

Standard operasjonsprosedyre: Avlivning av mus og rotter

SOP nr: 17-02

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COMMON TREATMENTS MICE AND RATS

1.0 PURPOSE

- 1.1 The intent of this Standard Operating Procedure is to describe common treatments used in the KPM rodent veterinary care program and provides a support tool for the veterinary care staff when treating the most frequent rodent medical conditions.
- 1.2 The goal of this SOP is also to prevent antibiotic resistance in a case of excessive and incompetent use of antibiotics.

2.0 RESPONSIBILITY

- 2.1 The KPM facility is responsible for creating, maintaining, distributing and revising this procedure.
- 2.2 The Head of Department is responsible for approving the procedure.
- 2.3 The Head of Department/PMSK provides necessary information for staff.
- 2.4 Room manager, group leader are responsible for adhering to the procedure at all times.
- 2.5 Group leader is responsible to follow .

3.0 PROSEDURES

General consideration

- 3.1 Only KPM veterinarians are authorized to recommend treatment.
- 3.2 Each medical case can be subject to individual differences. This SOP should not replace the veterinarian evaluation and should only be used as a general overview of the most common treatments.
- 3.3 Always evaluate the possible pain that can accompany the clinical condition.
- 3.4 Prior to establishing any treatment plan, the group Leader approval must be given.
- 3.5 In cases where the group leader or their research staff are in disagreement with the veterinarian, the veterinarian has the authority and the responsibility to make determinations concerning animal wellbeing. This includes removing an animal from a study, test, or teaching activity, and using appropriate treatment or control measures, including euthanasia if indicated, following diagnosis of an animal disease or injury.

- 3.6 If emergency euthanasia is required, KPM contacts the group leader, or persons designated for contact, before performing euthanasia. (see KPM [SOP nr: 8-01](#))
- 3.7 Observation of animals
- 3.7.1 KPM- employees or KPM- veterinarians will observe all animals inside KPM on a daily basis (including weekends and holidays) for illness, injury, and general condition. See the attachment “acute clinical condition”.
- 3.8 Submitting an illness/injury by room manager or group leader’s staff:
- 3.8.1 Sick or injured animals must be reported to KPM veterinarians.
- 3.8.2 KPM veterinarians decide what treatment should be administered and how long it will take.
- 3.8.3 KPM veterinarians inform group leader about state of animal health, diagnosis and possible treatment or euthanasia.
- 3.8.4 After receiving consent for treatment from group leader, the KPM veterinarians order room manager to start treatment.
- 3.8.5 Room manager are responsible for labeling cages with information about a treatment: name of medicine, start date and end date.
- 3.8.6 Room manager needs to update “animal examination” in science linker with: injure information, name of medicine, start date and end date.
- 3.8.7 Animal care staff inform KPM veterinarians about the end of the treatment period.
- 3.8.8 KPM veterinarians check a health condition after treatment and inform group leader about results.
- 3.8.9 If the treatment is ineffective, euthanasia is recommended after informing group leader (see [SOP nr: 8-01](#))

4.0 HEALTH, SAFETY AND ENVIRONMENT (HSE)

- 4.1 Everyone who handles animals must have adequate training and practice to ensure that animals are handled correctly.
- 4.2 The work must be carried out under ventilation to avoid exposure to allergens and the spread of potential contamination to the surrounding areas.
- 4.3 Everyone who handles chemicals must have adequate training and access to proper protective gear to ensure the safe use of chemicals.
- 4.4 Everyone should be careful when handling sharp object like needles and/or when handling medication. SDS and SOPs must be followed.
- 4.5 Everyone should be familiar with the Eco Archive and Safety Data Sheets for the chemicals or medicaments they may be exposed to. Eco archives should be kept up to date at all times.

5.0 EQUIPMENT AND MAINTENANCE

- 5.1 GM500- GM/GR900- cages
- 5.2 Nitril gloves
- 5.3 Soapy water
- 5.4 Tissue paper
- 5.5 70 % Ethanol

5.6 Needles and syringes

5.7 CO₂- apparatus

6.0 HISTORY AND EDITING

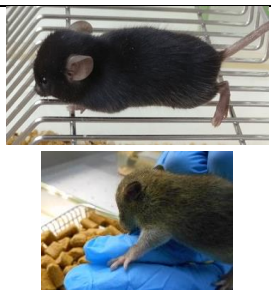

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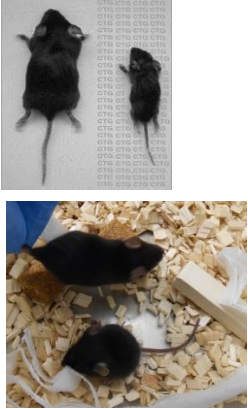
7.0 REFERENCES

7.1

7.2


Acute clinical conditions - MICE








Clinical symptoms	Description	Actions	Illustrations
Congenital abnormalities			
Hydrocephalus	The classical sign is an enlarged, domed head, ataxia and depression.	Termination	
Malocclusion	A misalignment of the teeth or incorrect relation between the teeth of the upper and lower dental arches. This deformity means the animal has difficulty in eating and discomfort when chewing food.	Termination	





<p>Vaginal septum or imperforate vagina with a secondary mucometra</p>	<p>Perineal swelling. The accumulation of secretions causes considerable distension of the vagina, cervix and womb and negatively affects reproduction. If the animal is mated, it can lead to difficulties during birth (dystocia).</p>	<p>Termination</p>	
<p>Poorly developed pups</p>	<p>The young are weak and poorly developed, with phenotypic changes such as insufficient body weight, missing limbs etc.</p>	<p>Termination (check breeding plan against the FOTS project/user or supplier)</p>	




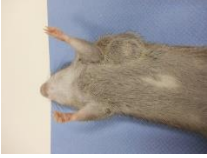


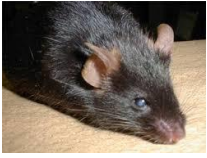

Acute clinical conditions - MICE



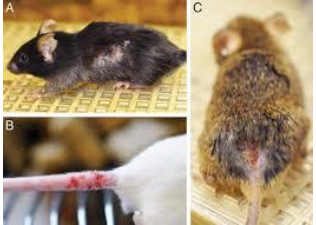

Always check the condition in accordance with FOTS




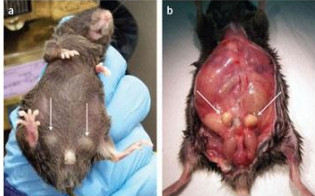
Clinical symptoms	Description	Actions	Illustrations
<p>Weight loss/weight gain</p>	<p>< 5% weight loss</p>	<p>Check teeth, look for other clinical signs</p>	
	<p>5-10% weight loss</p>	<p>Check teeth, look for other clinical signs, place pellets and wet food on the bottom of the cage, weigh animals twice a week</p>	
	<p>10-15% weight loss</p>	<p>Check/correct the causes, use soft food or gel capsules, weigh the animals daily, inform the veterinary surgeon</p>	

	15- 20% weight gain and mobility difficulties	Immediate termination	
General behaviour (mobility, unusual/abnormal movements, arching the back, interaction in the cage)	Minor reduction in the level of activity, slow movements, slower to respond to stimuli, rather marked arching of the back, less interaction with other animals in the cage, some neglect of nest building	Increase the frequency of welfare monitoring, investigate possible causes and act accordingly, e.g. if arthritis, provide softer and deeper litter, extra warmth (paper) and consider the use of analgesics	
	More obvious unwillingness to move (when the lid of the cage is removed), less awake than normal, repetitive movements/actions, limping, moderate back arching, piloerection, clear signs of isolation, aggressiveness	As above, frequent change of enrichment to help combat repetitive actions, e.g. introduce new toys, daily monitoring, give painkillers (consider oral administration), consider termination	
	Little voluntary activity, isolated from other animals, large degree of piloerection, paresis, ataxia, worsening of earlier signs, seizures	Immediate termination	
Ulcerative dermatitis (UD)	Mild form: Alopecia (baldness), itching and red skin, lesions less than 1 cm in diameter	Consider chlorhexidine treatments on changed skin twice a day, clip nails on back feet every 10-14 days	
	Moderate form: Intense itching, redness, scabs 1-2 cm	As above. If no improvement after treating twice, consider termination.	
	Severe form: Insistent itching, ulcerous lesions, open sores more than 2 cm, secondary bacterial infections	Immediate termination	



(use a separate score sheet for UD if necessary)			
Skin whitening or yellowing	Moderate form: slight whitening or yellowing of the feet, tail and eyes	Investigate possible causes, look for other clinical signs, if any, provide extra paper	
	Severe form: whitening or yellowing of the feet, tail and eyes	<p>As above. Blood tests recommended to find the cause.</p> <p>Termination should be considered.</p>	
Prolapse (rectal, vaginal)	Mild form: diameter 1-2 mm, tissue is moist and pink	Consider use of painkillers, increase frequency of welfare monitoring, apply Vaseline locally, soft bedding, soft mat or gel capsules	
	Moderate form: diameter 2 -3 mm, vaginal/rectal. The affected area is swollen, the tissue is moist and pink, no bleeding, impaired general condition	<p>As above, analgesic treatment, clean the tissue with salt water, apply antibiotic Vaseline ointment.</p> <p>Termination should be considered</p>	
	Severe form: more than 3 mm, vaginal/rectal area is swollen, the tissue is dark pink/red or black,	Immediate termination	

	dry and necrotic, bleeding, bad general condition		
Penis prolapse	Always severe form	Immediate termination	
Exterior lumps/tumours	Small lumps	No treatment if they do not affect normal body functions. Increase the frequency of welfare monitoring	
	Medium lumps (0,5-0,8mm), no ulceration or difficulty of movement	As above. Check for any other symptoms (lymph node enlargement). Welfare monitoring at least twice a week	
	Large lumps (> 0,8 mm), mobility problems and/or ulcerous	Immediate termination	
Eye problems	<p>Defects unlikely to affect animal health:</p> <ul style="list-style-type: none"> - corneal opacity or cataract: white fleck on the eye (corneal opacity) or in the eye (lens opacity/cataract). The surface of the eye is smooth and there is no discharge - microphthalmia, anophthalmia 	<p>Must be distinguished from keratitis by means of a magnifying glass</p> <p>No treatment</p>	  

	<p><u>Conjunctivitis</u> - red/swollen eyelids with/without discharge</p>	<p>Consider the frequency of welfare monitoring, clip front and back nails once a week, apply antibiotic ointment, give painkillers. If corneal ulcers are present, termination is recommended.</p> <p>Medicines: sodium chloride for rinsing the eyes, local antibiotics.</p>	
	<p><u>Keratitis</u> - the surface of the eye is irregular, with/without ulcers and with/without discharge</p> <p><u>Keratitis and conjunctivitis</u> - the surface of the eye is irregular, with/without ulcers, with discharge</p>	<p>Immediate termination</p>	
<p>Bite injuries</p>	<p>Less severe injuries: no large, bleeding wounds, usually on the tail and buttocks, the wounds appear dry</p>	<p>Check for genital injuries, increase the frequency of welfare monitoring, give extra enrichment or separate aggressive mice, give painkillers, sodium chloride 9 mg for cleaning, antibiotic ointment. Follow the rules for moving males during cage changing</p>	
	<p>Serious injuries: torn skin, penile injuries, bleeding wounds, apathy</p>	<p>Immediate termination</p>	

			
Bloated abdomen	The abdomen is larger than normal in non-obese animals/animals not pregnant. The abdomen is tense with tousled fur	Check for pregnancy and obesity. Must distinguish between ascites, hydronephrosis and hydrometra/mucometra. If mobility is impaired: immediate termination	
Dystocia	Pups are trapped in the birth canal, exposed uterus, arching of the back, weakness, heavy breathing	Immediate termination or Caesarean section and removal of the pups to another lactating female	
Enlargement preputial glands (males)	Ventral subcutaneous lumps or swelling in a lower abdomen and a inguinal region	No treatment/termination (age-relating pathology)	 <small>FIGURE 3 The ventral aspect of a 23-month-old male C57Bl6 mouse. (a) Bilateral subcutaneous swellings (arrows). (b) At necropsy, the ventral skin has been peeled back, revealing the thin abdominal musculature and enlarged preputial glands (arrows) corresponding to the subcutaneous swellings that were visible externally.</small>
Neurological disorders	Varying intensity: repetitive behaviours, ataxia, head tilt, spinning when lifted by the tail, circling, cramps	Supportive care: place pellets and wet food on the bottom of the cage, extra paper. The maintenance of such mice should be evaluated in accordance with the experiment proposal or should be terminated	




Akutte kliniske tilstander - ROTTER


Kliniske symptomer	Beskrivelse	Handlinger	Bilder
Medfødte misdannelser			
Hydrocephalus	Det klassiske tegnet er et forstørret, kuplet hode, ataksi og depresjon.	avliving	
Malokklusjon	En feiljustering av tennene eller feil forhold mellom tennene i de to tannbuer. På grunn av tannmisdannelse har et dyr problemer med å spise med ubehag ved tygging av maten.	avliving	
Dårlig utviklede avkom	Avkom er svake, dårlig utviklede, med fenotypiske endringer som utilstrekkelig kroppsvekt, mangel på lemmer etc.	avliving (sjekk avls plan med FOTS prosjekt/bruker eller leverandør)	


Akutte kliniske tilstander - ROTTER

Alltid sjekk tilstanden i samsvar med FOTS

Kliniske symptomer	Beskrivelse	Handlinger	Bilder
Vekttap/vektøkning	< 5% vekttap	Sjekk tenner, se etter andre kliniske tegn.	
	5-10% vekttap	Sjekk tenner, se etter andre kliniske tegn, pellets og våt mat ligger på bunnen, veie dyr 2 ganger per uke, informer veterinær.	
	10-15% vekttap	Behandling som ovenfor, sjekk/korriger årsakene, informer veterinær	
	>15% vektøkning med mobilitet vansker	Umiddelbart avliving	
Generell oppførsel (mobilitet, merkelig/abnormal bevegelse, skyter rygg, interaksjon i buret)	Mindre reduksjon i aktivitetsnivå, sakte bevegelse, tregere til å svare på stimuli, litt markert skyter rygg, mindre interaksjon med andre dyr i buret, noe forsømmelse av redebygging	Øke hyppigheten av dyretilsyn, undersøke mulige årsaker og handle deretter, f. ex ved artritt mykere og dypere strø; gi ekstra varme (papir), analgetika bør vurderes.	
	Mer åpenbart motvilje mot å bevege seg (når lokket er fjernet), mindre våken enn normalt, stereotypi, halte, moderat (skyter rygg, piloereksjon, merkbar isolering, aggressivitet	Som ovenfor, hyppig bytting av berikelse til dyr med stereotyp oppførsel, daglig tilsyn, gi smertestillende midler (per os administrering kan vurderes), avliving bør vurderes.	
	Lite frivillig aktivitet, isolert fra andre, piloereksjon i stor grad, parese, ataksi, forverring av noen tidligere tegn, anfall	Umiddelbart avliving	
Penis prolaps	Alltid alvorlig form	Umiddelbart avliving	

Ytre klumper/svulster	Små klumper	Ingen behandling hvis ikke påvirker normale kroppsfunksjoner, øke hyppigheten av dyretilsyn.	
	Medium klumper (1,0-2,5mm), ingen sårdannelse or mobilitet vansker	Som ovenfor; sjekk eventuelle andre symptomer (lymfeknuter utvidelse), tilsyn minst 2 ganger i uken	
	Store klumper (> 2,5 mm) mobilitet problemer og/eller ulcerøs	Umiddelbart avliving	
«De røde tårer» Chromodacryorrhea	Chromodacryorrhea oppstår som reaksjon på akutt stressfaktorer. Hud og pels omkring øyene og nesen er tonet en rødlig farge pga av porfyrinpigmenter er utskilt av Harders kjertel.	Sjekk allmenntilstand, se etter andre kliniske tegn, pellets og våt mat legg på bunnen, informer veterinær. Differensialdiagnose med sår: skylling av øye område med sterile vann.	
Øyeproblemer	Defekter som vanligvis ikke påvirker dyrehelsen: - hornhinnen opasitet eller katarakt: hvitt flekk på øyet (hornhinnen opasitet) eller i øyet (linsens opasitet/katarakt) Overflaten er glatt uten utflod. - microphthalmia, anophthalmia.	Må skilles fra keratitt ved bruk av forstørrelsesglass. Ingen behandling	
	<u>Konjunktivitt</u> rødfarget/hevelse i øyelokkene uten/med utflod.	Økt hyppighet av dyretilsyn, klipp negler på alle bein 1 x uke, salve med antibiotika, smertestillende behandling, hvis	

		hornhinesår er til stede avliving anbefales. Medisiner: Natriumklorid til skylling, antibiotika.	
	<u>Keratitt</u> – overflaten av øyet er uregelmessig, med/uten sårdannelse, med/uten utflod. <u>Keratitt med konjunktivitt</u> - overflaten av øyet er uregelmessig, med/uten sårdannelse, med utflod.	Umiddelbart avliving	
Bittskader	Mindre alvorlige skader: ikke store blødende sår, hyppigst på halen og baken, sår ser tørre ut.	Sjekk for kjønnsskader, øke hyppigheten av dyretilsyn, gi ekstra berikelse eller separer aggressive rotter, smertestilene behandling (Temgesic), Natriumklorid 9mg til skylling, salve med antibiotika, følg reglene for å flytte hanner under burskift.	
	Alvorlige skader: avrevet hud, penisskader, blødende sår, apati.	Umiddelbart avliving	
Oppblåsthet i magen	Magen større enn normalt hos ikke-fete/ikke-gravide dyr. Magen er stram (tense) med rufsete pels.	Sjekk: graviditet, overvekt. Må differensieres mellom ascites, hydronephrosis, hydrometra/mucometra. Ved nedsatt bevegelighet – umiddelbart avliving.	
Dystocia	Avkom sitter fast i fødselskanalen, utsatt livmor, skyter rygg, svakhet, tung pusting.	Umiddelbart avliving eller keisersnitt og flytning av avkom til en annen ammende hunn.	

<p>Enlargement preputial glands (males)</p>	<p>Ventral subcutaneous lumps or swelling in a lower abdomen and a inguinal region</p>	<p>No treatment/termination (age-relating pathology)</p>	 A photograph showing the ventral view of a male primate's lower abdomen and inguinal region. The skin is shaved, revealing two large, reddish, rounded, and swollen preputial glands. Two black arrows point to these glands. The surrounding skin appears slightly pinkish and irritated.
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Medicines used in the treatment of some conditions

Medicines	Indications	Dosage	Contraindications
Antiseptics			
Chlorhexidine	Disinfection of wounds, mucosal disinfection in the case of vaginal/rectal prolapse	According to need	Must not be used on joints and tendons. Must not come into contact with the brain, the meninges or perforated eardrums because chlorhexidine is neurotoxic. Hypersensitivity to any of the ingredients.
Chlorhexidine spirit	Skin disinfection before injections, puncture, sampling and surgery	Disinfect the skin surface and let the solution dry before the procedure	As above
Antibiotics – official guidelines for the correct use of antibacterial drugs must be taken into account.			
Fucidin, ointment	Skin diseases: dermatitis, eczema	Apply 2-3 times a day for 7 days	Skin infections related to large, open wounds. May cause irritation when treating anal prolapse. Do not use around the eyes. Use Bacimycin instead.
Kloramfenikol 5mg/ml, eye drops	watery eyes, conjunctivitis, keratitis	1 drop twice a day for 7 days	Hypersensitivity to any of the ingredients
Kloramfenikol 10mg/ml, eye ointment	watery eyes, conjunctivitis, keratitis	Lubricate twice a day for 7 days	Hypersensitivity to any of the ingredients
Fucithalamic 10mg/ml, eye drops	watery eyes, acute conjunctivitis caused by staphylococci, keratitis	1 drop twice a day for 7 days. On the 1 st day of treatment, 1 drop can be given 4 times.	Hypersensitivity to any of the ingredients
Bacimycin, ointment	Skin diseases: dermatitis, eczema. Anal prolapse.	Apply 2 times a day for 5-7 days	Broad antibacterial spectrum. Do not use in/around the ear (hearing damage)
Prontosan wound gel	Wound gel for cleansing, oisturizing and decontamination of wound. For crusted, infected, chronic and acute wound.	Apply 2-3 times a day for 5-7 days	Can be stored in refrigerator for up to eight weeks after opening,

Lubricating eye ointment			
Simplex	Sore or dry eyes	Apply a little ointment along the edge of the eye and eyelid or on the eye itself	None
Analgesics			
Xylocain	Local anaesthetic for painful surface, skin injuries, vaginal/rectal prolapse	Apply a little ointment on the affected area	Hypersensitivity to any of the ingredients.
Temgesic	Pain/discomfort according to scoring	Mice: 0,1 mg/kg/6-8t s.c. Rats: 0,05 mg/kg/6-8t s.c.	Severe respiratory insufficiency
Euthanasia			
Euthasol (400 mg/ml)	For euthanasia (neck extenson should be a priority)	Mice or rats > 7 days old; ≥150 mg/kg IP or IV	Non applicable