</td>
</tr>
<tr>
<td></td>
<td>Fluorogestone acetate (Chronogest®, Intervet)</td>
<td>Dog: Treatment of misalliance within 4 days of matting</td>
</tr>
<tr>
<td></td>
<td>Medoxyprogesterone acetate (Vermix®, Upjohn)</td>
<td>Synchronization of estrous</td>
</tr>
<tr>
<td></td>
<td>Medoxyprogesterone acetate (Perlutex®, Leo laboratories)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medoxyprogesterone acetate (Perlutex®, Leo laboratories)</td>
<td></td>
</tr>
<tr>
<td>Intra vaginal sponge</td>
<td>Fluorogestone acetate (Chronogest®, Intervet)</td>
<td>Synchronization of estrous</td>
</tr>
<tr>
<td>Tablet</td>
<td>Medoxyprogesterone acetate (Perlutex®, Leo laboratories)</td>
<td>Postponment of estrous in bitches</td>
</tr>
<tr>
<td>Injection</td>
<td>Medoxyprogesterone acetate (Perlutex®, Leo laboratories)</td>
<td>Postponment of estrous in bitches</td>
</tr>
<tr>
<td>Hormone</td>
<td>Commercial product</td>
<td>Indication</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Progestogens (Synthetic)</td>
<td>Proligestone (Covinan®, Intervet)</td>
<td>Postponement of estrous in bitches</td>
</tr>
<tr>
<td>Testosterone</td>
<td>Methyltestosterone, tablet, implant, injection (Oranddrone®, Intervet)</td>
<td>Controlling male libido</td>
</tr>
<tr>
<td>Prostaglandin F2α (cattle, horse, sheep, goat, pig, dog)</td>
<td>• Dinoprost (Lutalyse®Upjohn) • Cloprostenol (Estrumet® &amp; Planter®) • Fenprostalene (SynchroceptB®) • Luprosteol (Prosolvin® Intervet) • Tiaprost (Ilerin®, Hoechst)</td>
<td>• Synchronization of estrus • Induction of calving/abortion • Treatment of - Pyometra - Endometritis - Luteal cyst</td>
</tr>
</tbody>
</table>
Hormone residue in food producing animals

- Steroids (Diethyl-stilbesterol)
- Observe the withdrawal time (read the instruction)

Depends on
- the route of administration
- product formulation
- species
- sex
- age
- body condition and
- physiological status

Follow the principal of minimum side effect
Approach to treatment of infected genitalia
Indications

Therapeutic:
• Pyometra
• Endometritis of different degrees
• Postpartum metritis

Prophylactic:
• Dystocia
• Retained placenta
• Repeat breeding
• Pneumovagina
• Unsanitary breeding practice
• Excessive breeding or manipulation of genitalia
• Insertion of unsanitary equipments
Antimicrobial therapy

Antibiotic

• Most used and misused drug
• One should use with caution

• Inappropriate use of drug may result in
  - A delay in diagnosis
  - Ineffective therapy lead to life threat
  - Produce toxicity
  - Prolong disease state
  - Development of disorder

• Rational is to choose proper drug through a particular regimen

Non antibiotics alternatives
Route of administration

Local intrauterine

- Offer high conc. adjacent to endometrium
- Infection may involve myometrium, cervix and oviduct
- Intra uterine infusion may alter cycle length

Systemic

- Some antibiotic conc. are great in genitalia after administration
- Preferred route for Small animals

Combine both for better efficacy
Efficacy of treatment

- Failure either due to inappropriate dosage/drug selection
- Inappropriate use of drug may result in
  - A delay in diagnosis
  - Lack of effective therapy lead to life threat
  - Production of toxicity
  - Prolongation of disease state
  - Development of disorder

- Rational approach is choose proper drug through a particular regimen

Drug incompatibility:
Death of cattle reported with antibiotic in ethylene glycol vehicle administered i/v.
Dos and don’ts

• Be alert if initial treatment fails

• Send samples for culture and antibiotic sensitivity assay: determination of minimum inhibitory conc

• Prepare slide for gram staining and examine microscopically

• Evaluate clinically to all the affected cases if it is in farm

Prevention is better than cure

• Improve sanitary condition and management practices

• Mild infection will be resolved automatically, therapy may not offer any benefit

• Severely affected animals show some problem in conception whether or not treated
Non antibiotic alternative therapies

Major issues related to antibiotic therapy in food producing animals

• Inconsistent and variable results
• Selection of an ideal drug is time consuming
• Residual effect and with held time of meat and milk
• Risk of bacterial resistance due to inappropriate drug/dose selection
• Undesirable effect on natural defense
Early post partum period

Drugs capable of stimulating uterine contractions and or the defense mechanism

• Oxytocin:
  Dose
  i) 20 IU i/m immediately following calving or 5-10IU i/m 2-3 times a day for 2-3 days
  ii) 60 – 100IU as i/v drip over 6 – 10 h

• Prostaglandin: Effect is mediated through CL therefore (?)

• Ergonovine: Dose: 2- 5mg i/m but no consistent result

• Estrogen: Increase natural defense in the endometrium
  Dose: 3 -10mg estradiol benzoiate/valerate/cyprionate i/m repeat twice at 3 days interval

• GnRH: Initiate early resumption of cyclicity
  Dose: 20 – 100 µg GnRH analogue 10 - 14 days postpartum improves the conception rate

Intrauterine infusion of disinfectant is not recommended
Non antibiotic treatment of endometritis in cycling animals

• Prostaglandin: Two injection 10 – 14 days interval

• Intrauterine infusion of iodine:

  **Dose:** 2 – 4 % diluted lugol’s solution (2 – 4 ml in 100 ml saline)
  **Volume:** 25 – 50 ml works well

  - Early stage of cycle: does not affect cycle length
  - 4-5days of cycle: alter cycle length
Thanks for patient hearing.