International Seminar
A Role of The Veterinarian on The Global Health Challenges

Tuesday-Wednesday, September 18-19th 2012
University Club Hotel UGM
Yogyakarta

International Seminar is Collaborated among
Faculty of Veterinary Medicine
Universitas Gadjah Mada
Institut Pertanian Bogor
and
Universitas Airlangga
PROCEEDING

International Seminar
A Role of The Veterinarian on The Global Health Challenges

Tuesday-Wednesday, September 18-19th 2012
University Club Hotel UGM
Yogyakarta

International Seminar is Collaborated among
Faculty of Veterinary Medicine
Universitas Gadjah Mada
Institut Pertanian Bogor
and
Universitas Airlangga
# TABLE OF CONTENTS

Welcome Speech Chief of Organizing Committee International Seminar on:  
A Role of Veterinarian on The global Health Challenges ............................................. v

Welcome speech from Prof. Dr. Suratman, M.Sc.  
*Vice Rector* for Research and Community Services, UGM ....................................... vii

Welcome Speech of Dean of Veterinary Medicine Faculty Universitas Gadjah Mada ............ ix

Welcome Speech of Dean of Veterinary Medicine Faculty  
Bogor Agricultural University (IPB) ................................................................................. xi

Welcome Speech of Dean of Veterinary Medicine Faculty Airlangga University ............... xii

The Schedule International Seminar a Role of Veterinarian on The Global Health Challenges .... xiii

Table of Contents ............................................................................................................. xxi

## Parallel Class A.1.

<table>
<thead>
<tr>
<th>OP. A.1.1.</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>drh. Agung Budiyanto, M.P., Ph.D.</td>
<td></td>
</tr>
</tbody>
</table>
_The Effect of Breed and Body Score Condition on the Quality and Viability of Epididymal Bovine Sperm from Post Mortem Bull by In Vitro Collection Method._ |

<table>
<thead>
<tr>
<th>OP. A.1.2.</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>drh. Erif Maha Nugrah, M.Sc.</td>
<td></td>
</tr>
</tbody>
</table>
_Reproductive Performance of Cross Breed Cattle in “Handini Mukti” Farmers Group, Sleman Regency._ |

<table>
<thead>
<tr>
<th>OP. A.1.3.</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>drh. Teguh Budi Pitojo, M.P., PhD.</td>
<td></td>
</tr>
</tbody>
</table>
_An Immunohistochemical Study of The Cytoskeletal Proteins in The Immature Testis of Java Porcupine (Hystrix javanica)._ |

<table>
<thead>
<tr>
<th>OP. A.1.4.</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ir. Rosidi, M.P.</td>
<td></td>
</tr>
</tbody>
</table>
_Sperm Quality of Local Duck with Use Cow Reticulum in Feed._ |

<table>
<thead>
<tr>
<th>OP. A.1.5.</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>drh. Sri Gustari, M.P.</td>
<td></td>
</tr>
</tbody>
</table>
_The Estrous Performance Of Crossbreeding Cow In Nanggulan Sub-District, Kulonprogo District._ |

## Parallel Class B.1.

<table>
<thead>
<tr>
<th>OP. B.1.1.</th>
<th>22</th>
</tr>
</thead>
</table>
_Detection of Toxoplasma gondii Parasitemia in Animals by Nonradioactive Hybridization and Gene Amplification._
OP. B.1.2. Prof. drh. Hastari Wuryastuti, M.Sc., Ph.D. The Effectiveness of Oral Administered-Iodine Fortification of Red Fruit Extract (Pandanus conoideus Lam) for Correcting Iodine Deficiency Disorders in Sprague Dawley Rats.

OP. B.1.3. drh. Muchammad Yunus, M.Si., Ph.D. Isolation of Total RNA of Sporozoite Membrane Protein of E. tenella as Principle of Fragment Gene Amplification in PCR Technique.

OP. B.1.4. Dr. drh. Siti Rahmah Umniyati, S.U. Efficacy Of Herbal Medicine Composed Of Curcuma Heyneana Val Et Van Zijp, And Piper Cubeba L As Antiviral Against Dengue Virus In Vivo

OP. B.1.5. Dr. drh. S. Indarjulianto Diagnosis Of Microsporum Canis Infection By Two Uv-Light Tools In Dog

Parallel Class C.1.

OP. C.1.1. Muhibullah Campylobacteriosis and Risk Factors on Broiler Carcasses at the Poultry Slaughterhousesn of South Tangerang City.


OP. C.1.3. drh. Estu Widodo Cross-sectional Study Cattle leptospirosis In Pengasih District of Kulon Progo Regency.

OP. C.1.4. dr. Farida Damanik Risk Factors of House Environment, Smoking Behaviour and Alcohol Consumption in the Incidence of Pulmonary Tuberculosis in Banjarmasin City, Kalimantan, Indonesia

OP. C.1.5. dr. Dina Merisa Damanik Sanitation of House and School, Personal Hygiene and Infection of Soil Transmitted Helminths (sth) in The Elementary School Students of Palue Island, East Nusa Tenggara Province of Indonesia.

Parallel Class A. 2.

OP. A.2.1 Dr. drh. Irkham Widiyono Metabolic Adaptation During Feed Restriction In Male Ettawa Crossbred Goats.

OP. A.2.2 drh. Herry Agoes Hermadi, M.Si.
Bioactivity of Human Menopause Gonadotrophin (HMG) and HMGDeglycosylated (HMGDG) of Postmenopausal Woman Urine in In Vitro Bovine Embryo Cleavage.

**OP. A.2.3.**

*Some Serum Enzyme Activity in Ettawa Crossbreed Goats.*

**OP. A.2.4.**

*Dr. drh. Trini Susmiati, M.P.*

*Response Of Different Macrophage Cell To Oxidation Level Low Density Lipoprotein (LDL)*

**OP.A.2.5**

*drh. Sri Handayani Irianingsih, M.Biotech.*

*Sequence Analysis of Neuraminidase Gene Which Encodes Sensitivity to Antiviral Oseltamivir in Avian Influenza Virus A Subtype H5N1*

**Parallel Class B. 2.**

**OP. B.2.1.**

*Prof. drh. Kurniasih, M.VS., PhD.*

*Detection of Antibiotic Residu in the Fish Muscle of Oreochromisniloticus.*

**OP. B.2.2.**

*drh. FikaYuliza Purba*

*Mycotic Mastitis in Dairy Cows in Pakem Sub-district, Sleman District of Yogyakarta.*

**OP. B.2.3.**

*drh. Rian Hari Suharto*

*Surface Character of Staphylococcus aureus from Ettawah Crossbreed Goat’s Milk associated with Phagocytosis Capacity.*

**OP.B.2.4.**

*Prof. Dr. drh. Siti Isrina O.S.*

*Detection Of Muramidase Released Protein Of Streptococcus SuisInfection In Pigs In Papua*

**OP. B.2.5.**

*drh. Aris Purwantoro, M.Si.*

*Temperature fluctuation effects on biogas production Of livestock manure co-digested withmunicipal Solid organic waste*

**OP. B.2.6**

*√ drh. Ely Susanti*

*Study Of Brucellosis Impacts And Risk Factors On Dairy Cows’ Calving Interval In Borders Of Klaten – Boyolali District I*

**Parallel Class C. 2.**

**OP. C.2.1.**

*drh. BoediSetiawan, M.P.*

*Surgical Removal Of A Foreign Body From Dog Stomach: Case Report.*

**OP. C.2.2.**

*drh. Yudha Heru F., M.P., PhD.*

*Effect of Advanced Kidney Cell-derived Protein Extract (AKCPE) on Treatment of Chronic Renal Failure in Dog and Cat.*

xxiii
OP. C.2.3.  ................................................................. 101
Dr. drh. Agustina Dwi W., M.P.
The Comparison of Doxycycline Level Given by Feed and Drinking Water on Broiler Plasma and Brain.

OP.C.2.4.  ................................................................. 106
Dr. drh. Dhirgo Adjie, M.P.
The Evaluation Of Enterectomy Surgery Using Total Leucocyte, C-Reactive Protein And Fibrinogen Concentrations

OP.C.2.5  ................................................................. 111
Drh. Slamet Raharjo, M.P.
Study Of Cyclooxygenase (Cox)-2 On The Sheep Skin Incision Wound Healing Treated With Mashed Binahong Leaves (Anredera Cordifolia (Ten) Steenis)

OP.C.2.6  ................................................................. 112
drh. Iis Irawati
A Case-Control Study Of Protective Antibody Titre Post Rabies Vaccination Of Dog In West Sumatera
IMPACT OF BRUCELLOSIS AND OTHER FACTORS TO THE CALVING INTERVAL OF DAIRY COWS IN BORDER AREA OF KLATEN AND BOYOLALI

Ely Susanti, Widagdo Sri Nugroho, Agung Budiyanto

1Postgraduate student of Veterinary Science Faculty of Veterinary Medicine Gadjah Mada University, Staff of Department of Agriculture in Klaten District,
2Veterinary Public Health Department, Faculty of Veterinary Medicine, Gadjah Mada University,
3Obstetric and gynecology Department, Faculty of Veterinary Medicine, Gadjah Mada University,
4drh.elysusanti@gmail.com

ABSTRACT

Brucellosis is an endemic disease in Indonesia, which has been influence to the reproduction performing of cows. Border area of Klaten-Boyolali has a high risk of infecting brucellosis due to high cattle traffic in both districts. This study aims to investigate the effect of brucellosis and other risk factors to calving intervals on dairy cows in Klaten.

This cross-sectional study involved three hundred and fifty three dairy cows from one hundred and forty six farmers. Brucellosis was diagnosed using RBT and CFT. Calving interval datas were collected base on farmers’ recording, the risk factors were obtained by questionnaires include: general information, typology of the farmers, the type of cows, the number of cows, farming management, the farmers’ knowledge, and the cow’s individual data.

Eleven of three hundred and fifty three dairy cows (3.1%) suffered brucellosis, but it did not impact to the calving interval performance. Some factors that prolonged the calving interval, those factors were: cows’ first postpartum estrus, metritis history; abortion in the third trimester of pregnancy, the cows are from Jatinom Market. On the other hand, not having brucella vaccine reduces the dairy cows’ calving interval length.

Keywords: brucellosis, dairy cows, calving interval, risk factors, Klaten

INTRODUCTION

According to Director General of Animal Husbandry Regulation No. 59 / 2007, brucellosis is one of twelve strategic contagious animal diseases. Brucellosis is also one of the most important zoonotic diseases in the world. Brucellosis causes a decrease in milk production, abortion, weak newly born calves, weight loss, infertility and disability. Brucellosis is also a major inhibiting factor in the livestock trade. Therefore, it is also a disease with considerable economic impact (Bernues et al. 1996 and Rompis, 2002).

In cattle, brucellosis mainly infects cows. Bulls can also be infected but they do not directly spread the disease. Brucellosis in cattle is caused by the Brucella abortus bacterium which causes abortion in the last trimester and infertility. Brucellosis is an endemic disease in Indonesia, it spreads in almost all provinces.

Dense area of dairy cows in Klaten District has a high risk of having brucellosis, because it borders on the district of Sleman and Boyolali District, which are believed to have a high incidence of brucellosis. There is no official information on the prevalence of brucellosis in Boyolali and Sleman district until now. Kemalang, Karangnongko, Jatinom, and Tulung Sub District have a high traffic for dairy cows and dairy cow trade into Boyolali Livestock Market. It is one of the largest livestock markets in Central Java. As a result, the possibility of getting the animals infected by the disease is quite high. This study aims to investigate the effect of brucellosis and other risk factors to the calving intervals of dairy cows at Klaten District area, which has a high risk to be infected by the disease.
RESEARCH METHODOLOGY

2.1 Research Sites
The study was conducted at Klaten District, the area which has a high risk to be infected by brucellosis, has a high population of dairy cows, and borders on Boyolali District. The sites are Kemalang, Karangnungko, Jatinom, and Tulung Sub District.

2.2 Data Collection
A semi-structured questionnaire is used to collect information which was relevant to the investigation of the epidemiology, such as typology of farmers, farming experience, type of cattle, farming management system, cattle density, and data covering cattle's origin, age, vaccination status, gender, and reproductive performance. Before the study, the questionnaires are delivered to some respondents to test their validity and reliability.

2.3 Study Design
Cross-sectional epidemiological studies are used to investigate the effects of brucellosis and its risk factors to the calving interval. To calculate the sample size, the formulas of Martin et al., 1988, is used, n = 4PQ/L2. Ninety five per cent confidence level and five per cent error are desired. The temporary prevalence used was the prevalence of Laboratory Type B survey results in Surakarta, Central Java Province, which is 2.617%. Total sample are two hundred and eighty six cows. Assuming that each farmer has two cows, the sample consists of one hundred and forty three farmers.

2.4 Sampling Method
The sampling method used is a dual stage, simple random, proportional, and clusters. Blood specimens are collected from all cows owned by elected farmers. In this study the amount of blood specimens are obtained from three hundred and fifty three dairy cows from one hundred and forty six farmers. Serum screening for brucellosis are tested by using RBT, RBT positive serum and further by CFT.

2.6 Research Variables
The variable in this study are the calving interval as the dependent variable (X), and the factors that are assumed to have a relationship with the incidence of brucellosis as an independent variable (Y).

Screening test consisting RBT and the CFT confirmation test are used in this study. Any samples that showed positive results in RBT will be followed by CFT as a confirmation test. Both tests are conducted in Disease Investigation Centre (BBV) Wates.

2.8 Data Analysis
Data collected from the questionnaires and laboratory tests are processed by multivariate analysis using software Statistix for Windows Version 7. Linear regression models are used to determine the effect of brucellosis and other factors on calving interval.

RESULTS

The results of factor analysis calving intervals without intervention of variables.

Table 1. Linear regression analysis of calving interval

<table>
<thead>
<tr>
<th>UNWEIGHTED LEAST SQUARES LINEAR REGRESSION OF CALVINTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREDICTOR VARIABLES</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>CONSTANT</td>
</tr>
<tr>
<td>ESTRUSI</td>
</tr>
<tr>
<td>METRITIS</td>
</tr>
<tr>
<td>SC</td>
</tr>
<tr>
<td>SEMBLNKBUL</td>
</tr>
<tr>
<td>TINOM</td>
</tr>
<tr>
<td>VAKSINBRU</td>
</tr>
</tbody>
</table>

The analysis shows the value of Adjusted R-squared (Adj. R ²) is 0.4967. Constant confidence level is 0.000 and the test results with the Wilk-Shapiro Approximate is 0.9016 (Figure 1). After that CFT variable is forced. The result is the level of confidence for CFT variable is 0.645 and its Adj. R ² is 0.4949. Moreover, its test results with the Wilk-Shapiro Approximate amount is 0.9006, with the image of regression residual plot in fanning shaped and left-leaning histogram.
To obtain a better model, a transformation is carried out on the dependent variable by using the inverse transformation, BCALVIN = 1 / (CALVINTER). Transformed dependent variable model appear better than the model before the transformation. Adjusted R-squared value (Adj.R ^ 2) becomes 0.5149. Constant confidence level is 0.000 and the test result with the Wilk-Shapiro Approximate is 0.9690. In this equation the function used is the *inversed transformation*, BCALVIN = 1 / (CALVINTER). The result of the transformation model is better than the one before the transformation but it cannot be applied in the field.

As a consequence the model applied in the field is the model before the transformation. The equation model obtained for the calving interval is based on linear regression analysis before transformation, which is:

\[ \text{CALVINTER} = 12.5617 + 0.79597 \times ESTRUSI + 1.89004 \times METRITIS + 0.92946 \times SC + 2.01464 \times SEMBLNBL + 3.02256 \times TINOM - 71876 \times VAKSINBRU \]

![Wilk-Shapiro Test](image)

**Picture 1. Approximate Wilk-Shapiro calving interval**

**DISCUSSION**

The first postpartum estrus (ESTRUSI) is positive on calving interval (+ 0.79597). The late appearance of first postpartum estrus will add the value of the cows’ calving interval - the later the first estrus, the longer the calving interval. This is in accordance with the reproductive cycle – the period needed for the estrus is proportional to the period needed for the calving interval. The length of the calving interval is the accumulation of the period needed for the emergence of the first estus until the breeding and the period of the pregnancy (Bath, 1985 and Parkinson's disease and Barrett, 2010). In addition, Lobago (2007) explains that the calving interval has two components, the calving-to-conception interval and period of pregnancy. Calving-to-conception interval is related to the return of the cow’s estrous cycle and the accuracy in the estrus detection.

Reproductive health has a positive relationship to calving interval. Cows suffering from metritis will increase their calving interval for 1.89004 months. Cows suffering from metritis will take time for recovery. As a result, the calving interval of the cows suffering for metritis will be longer than the ones which do not suffer for metritis. Some previous studies describe that metritis can reduce pregnancy rate up to 30%, while the clinical endometritis can lower pregnancy rate of 27%, and subclinical endometritis can reduce pregnancy rate up to 51% (LeBlanc, 2005). While suffering metritis, the uterus does not support the development of the embryo properly. As a consequence, the embryo will die in a short period of time after the conception. A small number of abortion caused by metritis happen at 2-4 month pregnancy. Although metritis can be cured, the cow’s fertility cannot be as normal as it was before suffering for metritis. Moreover, its mean for SC will be higher than before which may cause abortion, salpingitis or even sterile (Parkinson, 2010). In addition, metritis causes irregular estrous cycles (Bath, 1985). Therefore, the cows which suffer for metritis have longer reproductive cycle than those which never suffer for metritis.
Preconception service has positive value in 0.92946 for calving interval. Cows that have 1 value of SC will add calving interval period of 0.92946 x 1 month. The bigger the value of SC a cow has, the longer period of calving interval it has. To achieve the ideal calving interval (12 months), the SC must also be ideal, which is once. In the reproductive performance of dairy cows, preconception service will always be proportional to the calving interval (Parkinson and Barrett, 2010). The period between the last time the cow gives birth up to a successful breeding resulting in pregnancy depends on the success of the breeding. Lobago (2007) explains that inefficiency of estrus detection is one of the factors that lead to the longer calving intervals. The accuracy of estrus detection and insemination time determine the success of conception (Stevenson, 2001 and LeBlanc, 2005).

Incidence of abortion in the third trimester of gestation (SEMBLNBUL) associates positively to calving interval. The cows having abortion in the third trimester have their calving interval increase by 2.01464. Abortion in the third trimester of pregnancy means increasing the length of the calving interval of at least six or seven months. If the cows have given birth three times or more, each calving interval will increase up to one or two months. Another possibility is that the length of calving interval is an indirect effect of the factors that cause abortion. Some factors that cause abortion are trauma, nutrition or infection, which may lead to the disruption of reproductive functions (Parkinson, 2010). Abortion can initiate the metritis, placenta retention, and temporary infertility in cows, which increase the length of calving interval (Mangen et al., 2002, Asmare et al., 2010, and Megersa et al., 2011).

The cows from animal market Jatinom (TINOM) have a positive influence on calving interval. Every cow that comes from the animal market Jatinom has increasing calving interval to 3.02256 months. Jatinom market is a major destination market for the trading of beef cattle, only a small amount of dairy cattle are traded there. The dairy cows from Jatinom Market are the result of cross breeding with beef cattle, so there can be an alternation of the cows’ reproductive function compare to the one with the pure line. Praharani et al. (2010) explains that the reproductive performance of Friesian Holstein cows from cross breeding with Ongole are lower than the Friesian Holstein cows - in this case the parameters used are the pregnancy percentage and the period of postpartum estrus. Cow breeding is associated with reproductive performance especially on conception rate, conception rate differences will cause differences in pregnancy rate and calving interval (Dillon et al., 2003).

The status of vaccination against brucellosis (VAKSINBRU) has a negative effect on calving interval. Cows which are not vaccinated by brucellosis vaccine will have reducing calving interval of 2.7 months. In contrast, if the cows are vaccinated, the calving interval will increase. In conclusion, it is better to not having the cows vaccinated so that they have longer calving interval. Brucellosis vaccination was done six months ago, at the time of interview, by S-19 type of vaccine. The vaccinated cows were not pregnant. S-19 vaccines were given to mature cow to gain immunity against brucellosis. The effect of S-19 vaccination is the persistent antibodies in the cattle (Lopez, et al., 2010). The data obtained indicate that all the vaccines used in the study area is the S-19 brucellosis vaccine and only thirteen cattle that have been vaccinated are included in the study. Every cattle vaccinated with the S-19 will have a positive reaction to the RBT (Samartino et al. 2000). Table 18. shows that there are six cows that have been vaccinated but do not lead to brucellosis positive RBT. The effect of S-19 vaccination occurs on the pregnant female, which may cause abortion (Monreal et al., 2003).

Six variables in the model of linear regression analysis are first estrus postpartum, metritis, SC, abortion in the third trimester of pregnancy age, the cattle's origin (from Jatinom Market) and brucellosis vaccination status. These variables must be considered in order to increase livestock productivity by minimizing calving interval. The results of linear regression analysis also showed that
there is no effect of brucellosis on calving intervals of dairy cows.

CONCLUSION

There is no effect of brucellosis on calving interval. Calving interval of dairy cows in the study are affected by the first postpartum estrus, metritis, SC, abortion in the third trimester of pregnancy, the cattle’s origin (from Jatinom Market) and brucellosis vaccination status.

REFERENCES


18) Quinn, et al., 2007 *Veterinary Microbiology and Mricrobial disease*. Blackwell Science Ltd.

