

NUER
ETHNO-VETERINARY KNOWLEDGE

A RESOURCE MANUAL

FINDINGS OF A PRELIMINARY STUDY

UNICEF

OPERATION LIFELINE SUDAN SOUTHERN SECTOR

LIVESTOCK PROGRAMME

Compiled by:

**Stephen Blakeway
BJ Linquist
David Adolph**

of Vetwork

INTELLECTUAL PROPERTY

The knowledge contained in this report remains the intellectual property of the people and communities from which it came.

ACKNOWLEDGEMENTS

This resource manual came from many people in Nuer land, and the manual belongs to all of them.

The information was collected by a number of people and NGOs. Thomas Bol Mawich, James Charey Mettish, John Banguang Riak, James Garkoich Bilieu, Yoanis Tear Maet, Yoanis Tear Malueth interviewed many people about many diseases around Wichok and Nyal during the study. These interviews were translated mostly by Peter Gai and 'Lima Lima' of RASS. ACROSS, SCF, VSF-B, VSF-CH and UNICEF all work with livestock in the Nuer areas and provided information.

The study team acknowledges the contribution all the people and animals of Southern Sudan in the preparation of the manual.

CONTENTS

Introduction	3
Section 1: The work of women and men including responsibilities for livestock	4
Introduction	4
Women's groups	4
Men's groups	8
Section 2: Summary of some Nuer disease names and animal health terms	9
Introduction	9
Nuer disease summaries	10
Other animal health practices and problems	38
Section 3: Summaries of treatments	40
Summary of non plant treatments	40
Summary of diseases for which there are plant treatments	41
Summary of plants used as traditional treatments	44
Section 4: Disease groupings (tentative)	48
Section 5: Terms collected at different locations	51

Comments about this manual would be gratefully received, and can be addressed to Unicef or to:

S Blakeway
 Vetwork
 2F3, 377 Leith Walk
 Edinburgh
 EH6 8SE
 UK

INTRODUCTION

This manual is part of a study, the value of which applies to all of Southern Sudan. There is a companion manual for Dinka areas, and it is hoped that in the future, other groups also will have their own.

The study was commissioned by the OLS Livestock Programme to investigate whether the work of the programme could be better integrated with local veterinary knowledge and practice. The study team believe it is both possible and desirable to fit 'western' veterinary medicine within the framework of what the Nuer (and other groups in Southern Sudan) already do to maintain the health of their animals; and that the best livestock programme for Southern Sudan will result from a combination of the best of both local and western knowledge.

The information in this manual was collected within a brief, two month, period ending in December 1996. It can therefore be considered only a preliminary study. The methods of information collection used during the study are described in the report that accompanies this manual. There is much more to be learnt, clarified and checked; much information has inevitably been lost in translation; and there will inevitably be misunderstandings and errors in the text of this manual. However it is hoped that these points emphasise the importance of continuing to improve understanding of local animal health knowledge, and of the actual words used when discussing animal health.

This manual is a resource for everyone working in the livestock programme, and will have immediate and particular relevance for the new 'Animal Health Assistants school' which will soon start in Nuer land. It is also of wider relevance, because of the central role of animals to Nuer culture, and because most veterinary knowledge amongst the Nuer is shared common property. It is hoped that it will be translated back into Nuer and could be used in general education.

By recording and affirming the value of local knowledge and culture, and by the process of recognising the value of what each group could contribute towards general prosperity, it is hoped that this manual will, in some small way, contribute to an early peace in southern Sudan.

SECTION 1: THE WORK OF WOMEN AND MEN, INCLUDING RESPONSIBILITIES FOR LIVESTOCK

Introduction

Groups of men and groups of women, in both Wichok and Nyal, were asked, separately, the following questions:

In the traditional Nuer lifestyle:

1. What is the work of women?
2. What is the work of men?
3. In relation to animals, what are women best at?
4. In relation to animals, what are men best at?
5. In relation to animals, what do women never do?
6. In relation to animals, what do men never do?

Women's groups: The work of women

After marriage...

collect water from the river (take the pot to the river)
(water is dirty, bad to drink, can kill people, need boreholes)
carry water to husband in *dar pina*, clay pots

build a *dwil*, (tukel) - house pole and timbers from trees; mud walls, cut grass for thatch,
cut trees to build houses (with *puur*, malodas, as have no axes)
cut grass to make roofs and the ropes used in making houses (using malodas as have no sickles)
can mud the roof of tukels to stop mosquitoes, and also make fire inside to make smoke - (but bothers
you, no ventilation so become sick)
make *luaks* and *dwils* with men

collect papyrus from river to make: mats, shade roofs, coverings for cold weather, *dieny*
make pots, cooking pots
make *dieny*, basket to carry *dura* and children (babies never pee in them), and used for fishing
make *leth*, winnowing pan, made and used by women
make *kot*, fan
make *twei*, container for *dura*, made with clay and grass
make *beem*, used in making wine as filter, made from grass / palm fronds
make local clothes, eg *yuar*, string skirt made from locally grown cotton
do skins
make beer / wine

will have home; will make fence
when home finished, will dig garden
women in charge of cultivating garden; to grow children through cultivation
may continue to help children to cultivate even after they marry
plant seed, clear ground, weed; sometimes crop is damaged and get nothing
when rain falls, will plant seed and crops will grow (maize), weed
when too heavy, will call men to help; when make beer, men will come to weed garden very thoroughly!
when harvest, cut y-shaped poles and four holes to put them in, make grain store
will have crops, prepared, threshed, stored in granary
make great contribution while growing maize and *dura*

if no crops, will look for water lilies
collect water lilies to eat because no grain

inside tukel, make place for grinding corn
grind the food
pound grain, *dura* (suffer from pounding grain by hand; need grinding mills)
cook food for children and men (with pot takes a long time, 2-3hrs, and men become angry, need
saucepans)
take food to husband

'men entitled not to cook'

cleaning room; mixing cow dung with soil to clean room
wetting the sitting place in morning

in early morning

sweep tukel, prepare food, grind it, put it in pot, light fire, go to milk cows, when water hot, mix water with flour, prepare one calabash of food for men, one for children, one for women

will prepare the milk got from the cows

at mid day, prepare grain again

(if food not ready quickly, men can box you; if you say you are tired, husband will beat you)

take care of the children

make byres (*luaks*) for cows

tie cows

milk cows

take the cows to graze in the bush

between 3 and 5 put milk into special gourds and roll and bang on thighs to make sour / butter / oil

cow dung: collection, spread to dry, collect all dried dung together, burn

in evening, milk cows

go to river looking for fish

no hooks and spools so must spear fish

in dry season, fish - catch mud fish using *soy*, a tube through which you put your hand, then when the fish bites you, you pull your hand out through the tube; or if no *soy*, try to catch fish in lap while kneeling in the water - fish can bite vagina of woman!

when woman giving birth, women go to help (midwives - *gam*); men never do (men do nothing!) (though a man trained by MDM as midwife in Mankien)

some women know about herbal treatments; don't know about herbal treatments for animals (though a plant used by women when cow doesn't have much milk), know about herbal treatments for children if sick can go to clinic

(this is the work of women)

(we do many things we women)

(no shoes so thorns can pierce feet, very painful)

(suffer from cold and sleep on ground)

(our ribs get thin from the heavy work; we have no medicine and are suffering but we keep on working)

(men just sit and pick hair from beards; care for children all the time, and men do nothing)

woman who has no husband (or widow) takes control of the household doing work of man

Women's groups: The work of men

when married...

to forest to clear trees to make ground to cultivate

work in garden together with women

when women make beer, men go to cut down trees for making tukels before drinking

make *luak* (women make ropes, mats, and beer to encourage others to help)

make roofs for *luak*, including y-shaped sticks to support roof

make ropes for cows

cut pegs for cattle

look after cattle

migrate with cows to another place

make spears

go to distant places to get fish

man goes to get *bee*, dress, for woman

children belong to men, take name of father

man gives *kuot gan*, orders to woman about looking after children
 men give *lar lar*, information, orders

(women and men together tie the cattle and dig ground etc)

Women's groups: In relation to animals, what women know best

when cow lost, go to look for it

tie cows down

milk cattle

milks cows then releases cattle

reporter of sickness of cows as closer to cattle

woman distributes milk to men and children (women get some if enough), children are the priority

give fresh milk to children, put rest into gourd

preparation of gourd: open mouth, take to river, leave 10 days, get all contents out; when empty, put in cow urine for 15 days to one month, and cow dung on outside; then clean with boiled water, then use for fresh milk

not cleaned on a daily basis, some milk always left inside to go sour

never use smoke or ash

goat milk gourds prepared differently: boil goats milk; put some cow's milk in gourd, then add goat's milk; don't finish milk, always leave some in to go sour

boil goats milk not cows because of smell of goats milk which results from their eating differently from cattle

to make butter, leave in special gourd 24hrs, then next day make butter

make it when cattle return in summer; use goats or cows milk, or sheeps milk

in dry season, not enough milk to make butter

don't make cheese or curds (need factory)

collect dung

cow dung - collection, drying and burning - *fush wer*

women look after calves, bring grass and water

work of children to look after calves; if no young children, women look after cattle

gat, children, responsible for shoats

baby shoats are work of women

young women without children look after shoats; if have children, children look after them; also with calves

women's duty to treat all young animals (use *tolar*)

if woman milks a cow whose calf is sick, leaves more milk in udder to feed calf

'don't let calf have first milk, don't let drink for 3 days', changes after discussion / clarification to 'allow calves some milk for first 3 days but not as much as it wants, then allow ad lib after three days

if cow doesn't let down milk, women's work to blow vagina (effective)

if cow agalactic, look for plants that help cow produce milk (*mayok* - get from thick forest ie far from Wichok, eg Mankien)

when cow afterbirth does not come out, look for plants to bring them out (*mordol* - dig from ground; used in cattle and sheep, but too strong for use in goats or people, would kill them; for goats use *tuar*)

char, man collects it, woman cooks it and gives to cow in nose or mouth; if cow loses calf, give *char* to get more milk, as well as blowing in vagina; chew *char* in own or cows mouth before blowing in vagina - *char* available in Ler and Nyal

char also given to sick cows and goats with *liei*

chan chan given through nose and mouth to cows without milk

use *mar* for *dop*; diagnose *dop* by testing if cow flexes when pinch spine, then look for progression of other signs

diagnosis made by men - all decisions about cattle made by men
diagnosis and treatment for shoats by either men or women; shoats belong to women, cattle to men

'men think women can't describe the signs of disease but they know very well'

Women's groups: In relation to animals, what men know best

responsible for checking grazing land for cattle
cattle, sheep, goats, calves all graze in different directions
migrate cattle to cattle camps
protect cattle from wild animals

men restrain cows
men bleed cattle
treatment of adult animals
men wash the mouths of cows that have mouth sores and can't eat
dystocia dealt with by men
castration

check *luaks* and replace woodwork if necessary
men cut wood for fires in cattle camps

Women's groups: Women never...

castrate
do roofs
women don't look after cattle as don't have spears or clubs to protect

Women's groups: Men never...

milk cow
collect cow dung
fetch water
pound grain
grind corn
make beer
plaster tukels
sweep compound
cut grass
make mats or grass ropes for buildings
make baskets, pots, winnowing pans, fans
wash or carry small babies
pick water lilies

Men's group: The work of men

'People were created as two people - a man and a woman - plus the cow which is their tame animal'

build *luak*;

maintain rope for restraining cattle;

take care of cattle; take them to good grass; if hear of disease in one place, avoid it;

men and boys look after sheep and goats;

men can bring grass and get water for calves;

men are responsible for treating animals;

men castrate and mend wounds (or get specialists to do it);

if hungry, men can go to far distance or decide to sell cow as don't want children or mother to suffer hunger - actually men demand to die before children;

men go fishing even when river is deep - get fish and bring to women to cook;

Men's group: The work of women

milk cow, sheep, goats

women collect cow dung and clean place for animals

fetch water

cook food

if no grain, go to look for water lilies

Men's group: In relation to animals, what women know best

if calf drinks milk from mother, woman will report to man;

if woman reports officially that she has been sick and therefore hasn't cooked food, man cannot beat her; if he does, her father can insist on a divorce;

women can also carry heavy things long distances, eg to Mankien, even when heavily pregnant; men wouldn't know how; a woman to us is like a donkey! if move in morning, women will carry everything;

women also know how to milk cow; inform men if milk yield drops but cannot diagnose disease;

men can just come to house and lie down; woman brings food and water; this is why we love women!

women grind food with wood; they are doing a lot of work;

SECTION 2: SUMMARY OF SOME NUER DISEASE NAMES AND ANIMAL HEALTH TERMS

Introduction

This section reports local knowledge of livestock disease, and usage of terms. It is a preliminary summary; the time available for the study was too short for anything else. The process of enquiry and recording should continue, alongside the other work of the Livestock Programme, so that there is a greater understanding of the background knowledge and language of the communities served by the programme.

The section summarises information from three sources:

- interviews conducted and recorded in Nuer, around Wichok and Nyal, during the study period, by six interviewers trained by the study team;
- interviews with a variety of people, in groups or individually, by the study team;
- written information available from NGOs working within the livestock programme of OLS/SS.

As far as possible, the information has not been 'interpreted'. Some summaries give a clear picture of the named condition, but others still require considerable clarification. There are differences in word usage between different areas of Nuerland.

No attempt has been made to correlate the information with 'western' diseases. In some cases there seems to be a clear correlation with a single western disease, but in others there isn't. In these cases, it can be counter-productive to try to tie the two systems.

In almost all cases, the numbers of informants has been below the ideal (at least 2 men and 2 women from each location) so, to make the summaries more readable, information about informants has only been given where it is considered important to help explain different meanings. More about individual informant information is available in the databases which are with the Livestock Programme.

(N) and (W) indicate information from Nyal or Wichok collected during the study.

(Duar) and (Waat) indicate information recorded by NGOs working in those locations, and made available to the study team.

The summaries follow, more or less, the order of the questions in the EVK question list given under 'methodology' in the report that accompanies this manual, except where the information is not available, or flows better by re arrangement.

Thus a full summary would include:

name of condition

literal meaning of word

which species, sex, age affected (the last two are 'both' and 'all' unless stated)

pattern of disease, including infectious or contagious

whether zoonotic

cause

prevention and control

signs

outcome if not treated

treatments 'traditional' and 'modern'

last case seen by informant

The compilers apologise for the many errors that are inevitable in a text of this nature.

NUER DISEASE SUMMARIES

'some diseases can be cured, some not'

bac

cracked feet following *dat* (N)

bak

Bak most commonly refers to headache.

Bak affects all animals, including people; of all ages; in any season; anywhere; although some informants say the word should only be used for humans.

It tends to occur often, affects animals one at a time, though can affect more than one at the same time, but does not spread from animal to animal, or between animals and people.

The cause is physical and it cannot be prevented. It is not serious, and animals affected will not die.

Animals with *bac* have a headache, move around restlessly and may have a fever.

It can be treated using the plants *tin tin*, or *reef*. The plants are mashed in water, then left for half an hour; the water is then drunk; the person or animal 'may recover after a while unless unlucky'. One informant had used this treatment and said it worked last time he used it (N). He had heard of modern medicine but said it was not available.

Other uses of the word included (1 informant, N):

'disease which affected cattle camp a long time ago, making animals go round and round in circles; old people recognised it and called it '*bak*'; animals were cut round the muzzle and mouth which helped some, though many died'.

and (1 informant, N):

bak, headache, occurs once a year, spreads like poison, caused by lack of medicine, lack of a government to provide medicine, and lack of vaccination; and through smoke; can only be avoided by moving to a place with medicine or without the disease; hairs of animal seem shrunk or smaller, and the mouth will be shivering as well as whole body, and its mouth will be full of saliva; there will be lack of milk from the cow; it will stop grazing through the day; there is no treatment, the animal has to die.

banjaer

Banjaer refers to a swelling on the forequarters, usually over the ribs, shoulder or leg.

Banjaer affects cattle (all, or plus wild animals, 2 out of 5 informants); most often in older animals; in any season (wet season, 1 informant); anywhere.

It is not common, affects animals one at a time, and does not spread from animal to animal, or between animals and people.

It is considered a natural disease; some say it can be caused by damage through fights between animals, or when animals bruise themselves falling down holes, but most said the cause was unknown. It cannot be prevented.

Banjaer appears as a swelling; it is always unilateral; sometimes the affected animal appears untroubled by its condition, but usually it is lame or cannot walk on the affected leg. The animal cannot reach the grazing areas, the body is weakened and, in milking cows, milk production drops. The cow may salivate, and 'sometimes the cow is late to wake up in the early morning'.

The swelling contains black stuff, bruising or haematomata; others say the area is dry; none of the informants (including a *banjaer* specialist) had seen air inside, or associate it with changes in urine colour. The meat from the area looks black and is discarded.

If left, the animal may recover, or it may 'cause death in a morning or up to a year'.

Treatment: treatment is usually done by a *leert*;

The swelling is cut (with a spear, sometimes heated), sometimes in several places down the length of the swelling. Air may be blown into the cuts, or into the first cut before making others, until all the affected area is blown up. The wound is washed with boiled cow's urine, cooled to hand heat. Any 'bad blood' is washed out. The washing is done either on the day of cutting or 24hrs later.

If treated the cow will usually recover after about one month with good nursing, ie fetch water and assist in getting to grazing area.

4 out of 5 interviewed informants were aware of this treatment; some had direct experience of its efficacy. The 5th person had not heard of the treatment and said he had a cow with *banjaer*, did nothing, and the cow died.

There was no knowledge of modern treatments.

(*Banjaer* can be compared to other swellings; see also eg **chuali, dheng, nguot, pot pot**)

benyiny

be means pain; *nyin* means eyes (singular: *wang*, eye)

Benyiny affects all animals including humans and birds; of all ages; in any season (though November, December and February were mentioned as being particularly bad); anywhere.

It affects one animal at a time, may affect one or two in one place but not many, and does not spread from animal to animal, or between animals and people.

There are a number of causes: too much wind and smoke around the cattle, hot weather, too many *wath* (a type of fly), grass seeds getting into the eyes during grazing, the sap of the plant *pa/nya*, snake venom (*ruei thual*), the disease *keic*.

The affected animal has eye problems with any of the following signs: redness, swelling, lacrimation, photophobia, blepharospasm, headache. It can be uni- or bi- lateral. The animal may close the affected eye, be unable to walk in a straight line. The problem may get better in a week or a month or may get worse leading to blindness, weakness and, rarely, death.

There is no prevention.

Treatment involves washing the eye regularly. This can be done with one of the following: water, boiled water, soap and water, tobacco water, the white part of chicken faeces dissolved in water.

If the cause is simple, the eye will get better with treatment, but if eg associated with *keic*, can't do anything and animal may go blind.

'My own cow called Boryen just got cured recently after I treated with dissolved tobacco (*tab*).'

buot

sores from beating donkey

chak

Chak are ticks - black, brown and red kinds, have 8 legs.

They affect all animals, in any season, anywhere.

They are picked up from grazing areas, ('especially from the grass called *duf*', 1 informant, W).

Chak stay in the soft parts of the animals, especially between the legs. They feed as parasites by sucking the blood and cause damage to teats and hides, cause lameness in goats, make the animal thin, and cause the yellow type of *noi*.

No prevention as in the whole area. Can pick ticks off and throw in fire, then burn bitten part of animal with fire, but keep re-infecting. Can also use kerosine, engine oil, or tick grease.

If treated and in one year it disappears, the affected cow regains its health.

chuali

(NB this word not used in Wichok area)

Chuali affects cattle; of all ages; in any season ; anywhere.

It affects one animal at a time, and does not spread from animal to animal, or between animals and people.

It may follow *mole* / *panyibole* or it may be of unknown cause.

It may 'swell knee of cow', or cause lots of swellings over many joints.

The swellings may be hard with little water inside, or may be fluid filled; sometimes get watery yellow fluid out, sometimes white stuff, often very smelly.

Treatment involves cutting open the swelling with a burning spear, and washing with boiled cow urine twice each day till better.

Can also give the cow a decoction of the tree, *kerwak*, to drink (1 informant, N), or apply the heated skull of a dead dog to the swelling (1 informant, N).

Without treatment, animal may live or die; even with treatment, can be progressive, so sell animal.

SB, personal observation, (N): at *luak* with 6 cows, 2 calves (all prisoners animals being looked after by *luak* owner), one cow aborted its first calf (*mole*) in cattle camp in April; since then, swellings have come up on both carpi and tarsi (*chuali*); left carpal swelling cut because was very fluidy, but man doesn't think others yet ready to cut; cow otherwise OK in self.

(see **mole**, **kuem**, **panyimbole**)

chuie

This condition requires elucidation.

Chuie are 'very small snakes without bones found in stomach';

'*chuie* lives in cows intestines (*chiln*) and 'bits' (*waw*) till they become many and then cow dies';

'*chuie* is the parasite that causes *guaw*'; 'have *chuie* in second stomach when *liei* / *guaw*'.

(2 informants, W & N) *Chuie* affects cattle and sheep / all animals; of all ages; in any season / in winter; anywhere.

It affects many animals at one time, but does not spread from animal to animal, or between animals and people.

Causes: 'It is caused by snails which live in the grass while cattle are grazing, then cow mix the grasses with snails by then they turn to worms in the cows stomach';

'worm in second stomach then burrows through into gall bladder, and into big red organ (?liver) which becomes very big'; (*chuie* described and drawn as a small thin worm, not at all like a liver fluke);

'It is caused by floods so that there should be more worms';

'from any water or green grass, not necessarily only from rivers, swamps and floods'.

Symptoms: 'in evening when cows come back from grazing field, while are resting, the affected one, its intestines use to make noise (*guak guak*), has frequent, severe diarrhoea (*ciith*) and produces many white worms; the cow become thin';

'shivering, weaken the cow body and when the cow dead you get more water also more saliva'.

The 'worms' are from pancreas and small intestine, not liver;

May see *chuie* animal without sickness on slaughter, or may see in sick animal on PM.

Animal affected with *chuie* may recover.

Prevention: only way to prevent is to evacuate the cattle from the flood area.

Treatment: no traditional treatment; valbazan is the treatment.

'*Chuie* same as *machueny*'.

ciith, ceth

Ciith is mainly used to mean diarrhoea, non-specifically.

(1 informant, W): It affects cattle, sheep and goats; of all ages; in any season, though is most common during the rainfall, when new green grasses growing, mainly in the month of April (*guak*); anywhere.

It starts with one animal then can affect the rest.

It can be caused when cows graze *thien* and *buor* (plants that grow along the river); in which case the symptoms are that it 'makes bloody diarrhoea, change the shape and body look like allergic in human and tear and mucus come out of both eyes and nose of cow'. This can be treated by water lilies (grind and give with water) and 'house of hornet' (*duel pien*); it can also be treated by tetracycline capsules; some cattle die, some survive.

(see **dany, kay, mathi, twiny, wathi**)

Another use of the word was:

'Cow vomits what looks like umbilical cord mixed with grass; people too if vomits, can survive; otherwise causes small and large intestines to swell, and dies'.

dam dam, dang dang

The name *dam dam* comes from the strange staggering, uncontrolled gait of an animal with the condition; it is always described graphically with the help of body language.

Dam dam affects cattle (goats also, 1 informant, Waat); of various ages (2 of 5 informants said mainly in young; 1 informant said not in young animals); mainly in *mai*, the rainy season (3 of 5 informants).

Only one animal or very few affected; does not spread from animal to animal.

Various associations: brought by flies especially when there are more flies (W);

with eating lush grass (though some say only affects calves before they start to graze) (Waat);

due to *yam yam* (Duar).

Symptoms: moves strangely; shivers, plods, legs funny, otherwise normal, wants to eat etc; dies or recovers quickly, PM normal (N);

it is recognised because the victim or the cow staggers; it behaves as if it has a mental problem; the eyes become deeper; the cow dung is watery (W);

sudden onset, disease of legs, bones, wobbles, staggers, sways, circles, head tilting to one side as if has headache, falls over, throws legs about, foam and water from mouth, most die in 3-4 days, PM only joint swelling (Waat);

in goats, repeatedly runs and collapses till death, 3 day course, PM fluid in joint cavities and liver enlarged (Waat).

Treatments:

just cut body of cow and put spear in fire when becomes hot and put in skin. If continues a long time, cow dies; if not with cow a long time, can survive. Last Dec had case, used spear in fire; most of cattle survived, some died (N);

head may be cauterised (Waat);

'it is treated by the following traditional methods: There are trees- a) *kuel* - You stab it with a sharp point and its milk spills out, then you put a calabash to let its milky water drip into it. It is not complicated how to use the dripped milky water b) *nguer* you slash a side of the trunk. Try to take the cover. Then soak it in water for some time. Then you raise up the mouth of the cow, open it, then pour the water into the mouth till the water goes deep through the throat. Then prick the cow's ear with a round sharpened tipped iron heated to the last degree. Then cut the tip of the tail of the cow. Then make a little cut on the back bone. Once it moves then the cow will go back to the normal stage; sometimes lives, sometimes dies; It just finished from my cows last rainy season. I applied the traditional treatment by using *kuel* & *nguer*. Then my cows were saved.' (W).

No modern treatments known.

dany (N)

Dany is a type of white diarrhoea; only of calves, only in wet season when much cloud and little light; affects calves from April when the rains start; caused by too much milk; some will die.

first treatment: stop from milking, and just give small amounts of water regularly to stop mouth from being dry; if catch early, gets better; generally takes 3-4 days;

used to have two plant treatments, but plants in area now inaccessible because of war - one grew in termite mound *wal manyang* (neem like tree), other *wal dany* like a ground nut, chewed and put in nose; *wal dany*, only some people know, only grows in wet season; chew root and put in nose of calf; makes calf sneeze and that makes calf better; sometimes works, sometimes calf dies

(see **ciith**, **kay**, **mathi**, **twiny**, **wathi**)

danying (W)

affects head of calf when drinks too much; affects just once a year;

dig local plant from ground ('medicine of *danying*') and put in nose; individuals know plant and others buy from him; new thing to have to pay, used to be free

can also use root of *nguer* tree - boil in water

(disease not known around Nyal)

dat, adet

Dat affects cattle (also all, goats or sheep mentioned by one each out of the 6 informants); either sex; all ages (1 informant said not in young animals; 1 informant said only kills young animals nowadays); any time of year, but most commonly in Apr-July.

It affects groups of animals and spreads animal to animal.

The cause is not known; it occurs when animals are brought together from different places.

Signs: lameness due to interdigital cracks, erosions on tongue, lesions in mouth cause salivation and difficulty grazing, breaks breath of cow, gives cow headache and fever, lazy and not active as usual, milk production drops, lasts two weeks; most get better but if badly affected, udder may be damaged later with sores, may develop into *yob yob* (Duar) or *juol* (N), and some deaths, mostly in calves.

Treat using boiled urine or salt water on cracked feet, and also salt dissolved in water into mouth of sick cow, (salt from Arabic traders); also bleed from neck.

Also treat with tetracycline capsules from people working in hospital.

Separate the animals from those affected; trek cattle away from infected cattle and avoid crowded water points.

(NB can have hoof damage alone eg from sticks or thorns, but different from *dat* and not named specifically).

dengber

shivering, may die

dogs, also cattle, all ages and sexes, thin or fat, any time of year, anywhere;

it is causeless; it just break out without cause;

starts with one dog and then to rest of them, one by one or from one to the other;

dog shivers and gets thin from the stomach, deforms the shape and looks with dirty eye and continuous laziness dog not active as usual for three days (*lieya jiook*);

no treatment, affected animals killed to stop spread;

'it affected my dogs for three years then I decided to destroy all dogs; I left only one puppy (*kuut jiook*)'.

(see **lal**)

dheng

Dheng is a non-painful abscess.

The term is used mostly for people, but is recorded in Waat as:

'abscess in neck or shoulder region or hind leg, perhaps in lymph node, affecting perhaps 3-4 animals in a *luak*'.

(see also **banjair**, **nguot**, **pot pot**)

dhom, dom

dhom affects cattle, goats & dogs; it affects one animal at a time; it cannot be prevented not protected. It does not affect people.

An affected cow looks clumsy, lazy and stands very pale; it causes sudden death (Waat), and unspecified fever in goats (Duar).

There is no traditional treatment.

Can be treated effectively with lung disease medicine from Arab traders.

If not treated the cow dies; sometimes it can live too.

It finished from my cows last year; it killed some, some got saved with lung disease medicine.

dop, duop

lungs stick to pleura, clears all animals

Dop means sticking together; the disease causes everything in the chest to stick together, the lungs to the pleura.

Dop affects cattle and wild ruminants; of all ages; in any season, but especially in November at start of cattle camp period; anywhere, but especially at cattle camps.

It affects all cattle camp when affects one cow, spreads from animal to animal. Does not affect people.

Caused when cows smell dead viper (*jeth*) (1 informant, W).

Affected animal coughs a lot, breathes very quickly, stops grazing, becomes thin, milk production stops, small wounds inside the chest, causes everything in the chest to stick together, the lungs to the pleura.

Prevent and control by separating sick from healthy.

Traditional treatments: plant, *dep gayny* and local wine, *cang char*, effective sometimes, not effective sometimes; chop *dep gayny*, a creeper, put in water, give by mouth, cow coughs a lot when put in mouth; *dep gayny* usually effective if given early.

Alamycine from Arabic traders in market (Rupnagai and Mayong) £5000 per bottle, effective but cow will die sometimes.

Untreated animals will die.

Had disease in 1995, treated with Alamycine, some died, some survived.

In Duar, *dop* also associated with a disease of sheep caused by the stress of walking long distances.

Affected animals have pneumonia, dullness, anorexia, death in 7 days; PM lungs coloured and healthy, yellow fluid in chest cavity. Treatable with terramycin LA.

In Waat, *dop dop* is a disease of goats and sheep affecting the head; animal makes a sound, tail wagging, falls over, water from the mouth, and dies, PM nothing to see. It is not associated with ticks.

dum dum

Dum dum is a disease affecting cattle and goats of all ages; at any time of year, anywhere. It affects one animal at a time. It is caused by taking blood from cow which is weak; it cannot be prevented.

It makes the cow check itself like someone feel sleepy and yawning. You just see the teeth of the animal exposed out to the air, and tear comes through eyes. It releases dry dung.

Treat by cutting some part of the cow with the very hot spear which you just pulled from the fire.

If the disease was for so long affecting cow, cow die; if not so long, cow survive.

Just finished from my cattle last winter; tried fire; some survive, some die.

Similar to *dam dam*, *rieny*.

duony

The word *duony* means unable to walk as before.

Duony affects cattle (and sheep, 1 informant of 5); of all ages (1 informant said it affects only medium to large animals, 1 informant said it used to affect all animals but now affects mainly the young); mainly at the start of the rainy season.

It affects one animal at a time; it is not a spreading disease; it does not affect people.

It is associated with heavy rains, when grass at about 20cm stage, and when the animals have spent the whole rainy season out of the *luak* and when there are floods in the area. It is caused by releasing the cow to pasture in the early morning when the weather is cool.

It affects the legs with terrible pains in joints, bones tightened, and stiffness; cow won't want to move, lies down, cannot get up unless lifted; has indigestion, cannot eat or drink, bloats, milk production stops; may die in one day but if survives several days, usually recovers.

To prevent, don't release cows in the early morning.

To treat, don't allow animal to eat or move for at least 24hrs (if eats will die); keep in sun and keep body warm, make fire round cow with *bot bot* (local grass) to keep its body warm; all day keep cow in sun and don't release for pasture; or keep in one day, if stomach still big the next day, keep in again, when stomach goes down, make grass fire round cow etc; don't let animal graze for one day, then let graze for two, then bleed, cow gets better.

May also use wild medicine, *tolar* (W).

With treatment will usually get better; without treatment can die.

Duony also affects a wild ruminant which is then hunted easily and killed for food as it cannot run away.

gieng, jok laya, nyapec, jok riem

Gieng means squeeze.

It affects cattle, sheep, not goats, all ages; all seasons, all places.

It affects all animals, and spreads like poison. It does not affect people.

It causes diarrhoea with blood, swellings all over body, eye pain. After two weeks the animal will either survive or have died.

It is controlled by quarantine.

Not seen since 1992.

Similar to *magwar*, *mawumlual*.

gom

gets thinner, especially in stomach

kills cattle and dogs; insides become green

no traditional treatment; used to kill dogs affected by *gom* to avoid spreading to normal dogs

last had 1 year back, no treatment given, killed affected dogs, and normal dogs survived

gony gony

cattle and goats

any time of year

one animal only, doesn't spread

little swellings with hair coming out

cause unknown; sometimes gets better; doesn't die but sick a long time; best to kill or sell for meat (same as **ker ker**)

guaw, (noi, liei, magwar)

Guaw affects older cattle, mainly in *jiom* and *tot* (wet season) when there are floods and mosquitoes. It affects all animals and spreads animal to animal.

It is caused by grazing in flooded areas, and mosquitoes.

Guaw makes the cow thin. It shivers, feels very weak, won't go to grass very far, goes slowly, eats too much, eat all time but not satisfied, grinds teeth, has tears from its eyes. Some say has diarrhoea, some say doesn't.

Is not particularly photophobic, does not breath rapidly (cf other wasting conditions).

PM: yellow, liver large, animal not so thin.

Cannot prevent unless cow taken to area with no water, mosquitoes or flooding.

Treat with root of tree, *rier troc*, (big *rier*); cut it into pieces, soak it in water in gourds, then after a while put in mouth of cow; effective but sometimes God says it will die and it dies anyway. Or can use root of *pa*; if use early, animal may survive.

Also capsule from Arabic traders, yellow and red; 2 capsules dissolved in water, injected into rib cage. Cow dies sometimes, sometimes doesn't die.

Had animals with *guaw* 2 years ago; used traditional treatment, some died, some recovered.

NB some say **guaw, liei, magwar, noi** are all the same, some say there are differences between them.

(see **guaw, liei, magwar, noi, taraw**)

gui gui

is a very small and disturbing insect.

It affects all animals and people in all seasons, everywhere, disturbing mostly in the evenings.

It enters eyes, ears and nose. It can make animals weary and lazy, and give them diarrhoea.

It causes the same diseases as mosquitoes, flies (*luang*) and *thurkuach*.

gueny, kuat kuat

Gueny affects all animals, of all ages, any time, any place.

It is an infection caused by ticks when they bite and cause round and tough sores which eventually become wounds and spread all over the body of the animal including its feet. It removes the coat of cow, starts from back.

Without treatment, it takes long to heal, or the animal eventually dies.

There is no traditional treatment.

Modern treatment is topical application of healing ointment.

It is not transmittable from animals to human beings.

(see **manyuany, pam**)

jey wumna

wum means nose

cattle; disease of head, nose bleeds, salivation, pain in joints

survives without treatment

jiok

means dog

jok

means disease

jok laya

jok means disease, *laya* means diarrhoea

It affects cattle and sheep, any time, any place. It spreads animal to animal and all become sick at the same time. It does not affect people.

It is caused by an insect, *kom*, then by cows licking each other.

Control by quarantining.

Affected animals have constipation with bloat, going to diarrhoea; tears come out, eyes fall in. Animals can die.

There is no treatment.

It finished a year ago; some lived, some died.

jok nyeng

moves strangely

or sleeping sickness

jok nyeti**jok tal**

nyeti means ribs

tal is a milk container

ie starvation of calf from overmilking of cow at times when little milk even for people

jok piny (Waat)

Diarrhoea associated with grazing in water; like *noi*.

jok puoth (Waat)

Disease of sheep and cattle in all seasons, anywhere.

It can spread with meat to other *luaks*.

It is a disease of lungs causing coughing and difficulty in breathing, with a 1mth to 2yr course, (like TB). PM only the lungs affected, heavy, swollen and variously coloured red, black and yellow; yellow fluid in chest; lungs and heart stuck together and to wall of chest; bad smell.

jok riem (Duar)

riem means blood

A disease of sheep causing bloody diarrhoea.

It is caused by PPR or plant poisoning.

jok tak, jang tak

tak means spleen

Jok tak affects cattle, sheep and humans, of all ages, in all places, mostly in rainy season (*ruel*).

Affects one animal at a time, not all at once. Humans can get it by eating the meat of the affected cow; if meat handled, may get skin wounds (*jang*); cows can't get it from man.

Caused by grazing in places where is water and snails; also cold weather can be the cause too.

Weakens the animal, diarrhoea, very fast in breathing, dislike hot weather, just stay in *luak*, eye become small (*hol hol*) and tear dropping from eyes; affects chest, causes cough and swelling on the back; makes *tak* black (W);

Kills either suddenly or in about 6wks in which case bloody diarrhoea may occur; PM spleen large, soft and spoiled so thrown away (*Waat*).

Untreated animals may die or may recover.

Traditionally, treat with *rier trok*: dig root, cut into pieces, mix water, give to cow by mouth; if give to cow, cow will survive if God says cow will survive; if not, will die;

can cut swelling on back, and clean with boiling water.

Or treat animal with *duop* and *guaw* medicine, bought in town before the crisis, and animal will get cure; also heard about it from the CAHW working in Wichok.

Last case finished last year, begin to treat with novidium, alamycine and *rier trok*; after that, most cattle survived.

Jok tak looks like *mawumlual*.

juol hair rough

Juol is a disease of cattle, affecting any age, any time, any place.

Affects one cow only, doesn't spread.

Some informants said it was always subsequent to another disease, particularly *dat*, 'brother of *dat*' (*Waat* & N); others said it could be subsequent to, or a symptom of, another disease; or is caused when a cow gets fat (W & N).

Makes hair stand and change colour a little bit; also too much breath; stays in shadow, or in water, not in sun, during heat of day, becomes thin.

Those who associate it with *dat*, say it often or always kills animal; those who associate it with other causes, say it does not kill animal, but makes it unthrifty, so it is best to kill it.

When associated with *dat*, it can be prevented if bleed animal immediately it gets *dat*; if don't bleed, will get *joul*, (and will die).

There is no treatment.

Hair and skin changes are like *ker ker*.

It is the same disease as *yop yop*.

(see **yop yop**)

kaithual

snake bite

kaith means bite; *thual* means snake

Can affect all animals including humans, any time (though snakes tend to be around more during *toot*, and go away in *jiom*) or place; it depends on someone's luck. It affects two to three in an area, both cattle and man like that, and goes away.

Snakes are an enemy to everyone, humans and livestock, or whoever comes across it. It is highly poisonous with high infection to anyone. If get too much swelling, destroys legs and eyes of both livestock and human.

Untreated, the affected animal can die.

Bitten part should be cut with a knife; or if it has released the poison into cows eye, then must be washed with *ruoth thual* (shed snake skin); or use the tree *thou* by cutting outer part of it and put into water, then wash the bitten area with it or to drink that water;

or call a person who knows plants to treat (the person who knows is someone born as a twin to a snake - some women give birth to twins, one is a person, one is a snake; there is one such person in Nadong) (N).

Modern treatment, *wal dop* (tetracycline), is the best of all, bought from the traders.

kash ngama

kash means bite; *ngum* means keep open
(ie dog keeps its mouth open to bite, ie mad)
(also **kuiny gok, ngam, waath**)

kay (N)

type of diarrhoea with blood affecting people and animals; all ages; any season, but associated with *ruei* (start of rains); cause unknown, possibly from water. One animal only, doesn't spread.
Type of diarrhoea with blood; shooting out like water; sometimes rectum comes out; sometimes die, sometimes recover.

No treatment or try with grass called *mariem*.

Informant has never had a cow with *kay*, just heard about it.

(NB pronounced very similarly to **keic**)

(see **ciith, dany, mathi, twiny, wathi**)

keic, kei

(NB pronounced very similarly to **kay**)

affects cattle, sometimes also sheep and goats; no stated association with age, season or place. It affects one animal at a time, perhaps one animal in a *luak*; does not spread.

affects horn, ears, eyes: growths, infections;

'Caused by *luang*, type of fly, when they bite the cow's eyes, ears, horns; this form a *keic*.' (W)

'in eye, caused by grass seed, or by something unknown - may be from air or hair';

cow with *keic* looks v distressed and irritable; eyes have tears, ear may be down; affected cow doesn't like to graze, stays home; can progress to deafness and blindness; horns break; problems with brain, like headache; course 6-12mths.

Treatments: treatment is usually done by a *leert*;

owner cuts the growing part of the keic with knife and use boiled urine; cow survives;

if in ear, applies needle like knife, cuts all swollen places; when have removed all, washes, repeat washing with hot water every day; if do this, calf survives;

if on eyelid, make a hook, and cut out the lump with a fine small spear;

if around eye, boil water to clean eye, take fine fishing spear and curve end to make fine hook; pull eyebrow / eyelid laterally and make cuts down eyelid to get out white pus;

may remove whole eye if already blind so dead eye doesn't confuse cow;

if in horn, heat fishing spear in fire till red hot then put into horn three times (going up the underside of the horn lengthways); don't wash with anything; occasionally can lead to blood coming down nose if badly affected; also sometimes pus from holes, but if this happens, animal will die;

if in horn, use small spear, put in fire, spear each affected horn three times; then use butter/oil - boil and put in holes; if cow doesn't die, means he's killed the *keic*.

ker ker

affects cattle, all ages, one animal only, doesn't spread

caused by burning, sun burn, if cow not kept clean, seen in dry season (*mai*)

skin disease, patches of hair come out, no treatment, animal recovers in wet season, or dies.

SB, personal observation, (N): *luak* with 5 cows and 3 calves; informed by women until old man arrived; 1 cow with *ker ker* on dorsa of pinnae; area of crusted exudate, quite discrete area, doesn't seem to be spreading though claim it is, not attracting flies or affecting cow in any way; white cow with small patches of grey black (told it doesn't only affect white cows); told father of this cow died 2 years ago of *ker ker*; this cow a second calver and neither calf affected; owner thinks cow will get better

(NB 1 informant suggested it can be an eye disease; wash eyes of cow with soap and boiled urine to keep clean)

(human disease *rueth* is same as *ker ker*)

(same as **gony gony, nyalieny**)

kiel, kel, nguok

kel means cough; *nguok* means vomiting

Affects chickens; widespread; coughing, nasal and oral discharges, widespread mortalities. (Duar) cough eg in calf that may have swallowed hair with milk, may vomit it up (W).

kuat kuat, gueny

removes coat of cow, starts from back

affects cattle, sheep and goats; no particular association with age, season, place. Starts with one animal, may then affect others.

Caused when tick bite cow; no prevention (W). Associated with water (Waat).

Makes wounds on parts of cow, especially *boam* and *wic* (head); the cow dislike to stand outside due to hotness of sun, unlike inside *luak*; it make weakness, itching and lack of blood (W).

Lesions round mouth, some deaths; like *panyuany* but rest of body not affected (Waat).

Cut infected part with knife then boil urine of other cows and put in cuts and when dry, maybe cow will become alive, maybe die.

Can also use 'gass' and *duop* medicines begged or bought from towns, esp where market; inject then begins to dry and recover.

'Gass' and *duop* drugs plus urine these are the best treatments for the '*ker ker boam*', then cattle recover.

Last seen this year; treated with paraffin/kerosene and alamyline (*wal dop*, drug for *dop*) and also used traditional treatment.

Similar to, or same as, *gueny* (which doesn't affect goats), and *poam* (which doesn't affect cattle).

(see **manyuany, pam, panyuany**)

kuem (Waat)

slow, non fatal disease of cattle; swelling of metatarsal and metacarpal regions, females often become barren; PM reddish fluid with small pieces of tissue in swelling.

(see **chuali, mole, panyibole**)

kuiny gok

dog disease

barking a lot, becomes wild and starts biting people, becomes paralysed

(same as **ngam, kash ngama, waath**)

also described as: something make the dog unable to walk and stand by its legs, difficulty breathing; associated with November and cold weather; give gourd milk to drink, some recover; saw some cases last month, did nothing, some dead, some recover (N).

lal

shivering

(see **dengber**)

leer (N)

swellings (like **nguot**) around neck

nguot of neck, or *keic* of ears

liei

liei means steal slowly, *guaw* means thin

Liei affects cattle and shoats, of all ages.

It starts with one cow and spreads to other cows one by one. It spreads to other cows. It does not move from animal to human beings or visa versa.

When there is more water it affects cows so water is the cause; caused by grazing water so seen from September.

Before, didn't have so much *liei* because were better able to move to dry areas where the disease was less prevalent.

(In goats only caused by browsing on *tap yaca* (spike seeded herbaceous plant) which is common near water, eg in Nyal (can also cause the disease in cattle if they eat it))

Signs: steals body of cow, bones showing, too much urine, watery diarrhoea (but not bloody)

slow loss of weight, step by step, one year; becomes dry, bones stand out; breathes quickly; hair standing; tail becomes big

gradual loss of condition, fever on and off, sunken eyes, may show lacrimation and photophobia, seeks shade, no hair on tail;

the cow doesn't graze, gets thin. the eyes gets in. It gives running stomach, shivers, and tearing.

sheep have pot belly, unkempt coat, diarrhoea, and may have bottle jaw.

NB cow with *liei* is photophobic, cow with liver fluke (*jok cuey*) basks in sunshine (Duar);

PM watery meat sometimes jelly like, poor taste when roasted, watery bone marrow, may get flukes in liver and worms in stomach and intestine;

PM sometimes kidney worms, sometimes yellow water in lungs, sometimes worms and yellow water in liver, generally lots of yellow water inside round organs; worms in all organs, no special one

Sometimes gets better if just take away from water;

also keeping warm in *luaks* can help them get better.

If not treated the cow dies.

Old informant claims used to be treatment for *liei* long ago; plant *car*, 'plant moves like an insect!' take flower and seed, collect seed and put into water, makes water red, give to cow to drink within 24 hrs; doesn't use now as would have to cultivate it as only grows in distant insecure bush; also had tree called *teet*, a big tree which also makes water red, and also only found in distant, insecure bush (N). It is treated by the roots of a seasonal plant called *yith lual* a reddish plant and roots of another a bit long plant called *rier*. These are soaked in water then the cow is caught, the mouth opened, then it is poured into the mouth. Once applied the cow is cured and no deaths (W).

It is treated by tetracycline caps and another cow's disease medicine called *guaw*. I don't know that medicine. These are bought from the Arab traders in towns. Once applied the cow is cured and lives.

SB, personal observation (N): (same *luak* as *ker ker* cow) cow sick with what is claimed to be *liei*; big horned cow 'brought from long distance', in April, so don't know much history; has cough at night or at pasture but not in chirey, assumed to have cough because had *dop* a long time ago, and has *liei* now; is losing weight and hair is standing up on withers; also slight lacrimation and nasal discharge; no longer giving milk; (calf born in April, gradually lost weight and died 2 weeks ago; died because of mosquitoes); cow cudding, no loss of hair on tail, not photophobic;

SB, personal observation (N): second *luak*, 2 cows, 1 heifer, 3 calves, 1 bull; two old ladies inform for a wee while then disappear! 1 cow and calf with *liei*, was fit, now thin, down milk, dung solid, urinating cause of *liei*: mosquitoes, *rom*, and grazing from water

liei also similar to *jok cuey*.

NB some say **guaw**, **liei**, **magwar**, **noi** are all the same, some say there are differences between them.

(see **guaw**, **liei**, **magwar**, **noi**, **taraw**)

luang

type of fly

affects all animals, everywhere

bad from march to may; rain in June kills; but will come again in march of new year

always serious in the morning and evening; back of cattle and round eyes becomes black, eyes with tears and dust

people burn cow dung in the morning and smoke moves around the cattle into the air, then the flies run away and the cattle are comfortable

flies taking blood from the cattle, which will grow very thin and then die

flies move from people to cattle and cattle to people

similar to *nyiith*, *ruom* and *thurkuac*

lueng

poisonous grass

machueny

swelling of liver

type of snail going to liver

from July, from grazing water

stomach, wind coming, cow loses weight

animal swollen at front, thin at back

PM liver very big, blood very black in skin, 'all organs mixed with meat; everything just like stone'

animal with *machueny* may also lose weight slowly

magwar

magwar means too much grazing, or weaken the cow

Magwar affects all animals, mainly older animals, particularly from November to January; also in rainy season when cattle kept in *luaks*.

It affects all animals at the same time, goes from one and goes to another.

It is caused by water (all diseases come from water), or bad weather especially floods; from *luang*, a big fly.

It steals body condition of cow till cow has no body left and dies; loses condition despite eating a lot; lots of diarrhoea but still milks, doesn't lose weight; tears, and liquid from mouth;

weakens body of cow, no grazing, no milk, lasts three months;

eye pain, weakened body of cow, rough skin body look change and weak and unable to walk, stop the milk, also when it is near to death it causes stop grazing.

PM all organs normal

Treat with tree roots *loor*, cut in very small pieces, put into water then give to the cow to drink.

If not treated, death.

Last cases: 1988 was year disease appear; we didn't do anything;

last year killed some of my cows, but I did nothing;

Same as *guaw*; equal to *liei*; similar to *mawumlual*, *liei*

NB some say **guaw**, **liei**, **magwar**, **noi** are all the same, some say there are differences between them.

(see **guaw**, **liei**, **magwar**, **noi**, **taraw**)

malpeth

Affects cattle of all ages, any place or season.

Can start with one and spreads to other cattle one by one.

No cause.

Completely changes the shape of the cattle, hair straight, not normal; or sudden death.

Without treatment, cow must die unless the cow has a strong resistant.

Use *rier trok*, some survive, some die.

'People are trying with *wal guaw* and *wal duop* bought from town; as soon as you treat the animal with it there will be no more death and I witness this, is a powerful medicine which destroying this disease.'

Two years ago; cows treated with *wal duop* and *guaw* drugs survive, and the ones not treated died.

Yiethpiny has the same symptoms

(see **yiethpiny**, **taraw**, **rieng**)

manyuany, pam, panyuany

are names for a condition that mainly affects goats, though some informants mention sheep and cattle, of any age at any time of year. It is not transmitted from humans to animals or vice versa.

Caused by: loss of condition due to low plane of nutrition; cold weather during the rainy season; when the goats remain in rains without shelter; *nyalieny* enter into the hair of the goat; may come up if animal recovers from *gieng*, or *yiethpiny*.

Signs: removes coat of goat, starts from mouth; makes goats very thin; skin condition characterised by all stages of pox formation, skin swellings widespread throughout body including teats and udder;

pox like lesions all over body including face, fever, weakness, scratching, may abort, milk reduced, 6mth course, hair falls out, scars remain;

hair straight up, a flow of mucus through the nose, the skin of the goat becomes coated.

It affects all goats without anyone to escape; affects 2-4 out of eg 15-20 animals; kills very few, but if die, can't eat meat because all liquid, meat swells under the skin; don't use meat as enters deep to skin. There is no way to prevent pam to infect other goats because there is only one *luak*.

Treatment is by keeping clean.

by making the goats drink the water of the herbs of the wild trees i.e. *buowa* or *tolar*.

It is also treated with tetracycline injection, from Rupnagai and Mayom; after injection the animal can survive or die.

SB personal observation (N): *luak* with 10 goats of various ages and sexes; informant young girl; 8 had *manyuany* in October, affecting nose and mouth, lesions red as recovered over one month; couldn't eat very well;

treated by informant: washed each goat's mouth and nose every other day with hand hot, boiled water till better; all recovered; 2 had diarrhoea, *ciith*, at the same time but got better.

brother of *kwat* in goats and *guol* or *guony* in humans

(see **gueny**, **kuat kuat**, **tun tun**)

mathi (W)

Diarrhoeal condition affecting all animals (1 informant said cattle and sheep, 1 said mainly goats, 1 said calves), in all seasons (except January to March), anywhere.

Starts with one animal, then to rest till finished.

Caused by soft newly grown grasses.

Affected animal suffers diarrhoea with pain and indigestion; tears come out and nose produces liquid.

Treated with water lilies (dry, grind and mix with water); or cow can be given local yeast from sorghum or maize (*thob beel* or *thob manytabni*) and the root of *bowau* trees and *modol*, some of these plants are found in the forest and some are at home.

Alamycine is the best treatment.

Without treatment, must die.

Just ended within this winter two months ago; by using injection with newly arrived drugs, cow will not die.

Similar to human disease called *juak* (?measles)

(see **ciith, dany, kay, twiny, wathi**)

mawumlual

wum means nose; *lual* means blood

Mawumlual is a disease of cattle (and other animals, 1 informant of 3), affecting all ages (only 6mths - 2yrs old, 1 informant); in any season, anywhere.

It affects groups of animals, and spreads from one to another, but it is not a common disease. It is not transmitted from animals to man.

It occurs when cattle have been left out and are bitten by mosquitoes, or when there are floods which carry a lot of snails which are infectious to the cattle.

It can be prevented by isolating the infected cows from the rest of the cattle.

'Seen long time ago in Dinka areas when used to visit Dinka areas amicably before war; haven't seen for a long time'.

'Possibly part of *gieng*, can affect cow in two ways, either with sores around mouth and body, or like *yiethpiny* in that it can kill immediately;'

affects cattle at their mouth, nose, and swells the sides of their front legs; causes a lot of mucus at the nose of the cow;

headache and diarrhoea, no milk, stop from grazing;

swells throat, much saliva from nose and mouth;

nose & mouth become raw like a wound; unable to graze; cow dies;

rapidly fatal disease, carcass has dark blood oozing from nose, mouth and sometimes anus and ears, the blood does not clot readily; carcass initially bloated, but decomposes rapidly, spleen enormously enlarged, and widespread blood splashes in the body; the blood is poisonous to people who skin the animal.

If not treated the animals die.

No traditional treatments.

Use tetracycline injection, by injecting the affected cows they survive.

Similar to *gieng* and *yiethpiny*.

(see **yiethpiny**)

mole, muol, panyimbole, chuali, kuem

NB Two conditions, generally associated, but with different names in different places.

(‘cows with swellings on knees don’t give birth’; ‘combination of swellings over joints with foul smelling vaginal discharge’; ‘the cow limps, has abortion, and is barren’.)

The conditions affect mainly cattle, but also sheep and goats; the conditions are seen in breeding females (usually 3rd or 4th calvers, though can affect at first calf). It is commonest in the rainy and colder seasons. There is no association with place.

It is generally said to affect one cow and not to spread, although one informant said it could spread between cows and bulls, and through bulls to other cows, with the infection in bulls usually unnoticed until it becomes infertile. It is thought not to spread between cattle and people.

The first condition is abortion followed by infertility, although the infertility may come without abortion, and one cow may abort more than once then become infertile, and that is also considered to be the same condition.

Other signs mentioned include: urine change to yellow; when abortion, before bleeding has stopped, bulls jump cow; affected cows become non-productive; doesn’t get pregnant, not like other cows, gets fat and very huge;

The cause is said to be:

something, the *muol*, is swallowed, goes to stomach of cow and lets foetus not to grow, makes the calf small; and after that it attacks the whole body of the cow, all the body is pale(W);

new growth grasses affect uterus of cow with *nguot* (W).

Treatment includes: some men put hand inside to clean uterus;

some men use neem tree sap after cleaning uterus by hand (N);

wany (grass / plant) put in water in sun for day, and given to cow to drink in the evening (N);

oral *wal mi kernyang* grows in bush (Waat);

The second condition is fluid swellings over joints; swelling of joints in all age groups, with yellow fluid; Treatment includes: cut open and drain liquid that looks like water or urine; the fluid is within a sort of container (*yai*) which, if removed stops the *muol* from coming back; if just cut, will return; clean with hot salt water; (most common, widely used treatment);

It is to be cut and a wild onion like plant, *jaal*, is cut into pieces, soaked in water and put into the mouth of the sick cow. Also *toar*, sisal, plant is used too. All these herbs are found in the forest. It can be cured though it does not finish from a cow at a go. The treatment is known to those who practise it. (W)

Outcome: It does not kill a cow but it cripples it if not treated.

NB *ngah* is a naturally infertile cow; *but* is a cow which has had calves but then becomes infertile (*mole/panyimbole* is one cause).

Use of names:

Wichok: **mole** is the term given to the swellings on the joints, associated with **panyimbole**, the abortion and infertility manifestation; the term **chuali** is not used or understood.

Nyal: **chuali** is the term given to the swellings on the joints, associated with **mole**, the abortion and infertility manifestation; **panyimbole** is not widely known, and if known is understood to mean early abortions not associated with joint swellings.

Waat: **kuem** and **muol** are both used for joint swellings associated with infertility.

Duar: the terms **panyimbole** and **muol** are recorded, but not their meanings.

(see **chuali, kuem**)

ngam (W)

A disease of dogs of all ages, with no seasonal or locational associations.

It can start with one dog, then to the rest one by one. then the mad one transmit to the healthy ones and so on

Cause unknown.

Signs: dog very weak and lazy and doesn't behave like others until it becomes hostile, runs mad, is very hostile with man, cattle and dogs, just bites any human beings surround it;

also described as: weakens the dog and look very thin and shiver; within three days completely, the dog becomes very thin and looks with dirty eye full with discharge; same symptoms as *dengber*.

No treatment; nobody buy drugs because it is a dog that suffer; it sound bad that you are treating a dog, not a cow;

Controlled by killing affected dogs; destroy mad dogs.

ngony (Waat)

bloat in cattle; bloat, difficulty breathing, may die

nguot

nguot is a painful abscess; (cf *dheng*)

Nguot affect all animals including humans, of any age, in any season (particularly rains, 1 informant) or place.

It usually affects one animal, but may affect a group; is generally considered not to spread, but may do sometimes. Generally not considered to spread from animals to people, but 1 informant thought it could.

Get 'big swelling' in one place, abscess either on body or in udder; has white stuff inside (sometimes get yellow water out, sometimes pus, *nga*, v bad smell);
cow becomes weak, swollen wound, unable to walk, lack of milk; lasts one week to one month;

NB In some places, eg Nyal, *nguot* is associated primarily with the udder ie mastitis:
swelling of udder, get blood from udder; can also affect over joints;
mastitis, swelling of udder, can break udder.

Without treatment, going to lose energy little by little till it die;

Treatments: 'anyone can cut nguot';

cut swollen region, cut over fluctuant soft place and clean with boiling urine; wound dries up;

the growth parts are to be cut so that discharge come out, and cleaning daily with hot or warm cows urine then wounds began to heal and swells disappear;

cut the swelling, wash with hot water, after that it recovers;

after one month cut open and wash out with cooled boiled water and sometimes with leaf of tree *nya*; *jal* (onion like plant) cut up, put in water for 8 hrs, then give to cow to drink; then cut into *nguot*, clean wound and put in ash of plant *nya* to dry up;

if nguot and get maggots in wound, put sap of *mark* in wound;

wild plant, *mark*, is pounded; put white sap into water and give to cow to drink;

for mastitis, milk onto ground twice each day till better, (but no effort to milk last);

if *nguot* in udder, open udder, may remove one entire teat, cleans once daily with boiling water till recovers.

Also can use *duop* medicine (tetracycline; bought from traders before conflict); if you use this medicine, the cow recovers;

Last finished two years ago; used alamyline, boiling urine and cut with knife; healed to normal; cattle all survive;

had it two years back, was using duob medicine and cows urine, we saw improvement and no death;

last month, treated cow, got better.

Similar to *pot pot* and *chuali*.

1 informant (N), thought synonymous with *keic* (affects eye, ear, horn), but affects cow everywhere.

NB In Waat, **nguot** reported to mean round worms, particularly haemonchus, in cattle.

(see also **dheng**, **banjair**, **keic**, **leer** (N), **pot pot**)

nima (Duar)

disease affecting all ages of chickens

fever, white diarrhoea matting tail, egg laying stops or get abnormally shaped eggs, sudden death, many birds affected, up to 60% die

noi

A disease of cattle (and goats), of all ages, in any (or just rainy) seasons, in all places.

Just affects one cow, not from affected to unaffected.

Sometimes caused by lack of enough grasses, or just comes even when there is enough grass.

Signs: gradual loss of weight & condition, fever, weakness, polydipsia, hair stands out giving dark colour, shivering, especially in morning, milk reduced; salivation, lacrimation (though eyes dry when death near), avoids sun, urine and faeces passed in small amounts, diarrhoea, lack of blood, bones weak;

2 types: rapid death, 12hrs, fever, shivering, hair standing, no blood except in heart;

or slow course, tail hair lost, tail not swished about as normal, urine smells and passed in small amounts, meat pale;

PM marrow and meat watery, smells bad when cooked (only eat if starving), makes plain, green soup without fat.

Without treatment, should die.

Treatments: root of *rier trok*; cut into pieces and mix with water and give to cattle; when treated that way, some survive, some die;

wal guaw (Novidium) from Arab traders; cow survive.

Last case last January and still continuing; before went to doctor, used *rier trok*; then went to CAHW who used novidium; some died, some survived;

got it in my own cattle last rainy season and is still affecting the cattle up to now; treat it with *wal guaw* and *rier trok*, some died and some survived.

NB, not known about in Nyal, though some have heard the name.

Same as, or similar to, *liei*, *guaw*, *duud*, *magwar*.

NB some say **guaw**, **liei**, **magwar**, **noi** are all the same, some say there are differences between them.

(see **guaw**, **liei**, **magwar**, **noi**, **taraw**)

nouk

affects all animals, any time, any place; affects one, then another, doesn't spread;

cause is natural or poison;

'agony because weak animal loses consciousness temporarily'; animal stops grazing; sometimes dies; no treatment;

in 1993, did nothing but animal recovered.

nyalieny

name of small insect inside skin or coat, small reddish insects in hair, insects that jump;

Most commonly said to affect sheep, especially young male sheep, but also goats, dogs, chickens, and all other animals are mentioned as able to be affected. Affects most commonly in rains and winter (November, December); spreads from animal to animal, eg sheep to calves.

Caused by dirty place, eg when cow leave *luak*, and sheep are left alone and nobody is cleaning the *luak*; infects poultry and premises that are not swept regularly; or sometimes God can cause it to affect animals as punishment on that year;

Prevented and controlled by good hygiene: remove sheep and chickens from infected places; clean the place of sheep and make smoke inside the *luak*;

insect inside skin hair biting, itching, sucking blood and it cause sheep weak and thin; makes body lazy; eye pain, hair stands, restless; lasts one month;

can stay in cattle's bodies for almost one year to cure it and re-infect the animals again;

one year ago, treated, some dead, some recover;

1995, cleaned the animals;

nyapec (Waat)

from *cuoapec* meaning to raid, ie the disease raids all cattle affects cattle and goats; goats may catch from cows bad diarrhoea with blood, lacrimation, something gets out from the skin; PM dry carcass, erosions in guts.

nyiith

mosquito, affects all animals including humans, of all ages, ('doesn't leave anything that has blood in its body'), especially from June, *pai bakel*, due to support from long grasses and water. Caused by rainy season whenever whole areas full with water and dew (*thech*); hotness of the sun kills them. Get no sleep, cows crying all night; the more it bite human the more they develop different diseases. Collect and burn the dry woods around the cattle camp every evening to get rest. similar to *wath*, *thurkuach*.

pajala

reproductive infection of donkeys and people (like gonorrhoea).

pam

(see **manyuany**)
(see **gueny**, **kuat kuat**)

panyibole

(see **mole**, **chuali**, **kuem**)

panyuany

(see **manyuany**)

peh lap

peh means retained; *lap* means placenta Sometimes associated with abortion (eg 'has *panyibole* in stomach which stops placenta coming out'), but not always.

Treatments: root of *chim yang* mashed and soaked in water for one day; give to cow to drink and placenta comes out

dep gayny for *peh lap* and agalactia together

mordol people who know the plant keep it secret, informant hasn't used (W)

toar root, cut and put in water for some time then give to cow to drink;

tobacco in water by mouth;

Put *sach*, grass ring used when carrying things on head, on horn of cow till placenta comes out (give to cow to help carry); never put anything in uterus (W).

pier (Waat)

sporadic, recurring disease of cattle;

infection of the tail ascending to the brain and causes animal to run off and does not return with the others so usually killed by predators, animals do not die but recover in a few days

pot pot

cellulitis

Affects all animals, of all ages and in any season or place, though may be more common in older animals and in the rainy season;

usually affects one animal but sometimes goes to another animal by chance; not transmissible.

Various suggested causes: poison or drinking dirty water; starts from the animals urine; it is causeless, it just break out without cause; something that affects cattle without signs then later get swelling; can be inside animal without knowing and comes out; result of ngoot; 'some think caused by snake bite, but not'.

Pot pot are swellings; 'it swells the cow, deforms or changes the cows shape, the cow looks bad shape'; don't have white stuff inside; starts with swelling mainly on knee and joints; affected animal doesn't die quickly.

Some cut over swellings (fishing spear put in fire and burn the affected part; cures it), but most say don't cut; may go away without treatment, but may cause death, unless god helps it;

'*pot pot* not cut unless starts to show signs of white stuff inside; no experts at treating *pot pot*.'

Can be given *duop* drugs and ttc capsules, bought from Arab traders in the towns when you inject the cow, and then the cow survive.

Last had in *tot* (summer) but still killing some animals; gave CBPP treatment (ttc capsules); some cattle survived, some died.

It almost over among my cows in last rainy season but still affecting up to now, just treat with *wal duop* and *thok jokna* (alamycine and ttc capsules); when injected, some survive and some die, then they begin to lives.

Yiethpiny makes similar swelling on upper leg of the cow.

(see also **deng**, **ngoot**, **banjair**)

(NB **Nyal**: **pot pot** is a small animal that eats the eyes of children!)

rieny

A disease which affects male cattle, sheep and goats (*tuut* bull, *ruath* young bull, *tutdeltho* billy goat, *tutdelroma* ram). It

Of two informants, one said it is only ever seen in animals recently castrated and cannot spread between animals; the castrated animal is unable to walk and seems to have back pain and cannot stand well due to testicle nerve infection. If clean with hot cow urine and warming leaf of a plant; the bull will survive and goes to grazing in the field. Can also treat successfully with *wal duop*. If not treated, could die. The informant had it in his animals last rain season, almost four months back; injected the affected animals and now they are cured.

The second informant did not make the association with castration and said it can spread between animals, and even between animals and people. The animal is cold and the back is stiff. The backbone of the animal becomes straight, the animal cannot bend the back nor can it stoop. It remains standing. Although there have never been any proper treatments, bathing the back with hot water had been tried, but no cure.

The tetracycline and the medicine for lung disease had been tried, bought from Arab traders in towns, and cured it.

If not treated the animal dies.

The second informant had it four years ago, applied the modern treatments mentioned above, some of the cows were saved and some died.

rieny also used to mean a sudden death syndrome by some
(cf **taraw**, **yiethpiny**, **malpeth**)

rol (W)

goitre

seen in calves and kids, which are born with it ('mother got disease causing new born to be born with *rol*'); can cause difficulty breathing; never reduces, if lump gets very big, goat dies; if stays small, goat survives; no treatment; don't cut or animal will die.

'still continuing in my goats, when it happened that goat gives birth, will come out with goitre'.

ruom

large fly ?tsetse

affects all animals including humans;

very active in the month of may (*pai dhiech*) an the rain fall (*ruei*) and stops in July (*pai barou*) and again comes in October (*pai wal*) and disappear again in December (*pai walrew*), yearly like that;

it produces its egg on the grasses during autumn (*toot*) with support from the dew (*theech*);

it prevents cattle from grazing at daylight, and weakens them; they just go to graze in the evening after ruom return to forest where it stays;

use to inject the affected animals with *wal duop* and *wal guaw* before Bul area reached into crisis; we bought these drugs from traders;

the affected cow die after long sickness till the cow become unable to walk;

similar to *nyiith*, *luang* (flies), *thurkuach*, *wath*.

rut

the name *rut* refers to respiratory rhales ('*rud rud*') due to throat swelling.

rut affects cattle, sheep and goats of all ages;

affects one animal and immediately goes to another on the spot; may occur all over an area in 5 days affecting many animals; it is contagious.

It is caused when, if a hyena eaten a cow, sheep or goat; if that meat is cooked and eaten in the middle of the cows it must affect those animals; it only appears where a hyena eaten an animal but not everywhere; affects that place and spreads everywhere near;

caused by snake bite and hyena bite the animal and the animal dead and you look the meat in the middle of the cow it cause affection;

caused by snake bite or hyena bite.

Prevention: is good to bury a dead cow been eaten by a hyena or follow instructions made by *kuar muon* (earth spiritual leader wearing leopard skin) about how it is supposed to be buried, especially the bones;

Controlled by separating animals and leave the place where it appears;

Signs: swelling all around the neck, difficult for the cow to breathe, snoring and die very soon; sudden death, may die in 1 day or may lie for 3 days, swollen head and throat; much mucus from the nose white in colour and lungs, and tears from the eyes, stops the cow from grazing, stops the milking.

Treatment: if a *kuar muon* will bury a rib of that dead cow and burn the meat of the dead cow and smoke go out to cattle, no harm will affect the cattle;

if it is not dead, it is injected with *wal duop*, and often survive;

all the cows in that particular area must be affected by *rut* for many years.

Last year it was finished; those cows affected by *rut* were injected by *wal duop*; those cows still alive until now.

sor (N), thor (Waat)

abortion

(N) informant has seen some abnormal foetuses, eg 'hyena bone'

taraw

cattle, buffalo, from December

it affected one cow and sometimes go to others;

starts in one place and spreads to every place, affecting animals one by one;

will affect all animals and die.

Associated with: infestation of brightly coloured ticks (Duar); dirty water; tsetse fly, and much rain/flood (N).

Affected animals not allowed to roam where much water to avoid more infection; separate affected cattle.

Signs: skin feels dry, animal looks weak, rough coat, keeps grazing but returns with empty stomach, passes hard dry faeces with difficulty; chronic condition, the animals die after one month; PM watery blood, meat may be yellow or pale, gall bladder enlarged and filled with thick, yellow fluid (Duar);

the big deaths seen when lots of *guaw* cases become severe (W);

dizziness, severe bloody diarrhoea and shivering; dryness, especially of skin; can disappear and

return, some die, some recover after long period of sickness; same as *gieng* (N);

taraw affects all cattle (just like *gieng*); makes cow stand and look up and doesn't graze or drink water until dies; if dies, no blood or water, body dry (N);

sudden death;

animals cry.

heard of long ago from grandfather but never seen (N).

Treat with terramycin LA.

thier

can affect all male animals, including man; no associations with time or place; appears without cause; doesn't spread.

scrotal swelling, swelling on the bulls testicle, develops as bull gets older, usually unilateral;

castrate, unilaterally or bilaterally as necessary, wash with boiled cows urine (*kieth yang*);

3 years back had one, castrated and used boiling urine, and got better;

completely different from other diseases.

thor (Waat), **sor** (N)

abortion

tun tun, tuny tuny

2 different usages:

In Duar and Wichok:

A disease of all goats; mainly during the rainy season; infects one and then spreads to the others; it is difficult to prevent *tuny tuny* to infect other goats when it has infected one.

Caused by too much water when the goats graze during the rains because their bodies do not like water.

Describes posture of goat as if cold and wet like it has been rained on; fatal disease characterised by fever, nasal discharge, white salivation in the mouth, diarrhoea, thinness, PM lesions in mouth, gums, nostrils, and haemorrhage in intestines (Duar);

It kills goats in great numbers and also infects them with severe diarrhoea;

Tuny tuny infects the goat at the mouth by forming sores and it prevents the goats to graze and with too much diarrhoea and the goat just remains in the *luak* crying;

Acute diarrhoea in goats causing death within one day.

Nothing used to heal the infected animal but eventual die.

Tuny tuny is healed by injecting the infected animal with tetracycline which can sometimes be gotten from the *Muharalin*.

In Nyal:

A disease of sheep or all animals; at the start of winter, November; affects whole village, all the animals in that area are to be sick, when it affected one sheep, it immediately spread; is a transmitted disease between man and animals.

Causes: animals kept in a bad place; dirty water; plant, *tiny tiny*, when there is no grass for sheep especially in winter.

Affected animals driven somewhere far, to avoid contact.

Makes wounds on the animals body which stay till the animal resists it or dies;

skin disease, it makes small swollen wounds into the sheep's body; sometimes result death or life.

Clean the wounds with boiled water;

no medicine because it is a complicated disease and is confusing people;

government drug tried and there was an improvement.

In 1995, used boiled water.

Possibly the same as *manyuany*.

twiny (Waat)

Bloody diarrhoea of calves, caused by dirty water, causing death in 10-20 days
(see **ciith, dany, kay, mathi, wathi**)

waath

dogs or cattle; run, become mad, bite other animals
(also **kash ngama**)

wath

a small fly, smaller than house fly

affects all animals including humans, any time, any place;

it bites cattle muchly always; in the morning cattle cry, they apply dust into the air using their legs to chase away *wath*;

collect dried cow dung and set to fire produce too much smoke, *tuol*, to chase *wath* away from cattle;

all cattle cut their ropes moving around avoiding *wath*;

it dislike rain, it finish last May after rain fell;

move between man and cattle;

same as flies, *ruom*, mosquitoes, *thurkuach* in symptoms.

wathi (Duar)

white diarrhoea with fever and bad odour in calves; mortalities quite high
(see **ciith**, **dany**, **kay**, **mathi**, **twiny**)

wut chueiny, wut cieny, jok cieny, jok com (Waat)

sporadic disease of cattle and goats, associated with rain, floods
disease of liver; loss of condition, dies in 1-3 days; PM liver enlarged, rotten and worms, small insects
seen in it;
similar to *yieth* and *rud*.

yam yam, yum yum

Affects cattle and goats,

It affects the sight of the cow; looks normal but blind; cow blind, lacrimation, wanders unknowingly
(*dam dam*).

Associated with grazing poor pasture in the dry season (Duar);

Alternatively (1 informant, W): It is caused by a fly called *wath* and sometimes when cows just dies all of a sudden. It reduces sight or makes the cow blind and mad. The cow runs away. The whole body of the cow looks sick. The eyes fall in, the cow sneezes, shivers, and water runs from the eyes. It starts with one cow then can infect the rest from one to another. The only prevention is to quarantine the affected cow and keep it way from other cows. A cow dies if not treated. There is no traditional treatment ever tried. I heard that it used to be given tetracycline for lungs disease treatment. The cough disease treatment had been applied. Also tetracycline capsules if applied then a cow could be treated. It finished from my cows last rainy season by applying TTC and lungs disease treatment. It infected five of my cows and I treated them via that treatment. It only affects cows not humans.

yiethpiny

yieth means speared; *piny* means on the ground; *yiethpiny* implies being struck down. affects all animals including humans; some say it occurs most commonly at the start of the rains. some say 'sporadic, 1-10 deaths in cattle camp'; others say 'spreads, affects all animals'.

Causes: when fly bites, or grazing bad grass; at the start of the rainy season, they eat bad grass, and if it dies in a day, people call it *yiethpiny*; animal grazing bite new poisonous grass which causes their infection and cause a sudden death, then people say there is an outbreak of *yieth piny* because they believe it is only *yiethpiny* that kills in one day;

To prevent *yieth piny*, the cow affected is isolated in a small fence where it gets its feeding and water without movement and contact with other cows till complete recovery is obtained; evacuate cattle from place where disease occur.

Symptoms: sudden death in otherwise healthy animal; animal comes in looking very healthy and just drops dead for no reason; nothing to show as it just occurs and the cow is dead; cow going round in circles when come back from grazing; gives the cow dizziness, tears come from eyes, then the animal falls down and dies; infects a cow in one day and kills it with stomach swollen and without diarrhoea; stomach very big on both sides, 'same as *duony* but *duony* gets better if keep still and off food', 'in *yiethpiny*, stomach not very big compared to *duony*'; no PM signs; with *yiethpiny*, sometimes stomach very big, sometimes neck very big, sometimes goes round in circles; usually die quicker than with *rud*, swelling in throat and noisy respiration, PM blood clots in heart, bloody carcass, yellow green swelling in throat, large spleen, bloated, swollen, spleen and liver; the cow shivers, its mouth swells, the cow is constipated and unable to graze with too much foam at its mouth; affects cow like *mawumlual* (skin becomes raw), but mainly on legs; may die or may recover after a long time.

Yiethpiny can be treated locally with wild roots of plant *modol* soaked in water and the animal may survive or die.

Yiethpiny can be treated by using tetracycline where the animal may survive or die.

An infected animal of *yiethpiny* can survive with treatment.

It still exists up to now but when there is any break out, tetracycline injections are purchased to vaccinate the cows in order to save their lives.

Last year not bad, but this year, from *ruel*, has killed a lot of animals.

It can be transmitted from animals to humans but not from humans to animals.

SB: *luak* with 21 goats, all ages, all sexes; informant young woman with baby claims 7-20 (if include adjacent *luak*) have died of *yiethpiny* since October; all older animals otherwise in good health; all looked healthy when went to graze and came back, but died inexplicably in *luak* overnight; goats have lived in the same area all their lives; told *jiom* particularly bad for *yiethpiny*; PM (carcasses eaten) all normal, no findings.

yop yop

hair rough
(see **juol**)

yob yob

affects cattle, sheep, goats of all ages; no association with season or place; affects only one animal.

follows from *dat*; caused by other diseases that affect the animal eg *dat*;
it is more serious on affected cattle when the sun rises hot.

quick shallow breaths; long, standing hair; seeks shade;
breathing with quick shallow breaths, panting
breathe fast, doesn't graze, affects when sun it raises too much, and the cow goes to where there is a
water which about 1 metre or less deep so that it can soak its body with its tail and feels cool;
at the mid day, the affected cattle like to stand in shallow water and some lying under the tree shade;
affected cows do not go to grazing only staying in *luak*;
the animal is alive but you can sell it at auction.

no traditional treatment; use *wal dop* and immediately recovers; (3 separate informants)

it has not yet finished off, my five cows are still suffering from it.

yung hok (Waat)

affects cattle; associated with bite of mad dog
cattle madness, bellowing, fighting other cows and humans, or frightened by them, dies in 6-10 days.

OTHER ANIMAL HEALTH PRACTICES AND PROBLEMS

The following information came from interviews with a number of people, including *leert* (specialists), around Wichok and Nyal.

Bone-setting

Bone setters treat humans and animals;
all specialists said they treat about 10 animals per year, and more people; with many surviving (though one said he has tried to treat about 10 animals but all have died!);
mid shaft fractures OK, but if in eg hip, hopeless;
usually from animals fighting or stepping into holes.

Initially open wound with knife to clean out haemorrhage / haematoma;
wash with cooled boiled urine; or use boiled water with leaves known by specialist;
splint with sticks; sticks all round leg and bind top and bottom with local rope;
wash wound regularly, every third day; (or: wash after 2 days if skin broken, otherwise takes sticks off in 10 days and wash; or: sometimes clean with boiled water every 3-10 days eg if worms enter);
remove sticks to wash, then re splint;
many weeks to heal; if bad, cow left tied up and water and feed brought to animal;
if fracture too complicated, cow will die; if simple fracture would do OK.
if gets to 30 days, won't die; if doesn't work, kill animal.

Castration

'most people try castration; if successful, continue, if have problems, call in someone else in future';
'if careful, animals don't die; occasional animal may die but small number';
'most people do their own castration; about one in ten may die; if in cattle camp, keep in shade and bring food and water; if in village, keep in *luak* for 2-4 days'.

same method all species;
if possible, wait till start of dry season when fewer flies or poisonous plants (can lead to *yiethpiny*);
animal tied up if necessary, and held down (legs and head) on left side in lateral recumbancy;
open castration using small spear head sharpened on a fishing spear;
bilateral incisions down lower two thirds of lateral aspect of scrotum, not quite to bottom; initial stab incision through skin into body of testis, extended in either direction;
testes exteriorised, tunica separated from body of testis and epididymus using spear;
blood vessel teased through with spear blade above blood plexus (in most cases), then removed and given to small boys to eat, (roast on dung fire);
any extraneous viscera carefully tucked back into the scrotum, and scrotum pulled down and shut;
no tying of vessels;
wash with boiled urine; wait for bleeding to stop then put salt into wound;
(or: don't wash immediately, wash with boiled water or urine after 2-3 days if necessary);
keep in *luak* three days, allowing out to graze in evenings;
after three days, wash again in boiled urine; if OK, can rejoin herd; if not, keep in longer;
(or: no particular after-care; after castration, release for grazing immediately).

(nb: SB observed 12 shoats castrated at one time in morning, and 2 goats one afternoon; none were washed or given salt in wound; only one seemed to bleed for a while; the 12 shoats were kept in *luak* the first day, but after the first day, they went out to graze with the rest of the shoats; the 2 goats took themselves back to the *luak*; cattle may be given more attention).

Colostrum:

When calf first born, must not allow to drink too much; must introduce milk slowly and allow to build up; but will allow to drink from the start; always control access to milk by calf, throughout the calf's life.
Calves allowed to drink from cow as soon as they are able after birth.

Dystocia

'done by some clever people', (turned out informant was one!), 'mainly by turning calf';
clean hands and fingers, no lubricants used, put hand and whole arm in, turn calf, calf comes out;
shoats: uses two fingers to gently manipulate;
embryotomy done by one or two people but very rare;
women do not help with dystocia, even for shoats.

NB one traditional midwife (*gam*) in Nyal was reported to assist shoats also but this could not be verified.

SECTION 3: SUMMARIES OF TREATMENTS**SUMMARY OF NON-PLANT TREATMENTS**

NB Urine leave urine in hot sun for part of day before use, but not necessarily for 24hrs

Cut and wash

banjair

chuali (N) (wash with salt)

jok tak (back) (N)

keic

kuat kuat / gueny (W)

mole / muol

nguat

pot pot (W)

Cut

dum dum (W)

Wash

dat (feet) - urine or salt water

ker ker (eyes)

Pull off and burn

chak

thurkuach

Bleed

dat

duony

Other

ceth / ciith

'house of wasp' (W)

chak

paraffin

dengber, gom, waath

kill dogs

duony

cow in sun 3 days

jey wumna

survives without treatment

kuat / gueny

paraffin / kerosene

mole (panyimbole) (N)

clean out uterus by hand

nguat of udder

put heated skull of dog against udder, also human bones (told twice)

peh lap

grass carrying ring 'sach' on horn (helps cow carry afterbirth till it comes out)

thier

castrate

SUMMARY OF DISEASES FOR WHICH THERE ARE PLANT TREATMENTS

abortion *bul*, a cactus; pick new growth segments, remove spines and mash in water; give to cow morning and evening for two days, to help her recover from abortion; informant had cow with abortion in April; gave *bul*.

agalactia *bash*, in pumpkin family and a food plant; for agalactia, mash with water; use seeds and flowers with leaves when available in *tot*, but can even use stems and roots in *mai*, if no other part of plant available; informant had cow with abortion in April; gave *bul*, then after two days, gave *bash*, and cow gave more milk; both *bul* and *bash* given morning and evening for two days.

chan chan; also good for agalactia;

both *bash* and *chan chan* useful, active plants for both people and animals; both grow when rains came, and are scarce after rains;

char, man collects, woman prepares; chew then give to cow;

dep gayny / mark, for *peh lap* and agalactia together (N);

kolpiru, from Bul, root used, chopped and mixed with water (W);

mayok, from Mankien.

bac *tin tin*, or *reef*, the plants are mashed in water, then left for half an hour; the water is then drunk; the person or animal 'may recover after a while unless unlucky'. One informant had used this treatment and said it worked last time he used it (N).

benyien *tab* (tobacco), dissolved in water and used to wash eye.

calf diarrhoea water lilies; dry, grind and give mixed with cows milk; work if given early, otherwise don't; works only if god on your side; but if no water, no water lilies.

ceth / ciith water lily (grind and give with water) (W).

chuali a decoction of the tree, *kerwak*, to drink (1 informant, N);

kuel; use milky sap;

nguer, soak bark in water for some time, then give decoction to cow as a drench;

'It just finished from my cows last rainy season. I applied the traditional treatment by using *kuel* & *nguer*. Then my cows were saved.' (W).

dam dam *kuel* (W),
nguei (W)

dany *dany*; grows in swamps, so only in wet season (N);
wal dany; ground nut like plant (N);
wal manyang; neem like tree, grows in termite mounds (N);
last two not available as only in war inaccessible bush (N);
char; use root in water for dany

danying *danying* (N);
can also use root of *nguer* tree boiled in water.

dop *dep gayny / mar*; a creeper, mash up with water, leave in water for one day, then give twice a day for two days by mouth, cow coughs a lot when put in mouth; *dep gayny* usually effective if given early; *dop* is in cattle camp now, people are using *dep gayny*, and animals generally get better.

duony make fire round cow with *bot bot* (local grass) to keep its body warm;
tolar (W)

guaw *rier troc*, (big rier); root cut into pieces, soak it in water in gourds, then after a while put in mouth of cow; effective but sometimes God says it will die and it dies anyway;
root of *pa*; if use early, animal may survive;
yith lual (W); '*yith lual* used for *guaw* but didn't help'.

jok tak *rier trok*: dig root, cut into pieces, mix water, give to cow by mouth; if give to cow, cow will survive if God says cow will survive; if not, will die.

kaithual the tree *thou* by cutting outer part of it and put into water, then wash the bitten area with it or to drink that water.

kay *riem / mariem*; type of grass (N)

liei *char*

car, 'plant moves like an insect'! used long ago; take flower and seed, collect seed and put into water, makes water red, give to cow to drink within 24 hrs; doesn't use now as would have to cultivate it as only grows in distant insecure bush;

pa (W)

teet, a big tree; also makes water red, also only found in distant, insecure bush (N).

yith lual, a seasonal, reddish plant, use roots;

rier, use roots;

these last two are soaked in water then the cow is caught, the mouth opened, then it is poured into the mouth. Once applied the cow is cured and no deaths (W).

magwar *loor*, tree; roots cut in very small pieces, put into water then give to the cow to drink.

malpeth *rier trok* (W)

manyuany by making the goats drink the water of the herbs of the wild trees' *buowa* or *tolar*.

mathi water lilies, dry, grind and mix with water (W);

or cow can be given local yeast from sorghum or maize (*thob beel* or *thob manytabni*) and the root of *bowau* trees and *modol*, some of these plants are found in the forest and some are at home.

mole / muol

(lumps on legs) *jaal / njal*, onion like plant; cut into pieces, soaked in water and put into the mouth of the sick cow (W);

toar, sisal like plant (W);

mayok (W);

(abortion) some use neem tree sap after cleaning uterus by hand (N);

wany (grass / plant) put in water in sun for day, and given to cow to drink in the evening

(N);

oral *wal mi kernyang* grows in bush (Waat).

nguo *jaal / njal*, onion like plant; cut up, put in water for 8 hrs, then give to cow to drink; a strong medicine, very poisonous, can make cow sick with cough like *dop*, or can kill cow, therefore not used routinely;

cut and clean wound, put in ash of plant, *nya / pa* to dry up;

nya, not used for wounds, but given to cows to drink if have *nguo* in udder; first use

nya to bring down swelling, if cow then not better, can cut and use *dep gayny* in wound to stop flies;

if get maggots in wound, put sap of *dep gayny / mark* in wound (*mark*; succulent, four sided stemmed, climbing euphorbia, with alternate leaves, suckers at internodes, tiny green flowers with four sepals and stamens emerging above the ovary, flowers in little clusters of three or more, red berries watery white flesh round seed within a thick red skin);

noi *rier*, root of *rier trok*; cut into pieces and mix with water and give to cattle; when treated that way, some survive, some die (W).

pam *buowa* (W);

tolar (W).

panyimbole neem tree sap after manually cleaning out uterus.

- peh lap** *tuar*; first choice for peh lap; mash root in water, give to cow by mouth, and peh lap comes out quickly;
 chim yang; second choice for peh lap if *tuar* not around, but not really for peh lap, not so strong; chew plant up in mouth, get young people to hold cow very securely, and blow bolus of *chim yang* up cow's nostril; makes it sneeze out disease; or: root of *chim yang* mashed and soaked in water for one day; give to cow to drink and placenta comes out;
 dep gayny for *peh lap* and agalactia together;
 mordol people who know the plant keep it secret, informant hasn't used (W);
 tobacco in water by mouth.
- yiethpiny** *modol*; roots soaked in water, the animal may survive or die (W).

SUMMARY OF PLANTS USED AS TRADITIONAL TREATMENTS

11 plants were collected around Nyal during the study. These were identified by their Turkana names in Lokichokio, which assisted in identifying their Latin names. In some cases, the Turkana / Latin identification does not seem correct; in these cases two names are given, the first being that bearing more resemblance to pictures in books. The study team will endeavour to have all plants collected identified, but this was not possible during the study period. Identification of confidently used medicinal plants should be part of the continuing work of the Livestock programme.

In each entry below, the Nuer name of the plant is followed by further identification details, the Nuer names of conditions for which the plant is used, and then any other notes on usage.

- bash** *Curcubitaceae*; pumpkin family agalactia
Convolvulaceae Ipomoea spathulata; sweet potato family (Turkana: *emartei*)
 also a food plant; for agalactia, mash with water; use seeds and flowers with leaves when available in *tot*, but can even use stems and roots in *mai*, if no other part of plant available; informant had cow with abortion in April; gave *bul*, then after two days, gave *bash*, and cow gave more milk; both *bul* and *bash* given morning and evening for two days;
 useful, active for both people and animals; grow when rains come, scarce after.
- bot bot** grass duony
 make fire round cow with *bot bot* to keep its body warm.
- bowau** mathi
 use root
- bul** cactus abortion
 pick new growth segments, remove spines and mash in water; give to cow morning and evening for two days, to help her recover from abortion; informant had cow with abortion in April; gave *bul*.
- buowa** *Ziziphus mauritania* (Turkana: *ekalalei*) pam (W)
manyuany
 make the goats drink the water of the herbs of the wild tree *buowa* or *tolar*.
- car** liei
 'plant moves like an insect!' used long ago; take flower and seed, collect seed and put into water, makes water red, give to cow to drink within 24 hrs; doesn't use now as would have to cultivate it as only grows in distant insecure bush;
- chan chan** (Turkana: *ngakapriet*) agalactia
 useful, active plant for both people and animals; grow when rains come, and scarce after.
- char** (Turkana: *akejuapo*) liei
dany
 man collects, woman prepares; chew then give to cow; use root in water for *dany*.
- chim yang** *Portulaca oleracea* (Turkana: *eliyet, elete*) dany
peh lap
 root mashed and soaked in water for one day; give to cow to drink and placenta comes out; second choice for *peh lap* if *tuar* not around, but not really for *peh lap*, not so strong; used particularly when cow ill but not really sure what is wrong exactly; chew plant up in mouth, get young people to hold cow very securely, and blow bolus up cow's nostril - makes it sneeze out disease, or start to show more specific signs.
- dany** dany
 grows in swamps, so only in wet season (N).
- danying** danying

dep gayny / mar / mark Euphorbiaagalactia
peh lap
dop
*nguot*for *peh lap* and agalactia together (N);*dop*: mash up with water, leave in water for one day, then give twice a day for two days by mouth, cow coughs a lot when put in mouth; usually effective if given early; *dop* is in cattle camp now, people are using *dep gayny*, and animals generally get better;

use in wound to stop flies, if get maggots in wound, put sap in wound

(succulent, four sided stemmed, climbing euphorbia, with alternate leaves, suckers at internodes, tiny green flowers with four sepals and stamens emerging above the ovary, flowers in little clusters of three or more, red berries watery white flesh round seed within a thick red skin).

jaal / njal onion like plant (Turkana: *akachumchum*)*mole* (hygromas)
nguot

cut into pieces, soak in water and put into the mouth of the sick cow (W);

cut up, put in water for 8 hrs, then give to cow to drink; a strong medicine, very poisonous, can make cow sick with cough like *dop*, or can kill cow, therefore not used routinely.**kerwak***chuali*

a decoction of the tree to drink (1 informant, N).

kolpiru

agalactia (W)

from Bul, root used, chopped and mixed with water (W).

kuel*chuali*
dam dam (W)

use milky sap.

loor

tree

magwar

roots cut in very small pieces, put into water then give to the cow to drink.

mar / mark see **dep gayny****mayok**agalactia, cattle
mole (hygromas)

from Mankien forests

modol

secret root

yiethpiny
mathi

roots soaked in water, the animal may survive or die (W).

mordol*peh lap*

(cattle & sheep, not goats); people who know the plant keep it secret, informant hasn't used (W).

neem

tree sap

panyimbole

after abortion, some use neem tree sap after cleaning uterus by hand (N).

nguei*dam dam* (W)**nguer**

tree

chuali
*danying**chuali*: soak bark in water for some time, then give decoction to cow as a drench;'It just finished from my cows last rainy season. I applied the traditional treatment by using *kuel* & *nguer*. Then my cows were saved.' (W);*danying*: use root boiled in water.

nya / pa	<i>Calotropis procera</i> (Turkana: <i>etesiro</i>)	<i>nguot</i> <i>liei</i> (W) <i>guaw</i>
<p>nguot: not used for wounds, but given to cows to drink if have <i>nguot</i> in udder; first use <i>nya</i> to bring down swelling, if cow then not better, can cut; cut and clean wound, put in ash of <i>nya / pa</i> to dry up; white sap from leaves, used for human wounds, but not animals; <i>liei</i>, <i>guaw</i>: if root used early, animal may survive.</p>		
reef		<i>bak</i>
<p>the plants are mashed in water, then left for half an hour; the water is then drunk; the person or animal 'may recover after a while unless unlucky'. One informant had used this treatment and said it worked last time he used it (N).</p>		
rier trok	<i>Sesbania sesban</i> <i>Polygala liniflora</i> (Turkana: <i>emaret</i>)	<i>guaw</i> <i>jok tak</i> (W) <i>liei</i> <i>malpeth</i> (W) <i>noi</i> (W)
<p>'big rier'; dig root, cut into pieces, soak it in water in gourds, then after a while put in mouth of cow; effective but sometimes God says it will die and it dies anyway; <i>rier trok</i> helps soften faeces but otherwise not much use;</p>		
riem / mariem	grass	<i>kay</i>
teet	a big tree	<i>liei</i>
<p>also makes water red, also only found in distant, insecure bush (N).</p>		
thob beel or thob manytabni	yeast	<i>mathi</i>
thou	tree	<i>kaithual</i>
<p>cut outer part of it, bark, and put into water, then wash the bitten area with it or drink that water.</p>		
tin tin		<i>bac</i>
<p>mashed in water, then left for half an hour; the water is then drunk; the person or animal 'may recover after a while unless unlucky'. One informant had used this treatment and said it worked last time he used it (N).</p>		
tab	tobacco	<i>peh lap</i> <i>beynyien</i>
<p>soak in water; given by mouth for <i>peh lap</i>; used as eye wash for <i>beynyien</i>.</p>		
toar	sisal like plant	<i>mole</i> (hygromas) (W)
tolar	<i>Solanum campylacanthum</i> <i>Solanum incanum</i> ; Sodom apple; (Turkana: <i>etulelo</i>)	<i>duony</i> <i>pam</i> (W) <i>manyuany</i> <i>panyimbole</i> (W)
<p><i>tolar</i> given to calves if drinks too much colostrum and becomes constipated - helps then pass faeces; <i>manyuany</i>: make the goats drink the water of the herbs of the wild tree <i>tolar</i>.</p>		
tuar	(Turkana: <i>abukut</i>)	<i>peh lap</i> (cattle & goats) (W)
<p>first choice for <i>peh lap</i>; mash root in water, give to cow by mouth, and <i>peh lap</i> comes out quickly.</p>		
wal dany	ground nut like	<i>dany</i>
wal manyang	neem like tree, grows on termite hills (Turkana: <i>loerkerka</i>)	<i>dany</i>

wal mi kernyang

grows in bush; give by mouth.

mole (abortion) (Waat)

wany

put in water in sun for day, and give to cow to drink in the evening.

mole (N)

water lilies

dry, grind and give mixed with cows milk or water; works if given early, otherwise doesn't; works only if God on your side; but if no water, no water lilies.

ciith
mathi

yith lual / jith lual

a seasonal, reddish plant
use roots, chopped and soaked, then given as a drench;
'*jith lual* used for *guaw* but didn't help'.

liei

SECTION 4: DISEASE GROUPINGS (TENTATIVE)

Diseases grouped by main symptoms

Swellings

banjaer
chuali
dheng
keic
kuem
leer
mole
nguat
pot pot

Skin & feet

bac
buot
dat
gony gony
gueny
juol
keic
ker ker
kuat kuat
manyuany
pam
panyuany
tun tun
yop yop

Eyes

benyiny
keic
yam yam

Neurological

bak
dam dam
kash ngama
kuiny gok
ngam
pier
rieny
waath
yung hok

Respiratory

dop
jok puoth
kiel
rut

Reproductive

chuali
kuem
mole
muol
pajala
panyimbole
peh lap
sor
thier
thor

Gastro-intestinal

chui
ciith
dany
jok piny
jok riem
kay
machueny
mathi
ngony
twiny

Wasting conditions

chui
guaw
liei
machueny
magwar
noi

Other systemic diseases

duony
gieng
jok laya
jok riem
nima
nyapec
rieny
taraw
tuny tuny
yiethpiny
yob yob

Other conditions

danying
dengber
dhom
dum dum
gom
jey wumna
jok cieny
jok com
jok nyeng
jok nyeti
jok tak
jok tal
juol
kaithual
lal
lueng
malpeth
mawumlual
nouk
rol
wut chueny
wut cieny

Bugs

<i>chak</i>	ticks
<i>gui gui</i>	small insect that gets into ears, eyes and noses
<i>lotuath</i>	insect
<i>luang</i>	fly, (called tsetse); come in great numbers; chased away by cow dung fires; puts disease into other cows; if sick cow bitten, can spread it; also used for ordinary fly (N)
<i>luekium</i>	cyclops
<i>mau</i>	fly that doesn't eat people or animals, just dried fish (N)
<i>mau mau</i>	huge fly found in E Equatoria that can kill a cow with one bite (W)
<i>nyaliny</i>	fleas or lice; insect lives between hairs; can remove hairs and kill goat
<i>nyieth</i>	mosquito; causes disease together with water and flies eg liei
<i>rom</i>	big, biting fly doesn't stay on cow; bites and flies away; can't put in fire as flies away too quickly (W) Nyal: <i>rom</i> a large biting fly that forces people to move away from area, or to put their cows out to graze early, and let them come back into the <i>luak</i> during heat of day to escape the flies; can carry disease from wild animals to cattle 4 types: small, green and black; very black (though not really black); blue grey; for buffalo, hyena and elephant come with rain, stop when north wind starts to blow (Nov/Dec)
<i>thurkuach</i>	biting fly that takes all blood; cow becomes thin, starey, dies; at sunset, pluck off and put in fire; (W) sleep with cow and eat them; different from but as bad as, <i>rom</i> (N)
<i>wath</i>	blood sucking fly (W) very small fly, causes problems (N)

SECTION 5: TERMS COLLECTED AT DIFFERENT LOCATIONS

The tables on the following pages show all the disease names collected by the study team and by the different organisations operating within the Operation Lifeline Sudan livestock programme at the various locations in which they work.

Disease names are grouped by species (although sheep and goat diseases are in some cases grouped together under 'shoats'), and listed alphabetically. Terms on the same horizontal line in the table are thought to be the same condition but with different spellings or local pronunciations. Terms on different horizontal lines are thought to be different conditions, even when they are very similar in spelling and pronunciation to terms on other horizontal lines.

In the following tables, terms are spelt as recorded at the time by the study team during group discussions, or as recorded by the different organisations. The spellings used in the main body of this manual were derived as a result of discussions with a number of individuals from different areas of Nuerland about consensual spelling. The spellings in the main body of the manual are suggested as possible 'standard' spellings, although these should be discussed further with recognised Nuer linguists.

Key:

Nyal list

collected by study team from groups of men and women in and around Nyal

Wichok list

combined list of terms collected by study team and VSF-Switzerland, from groups of men and women in Wichok

Wichok - men

list of terms collected by study team from groups of men in Wichok

Wichok - women

list of terms collected by study team from groups of women in Wichok

Wichok - VSF-CH

list of terms collected by VSF-Switzerland from groups of men and women in Wichok

MM - VSF-CH

list of terms collected by VSF-Switzerland mainly around Mankien

Ler - ACROSS

list of terms collected by ACROSS in and around Ler

VSF-B

list of terms collected by VSF-Belgium mainly around Akobo

Waat - DA

list of terms collected by UNICEF around Waat

Duar - DA

list of terms collected by UNICEF around Duar

