

# ADMINISTRATION OF MEDICINES TO DAIRY COWS (Level 3) – Part I

Topic	Training & information Content
9.1	Introduction to Animal health (Prevention vs curative health care)
9.2	Health signals
9.3	Biosecurity of dairy farms
9.4	Tick born diseases (Prevention and treatment)
9.5	Worm infections (Prevention and treatment)
9.6	Vaccination schedule and planning
9.7	Mastitis prevention and treatment
9.8	California Mastitis Test
9.9	Usage and storage of veterinary medicines on dairy farms
9.10	Administering of medicines to dairy cows
9.11	Instruction use of injectors into teat canal
9.12	Key performance indicators (KPIs) for monitoring health status of dairy herd



## 1. You will learn about (learning objectives):

- What medicines to use for dairy cows
- How to read a medicine label
- How to apply the medicines
  - Orally
  - On the skin
  - Injection
  - Spraying



**IMPORTANT**

*This module has two parts; this is part I – download Part II to continue to END.*



## 2. What are Medicines?

- Medicines are substances that when administered to an animal, have an effect on the physiology or psyche of the animal.
- This is done to cure or prevent an animal from a disease (vaccines or acaracides).
- Administration can be done differently:
  - Applying on the skin (ointments, acaracides)
  - Orally (through the mouth)
  - By injection
  - By putting it directly in to the womb
  - By putting it in the mammary gland (udder).



Intramammary tubes are applied into the udder through the teats.



Intrauterine capsules are applied directly into the uterus (womb).

### 3. Use registered medicines only

- For a medicine to get registered, it had elaborate testing on efficacy and safety.
- Registered medicines have appropriate information on the label.
- Other medicines for instance pesticides can possibly be harmful for cattle. Blindness is associated with use of pesticides.
- Unregistered medicines can be a food safety risk. To be registered, withdrawal times for milk and meat have to be on the medicine label.
- When unregistered acaricides are used, change this immediately.
- Your veterinary doctor can tell if the medicine is registered.



## 4. How to read a medicine label

Noromycin 300 LA is a sterile preconstituted solution of the broad-spectrum antibiotic oxytetracycline. Each mL contains 300 mg of oxytetracycline base as amphoteric oxytetracycline; 2.7% w/v magnesium oxide; 40% v/v glycerol formal; 10% v/v polyethylene glycol; and 0.4% w/v sodium formaldehyde sulphoxylate (as a preservative), monoethanolamine and/or hydrochloric acid as required to adjust pH.

**WARNINGS:** Discontinue treatment at least 28 days prior to slaughter of cattle and swine. Not for use in lactating dairy animals. Rapid intravenous administration may result in animal collapse. Oxytetracycline should be administered intravenously slowly over a period of at least 5 minutes.

**PRECAUTIONS:**  
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**CAUTION:**  
Intramuscular or subcutaneous injection may result in local tissue reaction which persists beyond the slaughter withdrawal period. This may result in trim loss of edible tissue at slaughter.

TAKE TIME  
OBSERVE LABEL DIRECTIONS

054670L01

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Oxytetracycline Injection 300 mg/mL

ANTIBIOTIC

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FOR USE IN ANIMALS ONLY  
NADA 141-143, Approved By FDA  
Restricted Drug(s) California. Use only as Directed  
U.S. Patent No. 6,110,905  
U.S. Patent No. 6,310,053

Net Contents: 100mL

**DOSAGE:**  
Oxytetracycline Injection

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Refer to package insert for complete indications, dosage, and usage.

Store at room temperature  
59° - 86°F (15° - 30°C).

KEEP FROM FREEZING. Batch No:  
Exp:

Distributed by:  
Norbrook, Inc.  
Lenexa, KS 66219

MADE IN THE UK



1. The label gives the product name (Noromycin) and the name of the medicine i.e active ingredient (Oxytetracycline).

2. On the label is also written how it is registered and for which animals. So here approved by the American Food and Drug Authority for California.

## 4.1 How to read a medicine label Cont'd...

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**3**

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3. The label tells you the withdrawal time. In this case 28 days for meat; and the medicine may not be used for lactating cattle (LA stands for long acting, for lactating cattle you will use short acting tetracycline ).


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**OBSERVE LABEL DIRECTIONS**


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Lenexa, KS 66219

**MADE IN THE UK**

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4. The dosage is always on the label. This requires some calculation.

- 3 ml per 100 pound is similar to 6 ml per 100 kg. So an adult cow should be injected 5 x 6 ml = 30 ml. A new born calf should have no more than 3 ml.


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Lenexa, KS 66219

**MADE IN THE UK**

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5. The label also subscribes for which diseases it should be used. Leave off label use to a veterinarian.

▪ A Tetracycline does not cure East Coast Fever.



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6. Warnings, cautions and pre-cautions are important and relevant to know. Especially contra-indications like for instance the use of cortico-steroids which cause abortion in pregnant animals.

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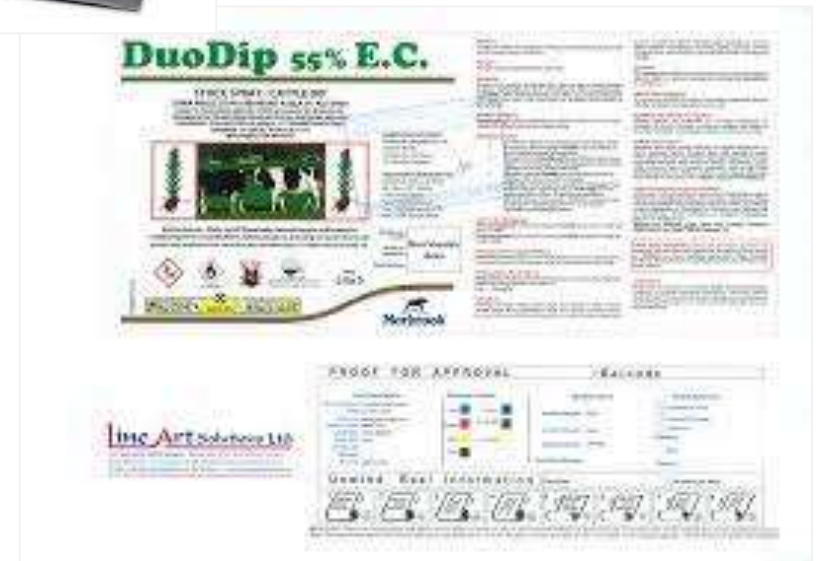
7. The label tells you how to administer the medicine. In this case by intramuscular (IM) or sub-cutaneous (SC) injection.

## 4.6 How to read a medicine label

### Cont'd: **Wrap up**

On a medicine label you will find:

- The name of the active ingredient.
- For which animal it is registered.
- The withdrawal time for meat and milk.
- The dosage.
- For which diseases it is indicated (Indications).
- Warnings (Contra indications)
- How to apply the medicine.



## 5. Measuring the heart girth

- Measuring the heart girth gives a good weight estimate, so you can calculate your dose of medicine properly.
- See table to the right.



Cm's	Kg's	Cm's	Kg's	Cm's	Kg's	Cm's	Kg's
75	41	108	114	142	236	176	435
76	42	109	117	143	240	177	440
77	44	110	120	144	245	178	445
78	46	111	123	145	250	179	452
79	48	112	126	146	255	180	460
80	49	113	129	147	260	181	467
81	51	114	132	148	268	182	474
82	53	115	135	149	276	183	480
83	54	116	139	150	283	184	487
84	56	117	142	151	290	185	493
85	58	118	145	152	295	186	500
86	60	119	148	153	300	187	508
87	62	120	151	154	305	188	516
88	64	121	154	155	310	189	523
89	66	122	158	156	315	190	530
90	68	123	162	157	320	191	538
91	70	124	166	158	325	192	546
92	72	125	170	159	330	193	554
93	74	126	173	160	335	194	562
94	77	127	176	161	340	195	570
95	79	128	179	162	345	196	578
96	81	129	183	163	350	197	586
97	84	130	187	164	357	198	594
98	86	131	191	165	364	199	600
99	88	132	195	166	370	200	608
100	91	133	198	167	377	201	616
101	93	134	202	168	384	202	624
102	96	135	208	169	390	203	632
103	99	136	212	170	397	204	640
		137	216	171	404	205	645
104	102	138	220	172	410	206	650
105	104	139	224	173	417	208	654
106	107	140	228	174	424	209	657
107	110	141	232	175	430	210	660

## 5.1 Measuring the heart girth Cont'd...

- The easiest to be done is in the crush with a special measure tape.
- If you do not have measure tape, take a rope and measure the distances corresponding with 100kg, 150kg, 200kg, 250kg and put tape around these spots (for the distances see table).
- Make sure that the cow stays square when measuring.
- No need to pull the tape or rope tight when measuring!
- Make sure you calculate the dose well.
- Under dosing does not work well.
- Overdosing makes no sense and is expensive.



## 6. Oral application of medicines

- Giving medicines through the mouth is very rare in cattle.
- This has everything to do with the stomach system of cattle. In the rumen, reticulum and omasum, the present microorganisms will degrade the effective components of most medicines.
- Secondly it is not easy to apply.
- Nevertheless some medicines are given by mouth, for instances salts or magnets for preventing reticulitis.

Magnets when placed in the reticulum will adhere sharp metal objects, preventing them from penetrating the stomach wall and eventually from puncturing the heart.



## 6.1 Drenching of anti-worm medicines

- Weigh the animal (measure heart girth).
- Calculate the dosage.
- Fill the drench with the appropriate amount of medicine.
- First squeeze air out of the drench.
  - Keep squeezing.
  - Put the tip of the drench into the medicine.
  - Reduce the power of the squeezing and the medicine will suck into the drench.
  - Stop when you reach the right dosage.
- Fix the head of the cow.
- Put the tip of the drench in the corner of the mouth and stick it behind the tongue.
- Gently squeeze the medicine into the mouth of the cow.



## 6.2 Giving a bolus

- Put the bolus in an applicator.
- Put one hand over the cow.
- Take the tongue out or push on the palate, so the mouth is open.
- Gently bring the tip of the applicator in line with the base of the tongue.
- Gently squeeze the bolus behind the tongue.
- Regurgitating boluses may impair bolus administration. Wait for the bolus to be (re)swallowed or allow the cow to stand 15 minutes prior to apply again.





## 7. Ointments

- Ointments can be used to reduce swelling or to cure pink eye.
- When applying on the skin:
  - Clean and dry the area of application.
  - Wear gloves (most ointments will contain medicines which can penetrate the skin).
  - Make sure the ointment in the jar does not get dirty.
  - Massage the ointment on the place of application (thumb rule, the longer the better).



## 7.1 Ointments for Pink eye

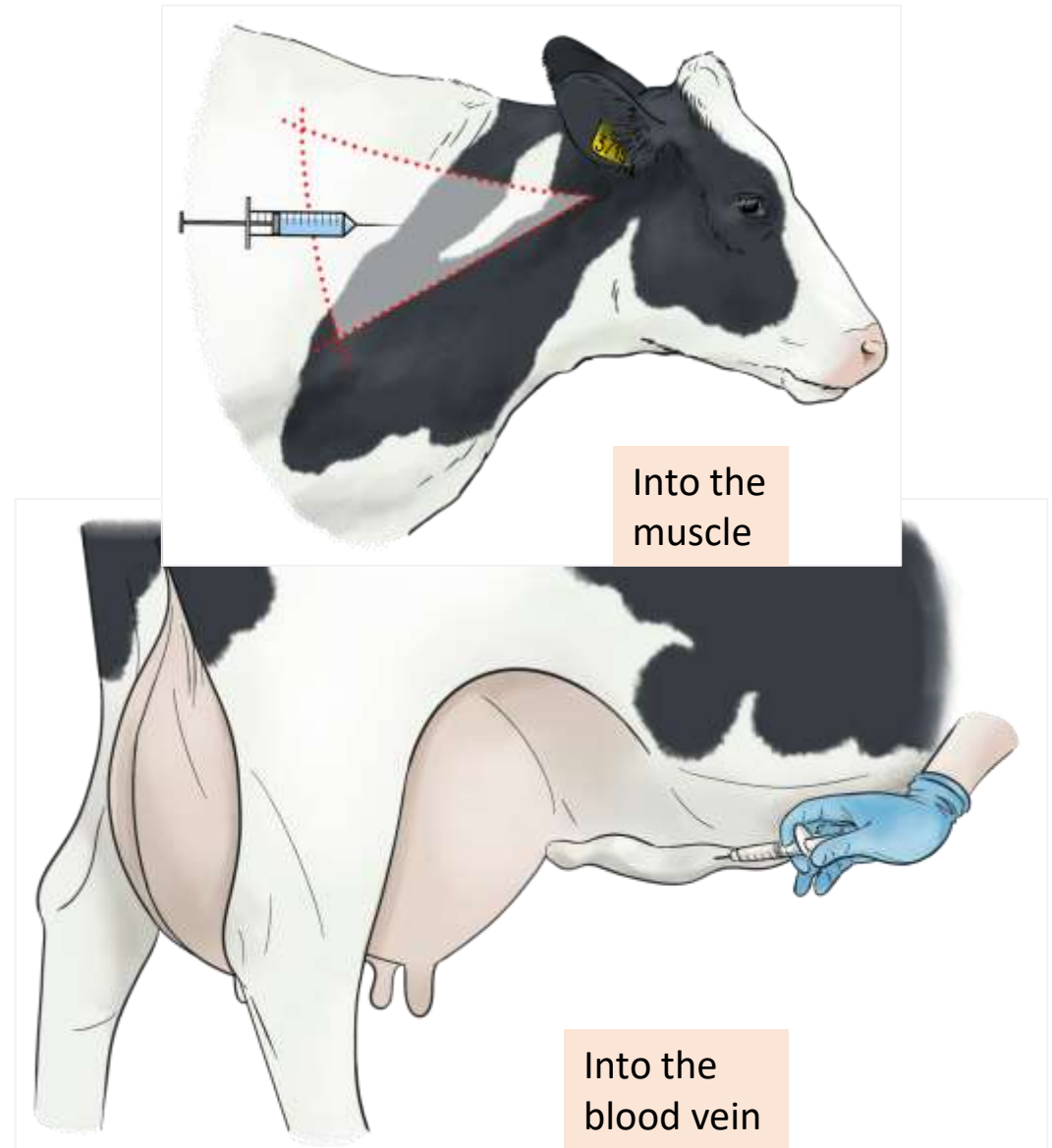
- To cure pink eye often tetracycline ointments are used (if not available sometimes udder tubes).
- When applying on the eye:
  - Fix the head of the cow.
  - Open the eyelid by pushing on the skin beneath the eye.
  - With the other hand squeeze a small line of ointment between the eyelid and the eyeball.
  - Close the eyelid and gently massage the closed eyelid.

**Important Note:** A trained veterinarian will give an injection. Do not do this if not qualified.



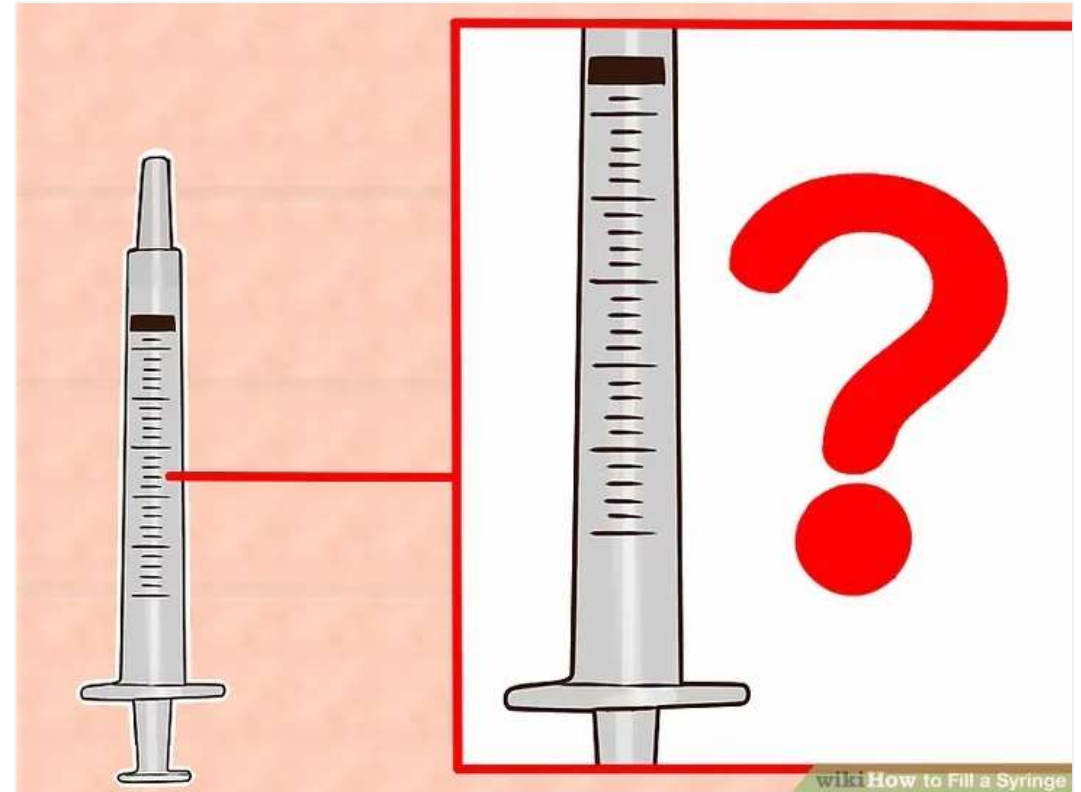
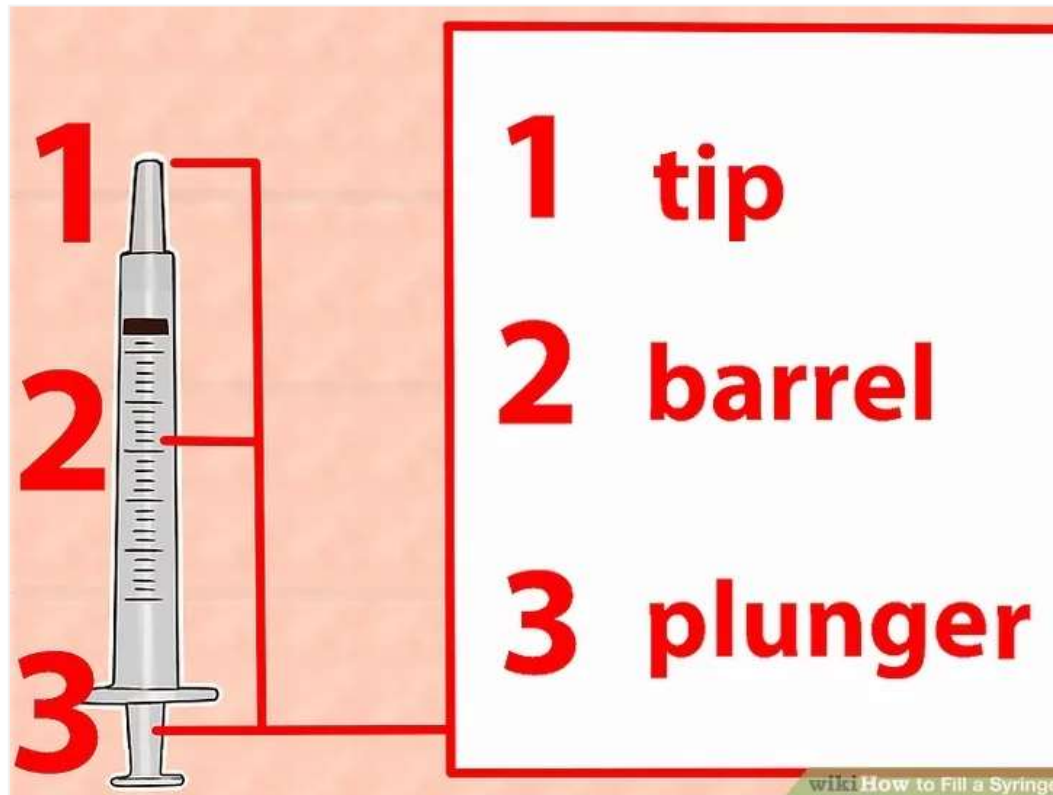
## 8. Injections

- A lot of medicines have to be given by injection with a syringe.
- There are 3 ways to do this:
  - i. Intravenous (IV) - in the vein.
  - ii. Intramuscular (IM) - in the muscle.
  - iii. Subcutaneous (SC) - under the skin.



## 9. The Syringe

- A syringe is made of 3 basic parts. Those parts include the barrel, the plunger, and the tip.



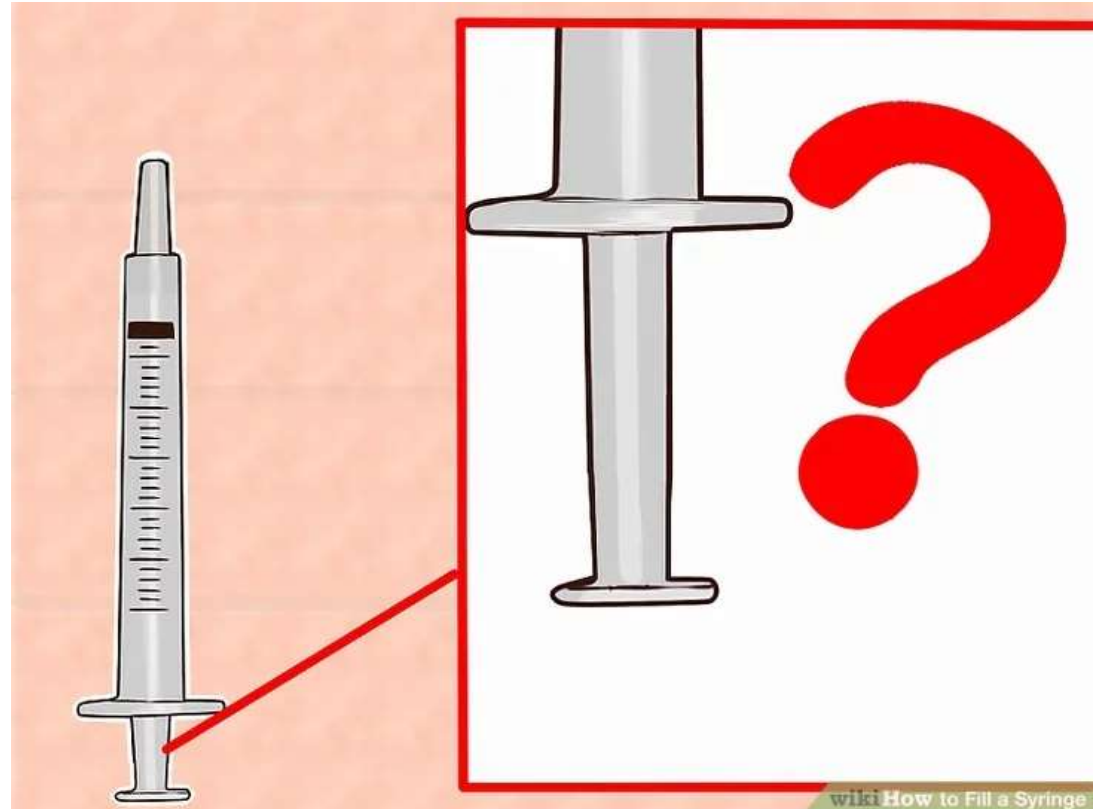
What the barrel does;

- The barrel is the clear part in the middle that holds the medicine.
- The barrel is marked with numbers and lines in a graduated manner.
- ONE ml is the same as ONE cc.

## 9.1 Syringe: The plunger

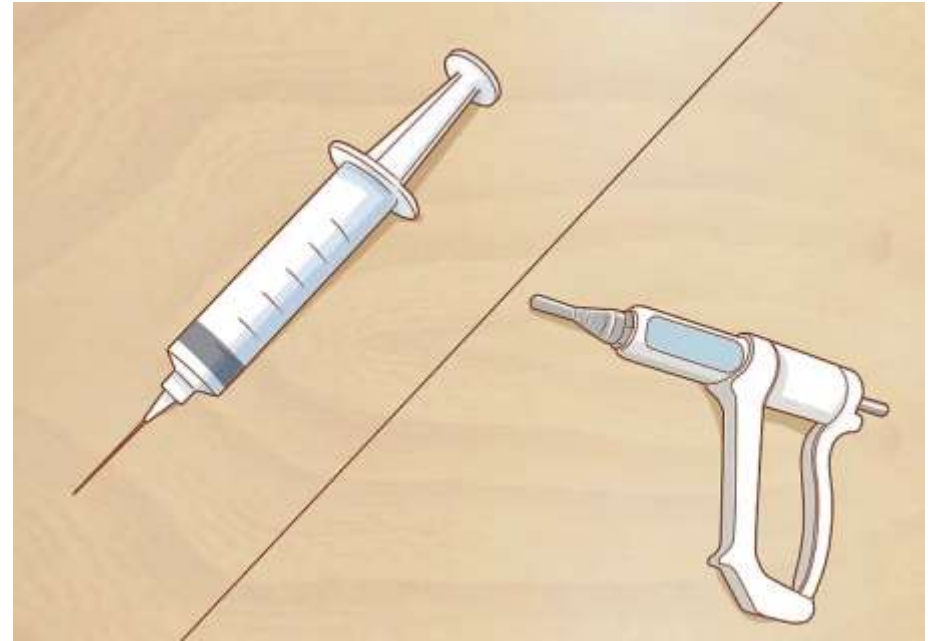
Recognize the plunger.

- The plunger is the part of the syringe that you manipulate as you fill the syringe.
- The end of the plunger extends out from the bottom of the syringe, and gently glides inside the barrel.
- This action helps you to accurately draw up the correct amount of medicine. The rubber tip of the plunger that slides inside the barrel is considered sterile.
- The lower part of the plunger extends from the bottom of the syringe. This is the also the part you push to deliver the medicine when you give the injection.



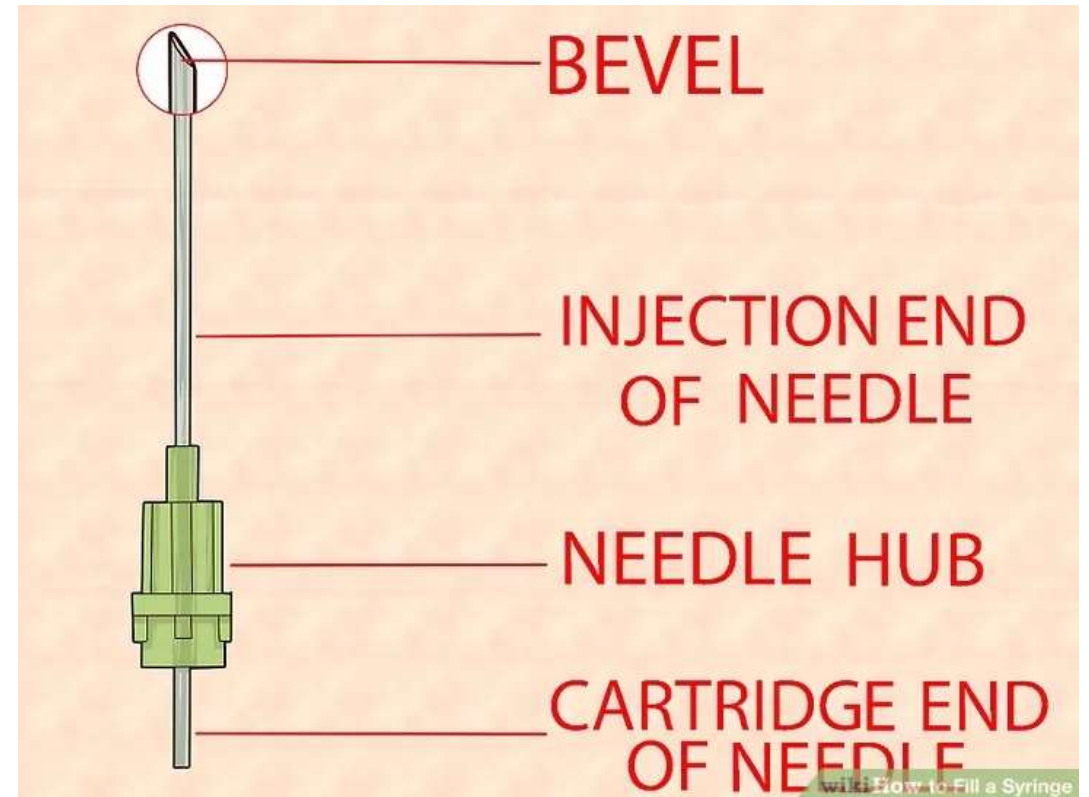
## 9.2 Choose your syringe

- Choose the syringe or dosing syringe.
- With a regular syringe you manually control how much of the medicine is injected into the cow.
- The dosing syringe injects a pre-set amount of the medicine, which is useful when administering to more than one animal.
- Syringes are plastic and cannot be used more than once or twice, after which they should be discarded.
- Use the appropriate size syringe for the dose you will be applying.
- A dose in one syringe should be used for only one animal.
- A dosing syringe or dosing gun has a glass housing (which holds multiple doses) and a plunger that has a thick rubber washer on the end to create a vacuum.



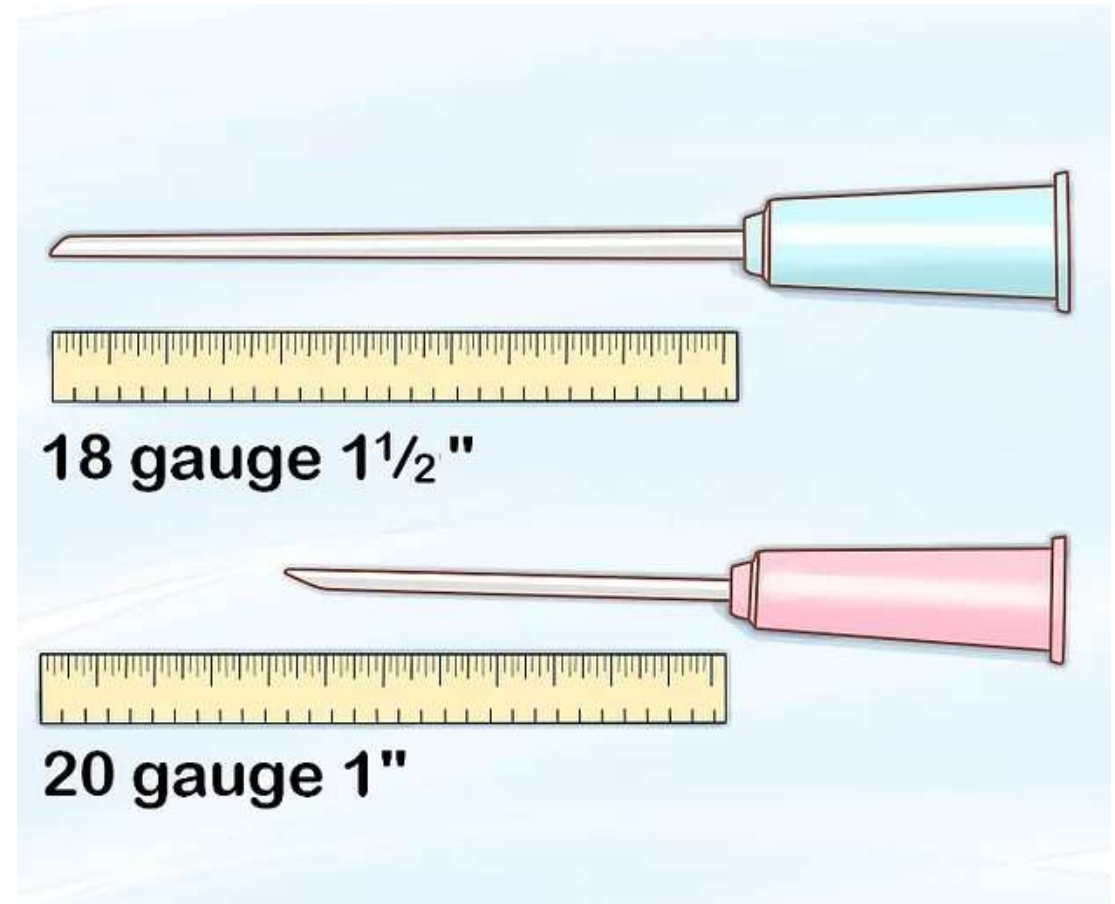
## 10. The Needle

- Identify parts of the needle. The needle attaches to the tip of the syringe and has 3 parts; the hub, shaft, and bevel.
  - The **hub** is the part closest to the barrel where the needle connects to the syringe.
  - The **shaft** is the longest part of the needle.
  - The **bevel** is the very tip of the needle that comes in direct contact with the skin of the animal receiving the injection. Needles are designed to have a slight slant or bevel, on the very tip.



## 10.1 Select the needle

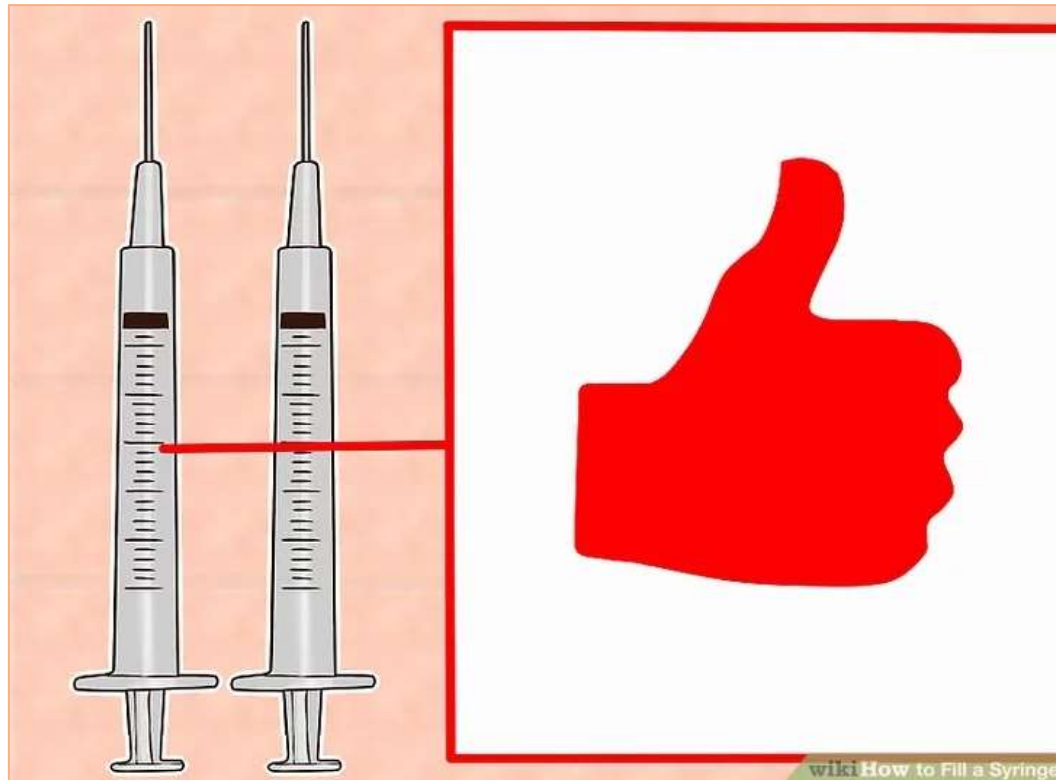
- Choose a needle based on the weight of the animal.
- The size of the needle is shown in measurements. The size of a needle is inversely proportional to its diameter, so the smaller the size, the larger the needle. For example, a calf's skin is thinner than an adult cow's; so you can use a thinner, larger-sized needle.
- Use the thinnest size possible to ensure the cow feels as little pain as possible.
- To give an injection to a calf weighing less than 225 kg, a needle with a length of 1 inch is ideal.
- For larger animals weighing more than 225 kg, you will need a 1.5 inch needle.





## 11. How to prepare for injection

- Read the label on the medicine bottle.
- The label tells how to administer the medicine and which dosage to choose.
- Calculate the dosage.

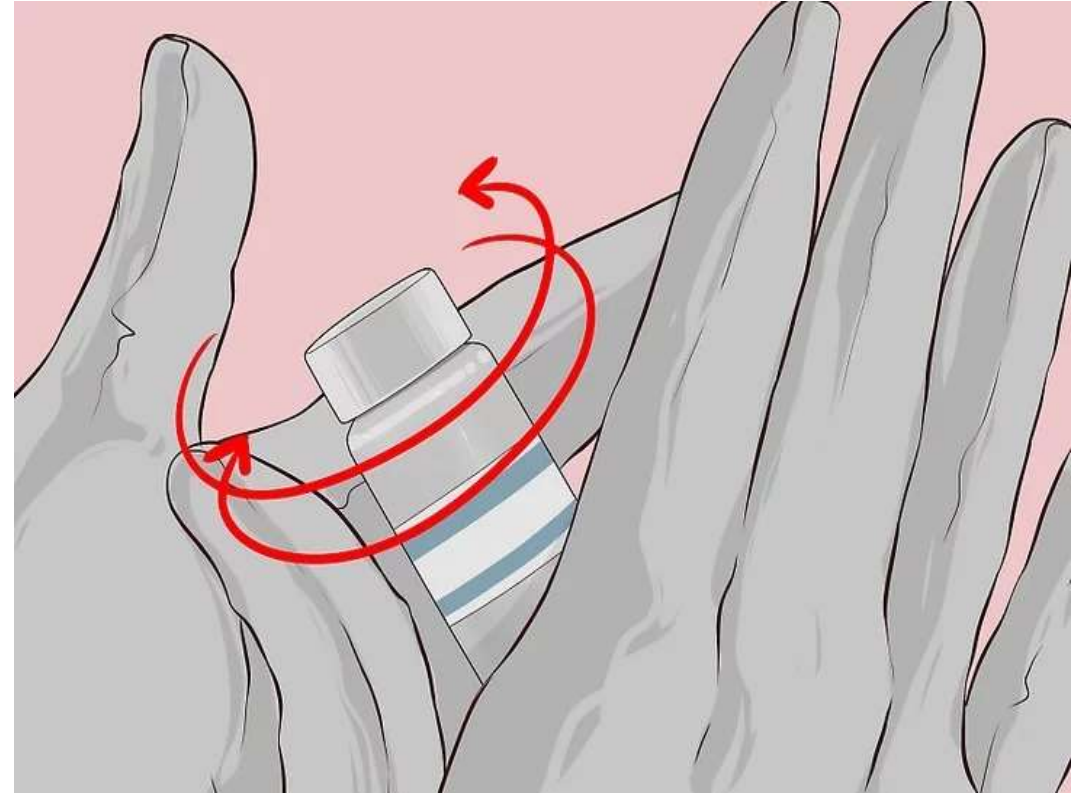


- Check the syringe and needle.
- Check if the plunger goes up and down easily.
- Is the needle damaged?
- Are there no cracks in the syringe?
- Do you have a needle and syringe suitable to deliver the medication?

## 11.1 How to prepare for injection Cont'd...



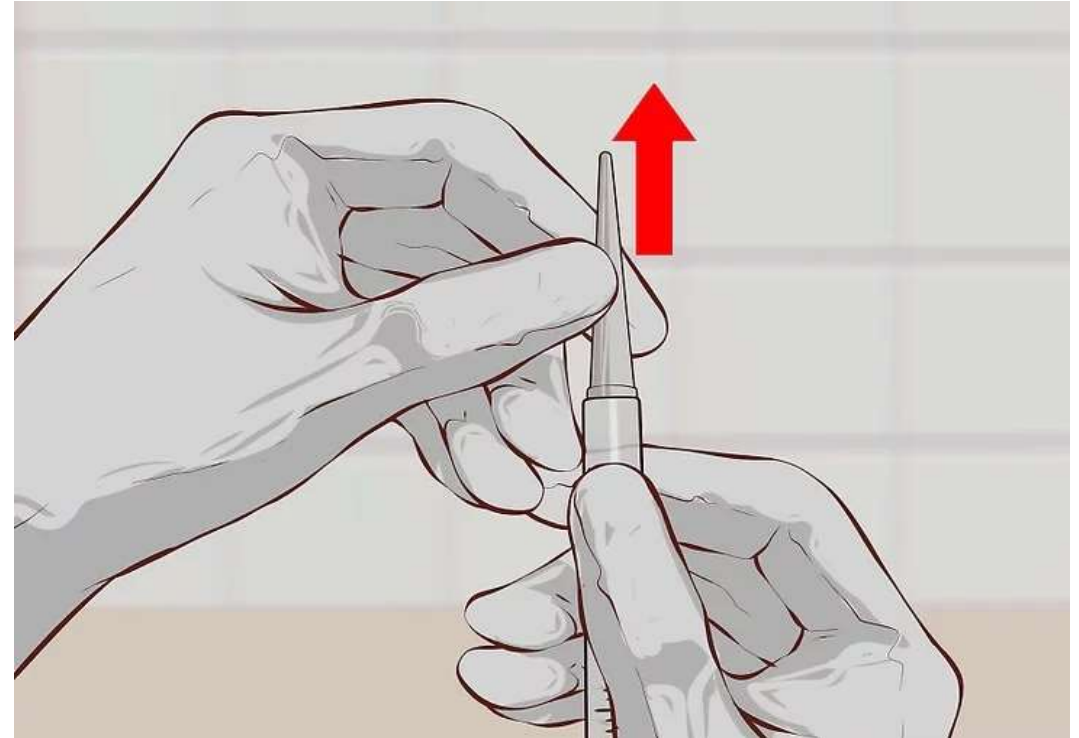
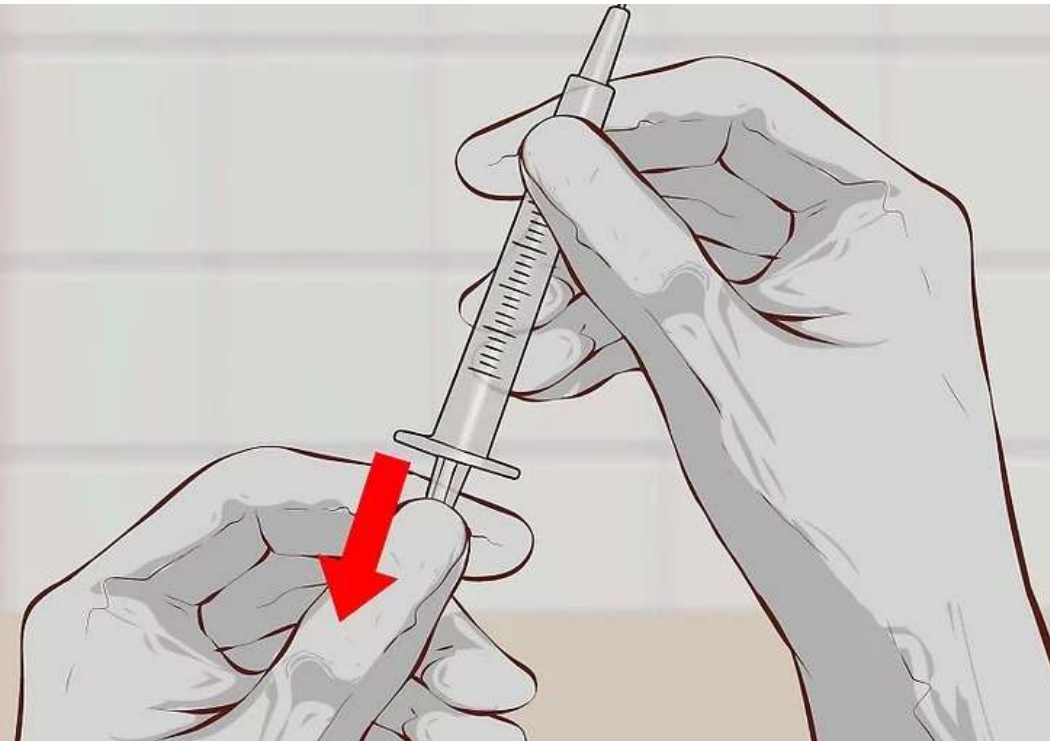
- Wash your hands thoroughly.
- Work as clean as possible.



- Mix the medicine by shaking the bottle.
- Penicillin especially, can be a very thick emulsion, good shaking is therefore required.

## 12. How to fill the syringe

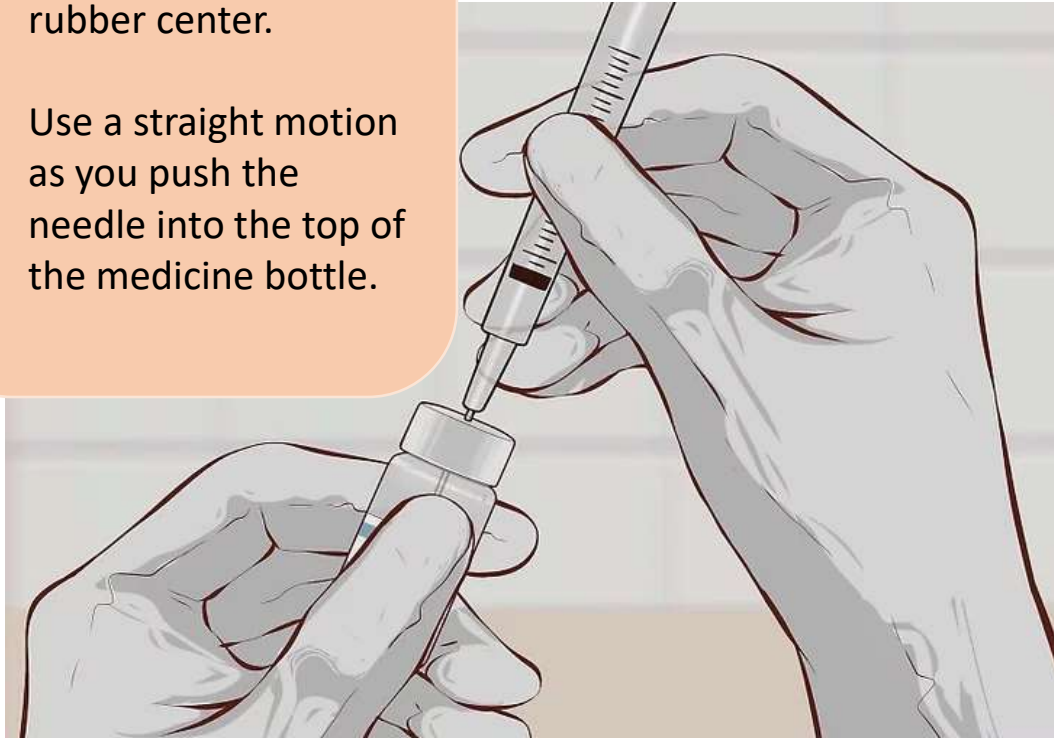
- Pull the plunger back on the syringe.
- Your target is the line or mark on the barrel, that is equal to the amount of medication you need to draw up.



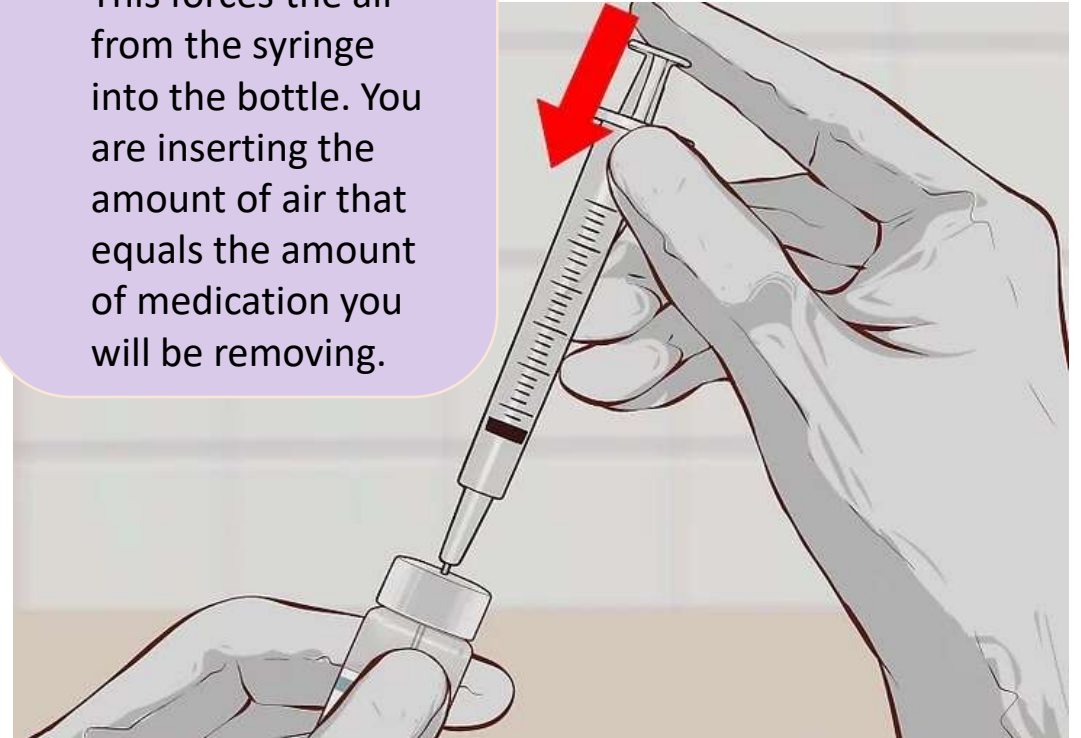
- Put the needle on the barrel.
- Remove the needle cover.
- Be cautious not to touch the needle.

## 12.1 How to fill the syringe Cont'd...

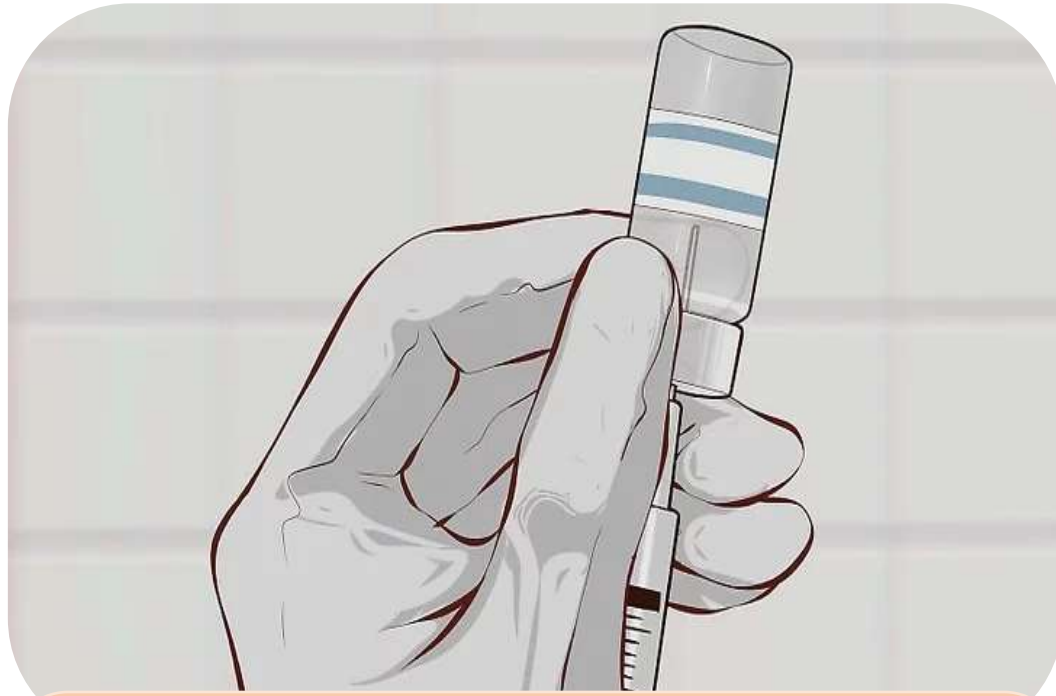
- Insert the syringe needle into the rubber center.
- Use a straight motion as you push the needle into the top of the medicine bottle.



- Push the plunger of the syringe down.
- This forces the air from the syringe into the bottle. You are inserting the amount of air that equals the amount of medication you will be removing.

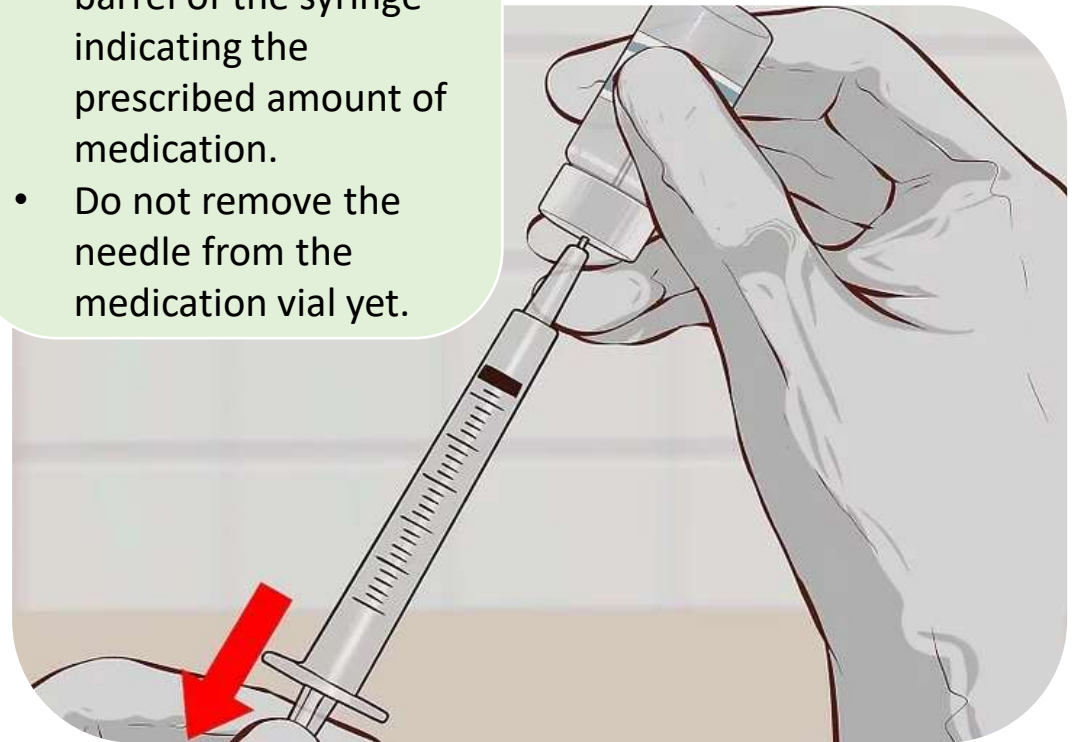


## 12.2 How to fill the syringe Cont'd...



- Turn the bottle upside-down.
- Do this carefully so as not to dislodge the needle from the bottle. Hold the neck of the bottle between your thumb and index finger of your non-dominant hand. Support the syringe with your other hand.
- Do not allow the needle to bend.

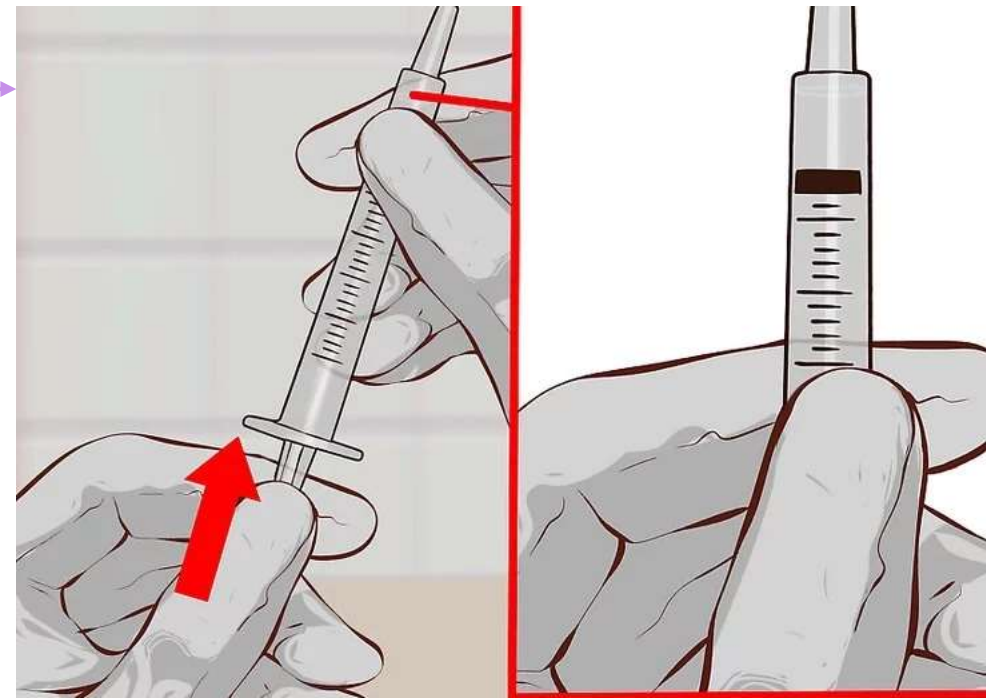
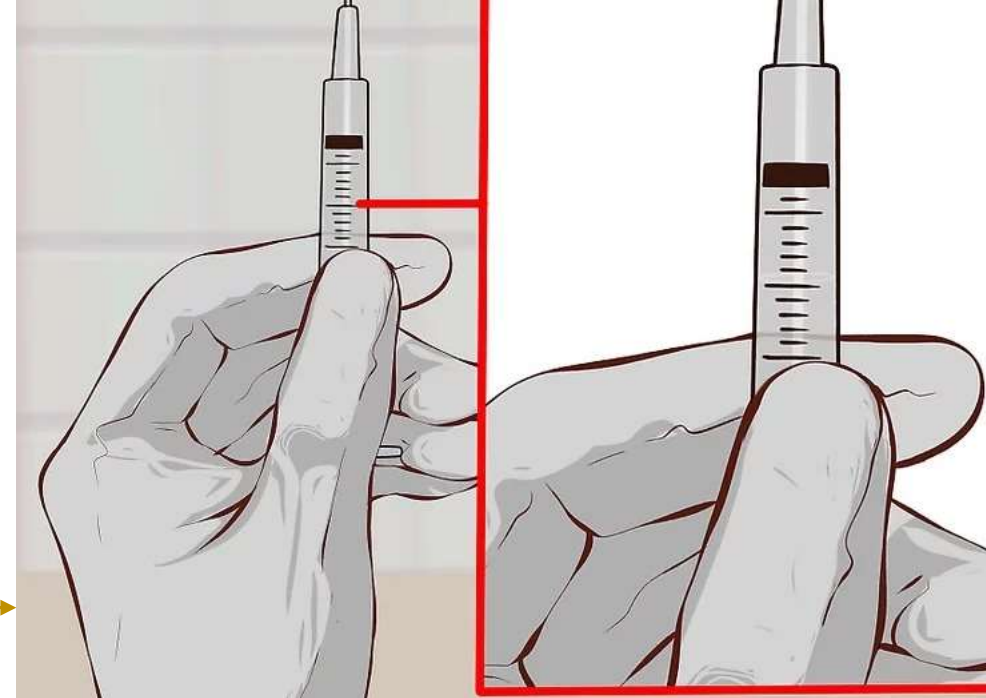
- Pull the plunger back.
- Use your dominant hand to pull the plunger back to the line marked on the barrel of the syringe indicating the prescribed amount of medication.
- Do not remove the needle from the medication vial yet.



## 12.3 How to fill the syringe Cont'd...

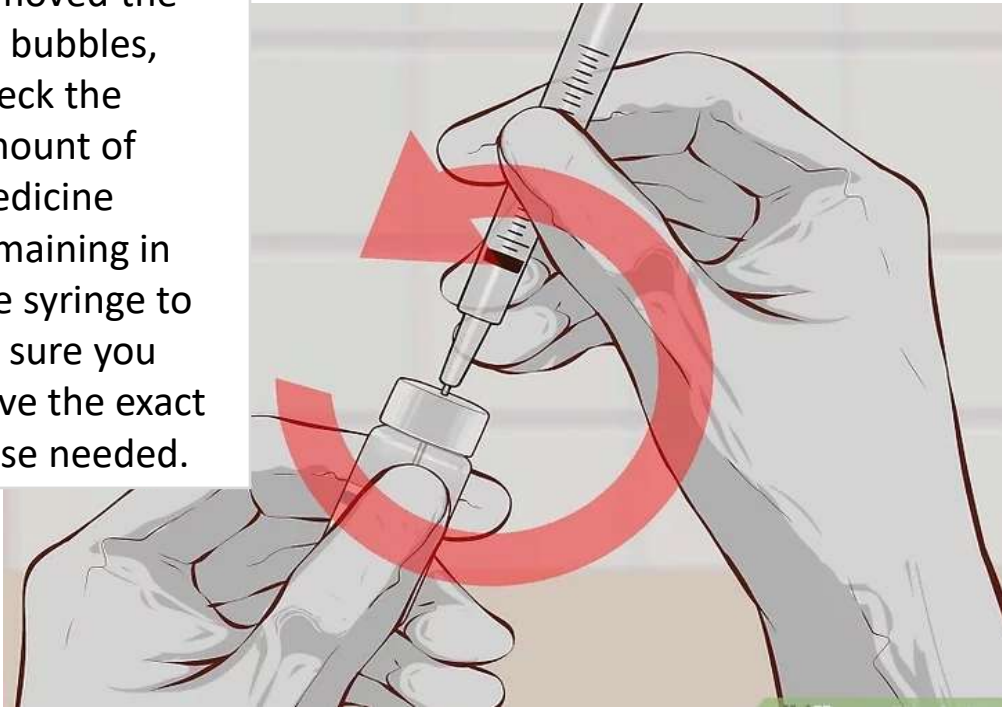
- Inspect the medication in the syringe for air bubbles.
- Gently tap the barrel of the syringe. This will move any air bubbles trapped in the medicine toward the needle.

- Push the plunger gently.
- Once the air bubbles are at the top of the syringe, push the plunger until the air bubbles are removed.
- A small amount of medicine may squirt out as you remove the air bubbles.
- Injecting air in people can be fatal. The risk of complications for cattle is small.

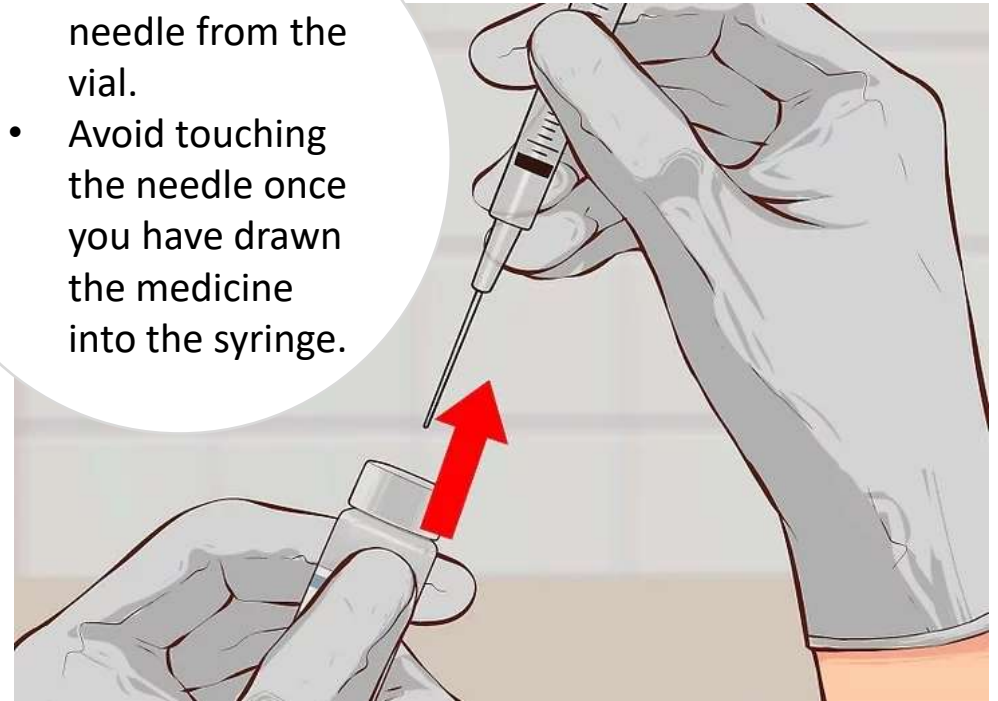


## 12.4 How to fill the syringe Cont'd...

- Draw more medicine if needed.
- Once you have removed the air bubbles, check the amount of medicine remaining in the syringe to be sure you have the exact dose needed.

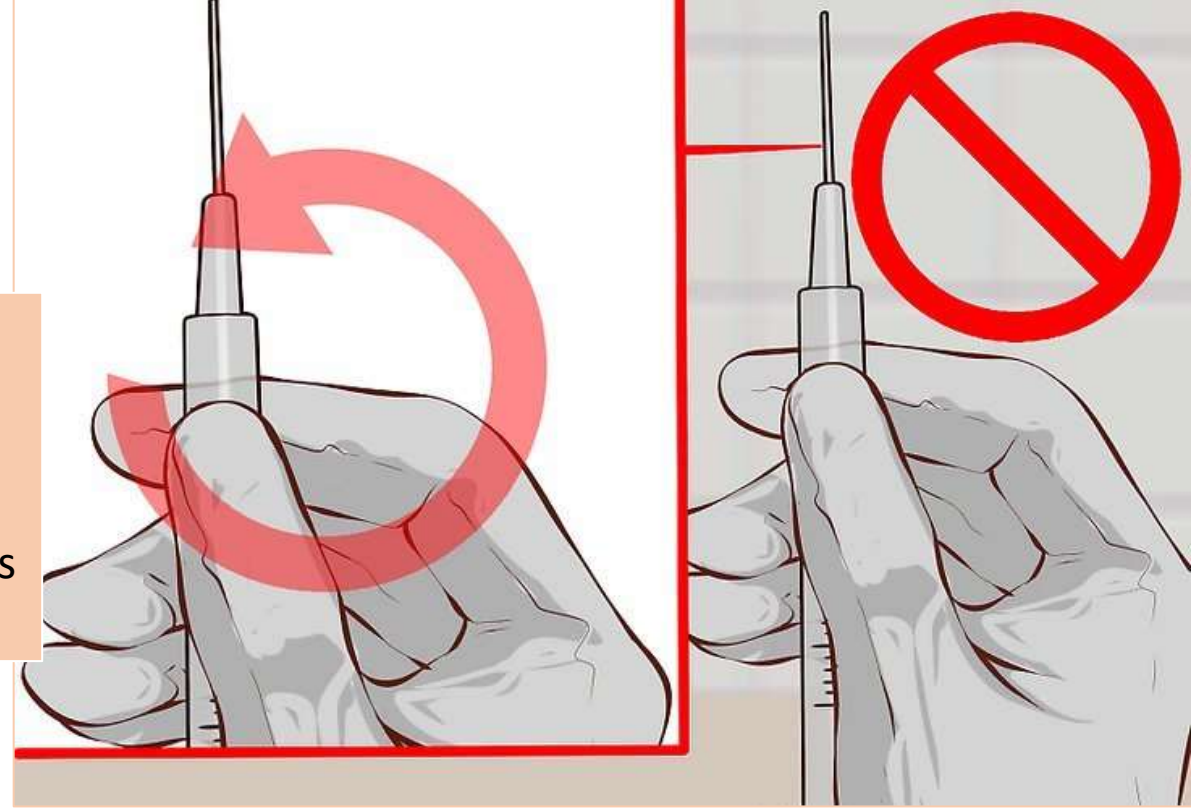


- Remove the needle from the vial.
- Avoid touching the needle once you have drawn the medicine into the syringe.



## 12.5 How to fill the syringe Cont'd...

- Never re-use a needle. Once the injection has been given, discard of the needle properly, preferably in a special container.
- A needle that has pierced the skin is not only dulled, but contaminated with possibly serious and contagious diseases.



- Remember medicines are often toxic.
- Needles can be contaminated.
- Take good care of your disposables.

**Biosecurity!**



### 13. Important note: Download Part II



*This module continues in  
Part II...*

**- PROCEED TO PART II -**