



## SOP 4.01 Teaching artificial insemination and pregnancy diagnosis in cattle

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### Purpose

- (1) The objective of this standard operating procedure is to provide guidance to the Charles Sturt University staff on: Teaching artificial insemination (AI) and pregnancy diagnosis (PD) in cattle; or research involving AI and PD.

### Scope

- (2) This procedure applies to any person who is involved in AEC approved projects involving the teaching of, or research involving, artificial insemination and pregnancy diagnosis/testing of cattle.
- (3) All researchers and teaching staff using animals for scientific purposes must be competent. For definition of competency refer to Charles Sturt University's Policy on 'Animal Care Competency Training and Assessment'

### Details of procedure

#### Artificial insemination Schools

- (4) Alternatives such as lectures, videos and 'palpation aids' should be used as teaching aids prior to students attending the AI/PD school.
- (5) There should be at least one instructor per fifteen students.
- (6) Cows must be individually identified by ear tag or freeze brand prior to use in a school.
- (7) They should be pregnancy tested prior to the commencement of instruction; only non-pregnant cows should be used.
- (8) Only mature cows with current Leptospirosis vaccination may be used. Animals under 15 months of age or undersized animals should not be used.
- (9) Only cows of quiet temperament should be used for instruction. They must be restrained to prevent lateral or forward movement, preferably in a head bail with a vet gate.
- (10) The student is attired with protective clothing- overalls and boots- and has a rectal sleeve on one arm and preferably an examination glove on the other hand.
- (11) If the Enzootic Bovine Leucosis (EBL) or Pestivirus status of the cattle in use has not been established or is positive, a new glove should be used with each cow to avoid the possible transmission of diseases per rectum. Equipment should be disinfected, or a new sleeve used for each cow.
- (12) Only recommended test guns (insemination pipettes) or insemination guns with sleeves should be used.
- (13) Cows showing abnormal vulval or vaginal discharge (other than oestrus discharge) should not be used. The oestrous status of cows used for instruction should not be important. Easier penetration of the cervix in oestrus cows is very transient and would not justify the use of oestrus synchronisation. The disadvantage of the use of oestrus cows is that oestrus synchronisation will be required prior to the course, with associated extra yarding and



handling. Oestrus cows will show mounting behaviour in confined areas, causing additional stress.

- (14) The cows should be restrained in a crush/shute;
- (15) The students should have a prepared AI pipette with sheath ready for use in the cow; the student introduces one arm *per rectum* and locates the cervix.
- (16) The vulva is wiped with a paper towel.
- (17) The insemination pipette is introduced in an upwards and forwards motion with the non-palpating hand until the tip is detected near the cervix.
- (18) The pipette is manipulated through the cervix, and the tip detected in the uterine body or horn; The 'semen' is introduced into the uterus.
- (19) The pipette and arm are removed from the cow.

### Drugs, chemicals, or biological agents

- (20) As a general practice, no drugs are required.
- (21) Obstetrical lubricant or similar product should be used to provide lubrication.

### Impact of procedure on wellbeing of animals

- (22) Repeated and/or inexperienced practice of the procedure may result in severe straining, ballooning of the rectum, bleeding or thickening of the rectum. Thickening is less likely to occur in animals accustomed to rectal palpation. (To reduce the impact of the procedure (*viz.* the possibility of trainees abrading the rectal mucosa of the cows being used), the trainees should be asked to have fingernails cut short, jewellery removed and to wear gloves with seams inside-out so that the seams are on the inside.)

### Animal care

- (23) During the school: Cows showing any sign of distress during a school must be removed from the school. Any cow showing reproductive tract bleeding or more than slight rectal bleeding, should be withdrawn immediately and not used until veterinary clearance has been given. Use of cows must be discontinued for a week if they show frank blood, severe straining or ballooning of rectum.
- (24) After the school: Cows should be checked twice daily for the first day after a school and once daily for a further 5 days. Records must be kept for individual cows of the incidence of discharge, other abnormal event or behaviour, or any treatment administered. A necropsy must be performed on any cow that dies unexpectedly following a school and the supervising AEC informed of the results as soon as practicable.

### Pain relief

- (25) Normally, none required.



## Reuse and repeated use

- (26) There should be a maximum of two (2) inseminations per cow if used in the first 'hands-on' session. Cows used in subsequent sessions may have a maximum of four (4) inseminations.
- (27) Alternatives such as lectures, videos and 'palpation aids' should be used as teaching aids prior to students attending the AI/PD school.
- (28) Appropriate marking or documentation (using a proprietary stock marker, or other appropriate recording system) should be applied to each animal before insemination to identify each insemination.
- (29) Cows may be used in one session per day and may be used on a second day after an overnight rest. They may be used for a maximum on 2 days in any one 14-day period. Reuse should only occur after assessment of the cow by a veterinarian or a qualified instructor.
- (30) If not used two days in a row, they can be used once weekly. Cows not showing rectal thickening may be used weekly if used once per week, or if for two days, fortnightly intervals unless removed for some other reason. The greatest risk to the cows is from mucosal abrasion of the rectum due to the number of 'arms' entering the rectum and examining the pelvic contents. In view of the rapid regeneration of rectal mucosa (Holyhead et al, 1983) this time should allow for sufficient mucosal regeneration and healing to occur if necessary.
- (31) Cows not showing rectal thickening may be used once weekly or two days every fortnight, unless removed for some other reason. Cows which show evidence of thickening of the rectal wall should be withdrawn immediately and not used for a period of one month, after which reuse should only occur after assessment of the cow by the veterinarian or a qualified instructor.

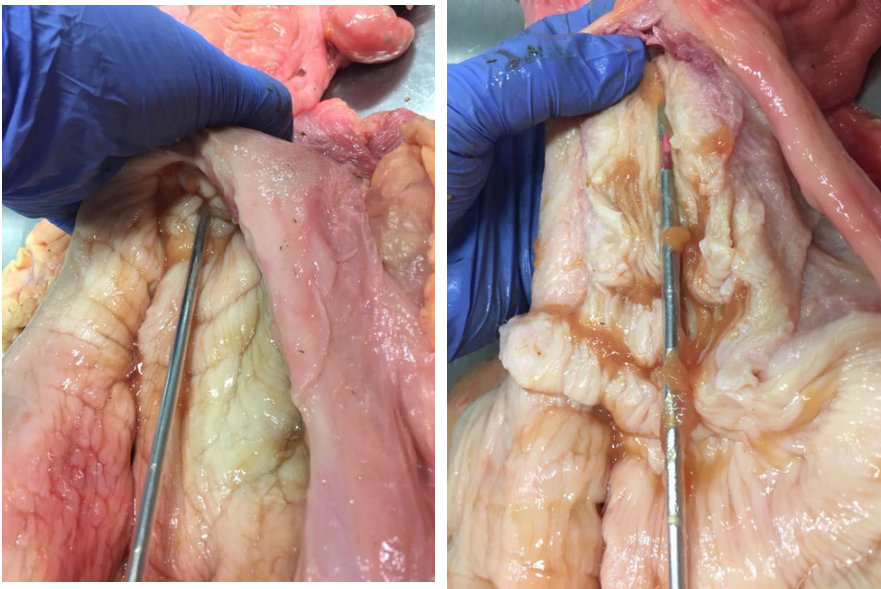
## Qualifications, experience or training necessary to perform this procedure

- (32) Demonstrator: Instruction in insemination technique will only be provided by a suitably qualified veterinarian or instructor approved by an AEC.
- (33) Students: Experience in cattle handling. Familiarity with anatomy/physiology, competence using abattoir specimens and/or an artificial cow.

## Record requirements

- (34) An appropriate 'Cattle monitoring form'.

**Associated documentation (including pictures if available)**



Figures 1+2 Identification of the external cervical os (Left) and passage of the insemination pipette through the cervix and into the uterine body (right). Images courtesy of Dr Allan Gunn.

**Glossary**

(35) None required.

**References and relevant links**

(36) Holyhead, E.M.; Thomas, N. W. And Wilson, C. G. (1983) The regeneration of rectal epithelium in the rat following wounding with suppositories of polyoxyethylene (23) lauryl ether. Br. J. exp. Path. 64, 456



## Details of procedure

### Heading: Pregnancy Diagnosis/Testing Schools

- (37) There should be at least one instructor per fifteen students.
- (38) Cows must be individually identified by ear tag or freeze brand prior to use in a school.
- (39) Only mature cows with current leptospirosis vaccination should be used.
- (40) Only cows of quiet temperament should be used for instruction. Cows must be restrained to prevent lateral or forward movement, preferably in a head bail with a vet gate.
- (41) If the EBL or Pestivirus status of the cattle in use has not been established or is positive, a new glove should be used with each cow to avoid the possible transmission of diseases per rectum.
- (42) Cows showing abnormal vulval or vaginal discharge (other than oestrus discharge) should not be used.
- (43) The cow is appropriately restrained in a crush/shute;
- (44) The student is attired with protective clothing- overalls and boots- and has a rectal sleeve on one arm and preferably an examination glove on the other hand.
- (45) With the appropriate biomechanical body position, the lubricated arm is introduced per rectum.
- (46) The caudal abdomen and reproductive tract is examined and assessed manually per rectum.
- (47) The gloved arm is removed from the rectum of the cow.
- (48) Students are to determine pregnancy status by recognising one of four definitive signs of pregnancy: Membrane slip; fetal ballottement; presence of an amniotic vesicle; identification of at least three placentomes (See: Beggs, 2014).

### Drugs, chemicals, or biological agents

- (49) Obstetrical lubricant or similar product should be used to provide lubrication.

### Impact of procedure on wellbeing of animals

- (50) Repeated and/or inexperienced practice of the procedure may result in severe straining, ballooning of the rectum, bleeding or thickening of the rectum. Thickening is less likely to occur in animals accustomed to rectal palpation.

### Animal care

- (51) During the school: Cows showing any sign of distress during a school must be removed from the school. Any cow showing more than slight rectal bleeding, should be withdrawn immediately and not used until veterinary clearance has been given. Use of cows must be discontinued if they show frank blood, severe straining or ballooning of the rectum.
- (52) After the school: Cows should be checked twice daily for the first day after a school and once daily for a further 5 days. Records must be kept for individual cows of the incidence of discharge, other abnormal event or behaviour, or any treatment administered.



### **Pain relief**

(53) Normally, none required.

### **Reuse and repeated use**

- (54) There should be a maximum 6 examinations per animal (4 preferred) if used in the first 'hands-on' session. Cows used in subsequent sessions may have a maximum of 8 examinations (6 preferred, 4 if used weekly). Appropriate marking or identification (using a proprietary stock marker, or documentation) should be applied to each animal before examination to identify each examination.
- (55) Cows may be used in one session per day and may be used on a second day after an overnight rest. They may be used for a maximum on 2 days in any one 14-day period. Reuse should only occur after assessment of the cow by a veterinarian or a qualified instructor.
- (56) Cows not showing rectal thickening may be used once weekly or two days every fortnight, unless removed for some other reason. Cows which show evidence of thickening of the rectal wall should be withdrawn immediately and not used for a period of one month, after which reuse should only occur after assessment of the cow by the veterinarian or a qualified instructor.
- (57) If not used two days in a row, they can be used once weekly. Cows not showing rectal thickening may be used once weekly, or for two days at fortnightly intervals unless removed for some other reason. The greatest risk to the cows is from mucosal abrasion of the rectum due to the number of 'arms' entering the rectum and examining the pelvic contents. In view of the rapid regeneration of rectal mucosa (Holyhead et al, 1983) this time should allow for sufficient mucosal regeneration and healing to occur if necessary. Cows which show evidence of thickening of the rectal wall should be withdrawn immediately and not used for a period of one month, after which reuse should only occur after assessment of the cow by a veterinarian or qualified instructor.

### **Qualifications, experience or training necessary to perform this procedure**

- (58) Demonstrators: Veterinarian with appropriate experience or instructor approved by an AEC.
- (59) Students: Experience in cattle handling. Familiarity with anatomy/physiology, competence using abattoir specimens and/or an artificial cow.

### **Record requirements**

(60) An appropriate 'Cattle monitoring form'.

### **Associated documentation (including pictures if available)**

(61) None required

### **Glossary**

(62) None required.



## References and relevant links

- (63) Holyhead, E.M.; Thomas, N. W. And Wilson, C. G. (1983) The regeneration of rectal epithelium in the rat following wounding with suppositories of polyoxyethylene (23) lauryl ether. Br. J. exp. Path. 64, 456
- (64) Beggs, D. S. (Ed.). (2014). *Pregnancy diagnosis in cattle* (3rd edition.). Australian Cattle Veterinarians.