Wildlife Conservation
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Lecture - 22
Care for immoblised animal

[FL]. In today's lecture, we will have a look at Care of immobilized animals.

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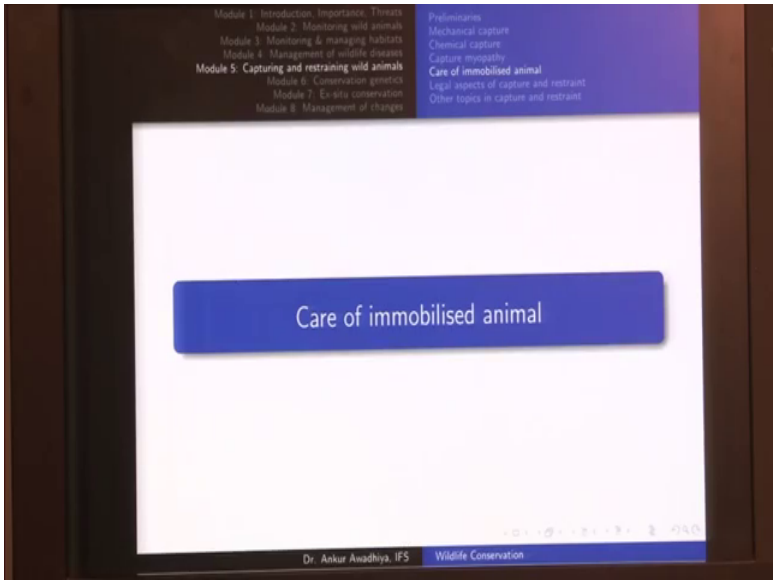

So, once you have put down an animal using say a chemically immobilization or say a physical immobilization, how do you take care of that animal.

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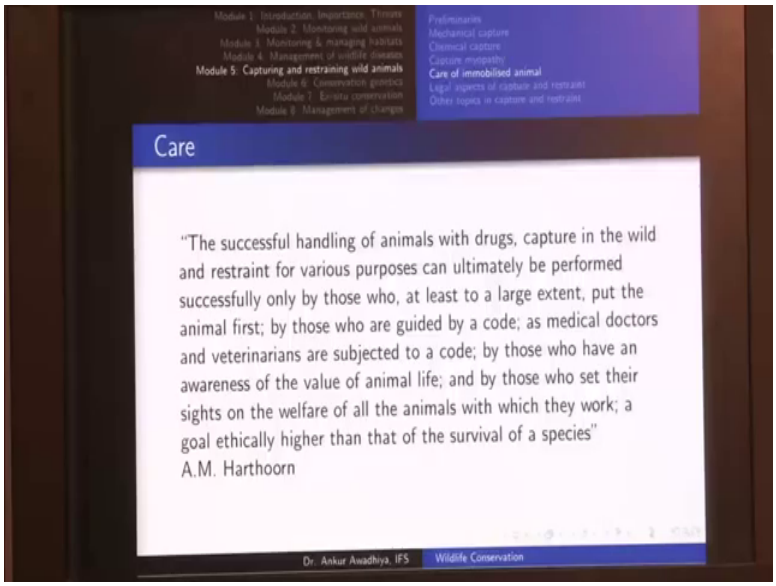

So, we begin with a quote by A.M Harthoorn. Now, A.M Harthoorn was a veterinarian, who was the first proponent of large scale use of chemical immobilization of animals for their transportation. And he worked in a number of African countries. And he was the first person, who made it possible to translocate the animals, who were endangered from areas, where they were suffering from large threat of poaching into areas that were much more safer for those animals.

So, he said that the successful handling of animals with drugs, capture in the wild and restraint for various purposes can ultimately be performed successfully only by those who, at least to a large extent, put the animal first; by those who are guided by a code; as medical doctors and veterinarians are subject to a code; by those who have an awareness of the value of animal life. And by those who set their sights on the welfare of all the animals with which they work; a goal ethically higher than that of the survival of a species.

So, essentially what he said first that whenever you are working with the animal, understand that you are handling the life of an animal, the life of the animal is in your hands. And so at most care needs to be exercised, when you are handling that animal, so that this animal survives. Your goal has to be that the animal that you are working with survives and it is not harmed. And only when you work with such an ethical goal only,

when you work with such an ethical code, when you be able to work for the welfare of the animals.

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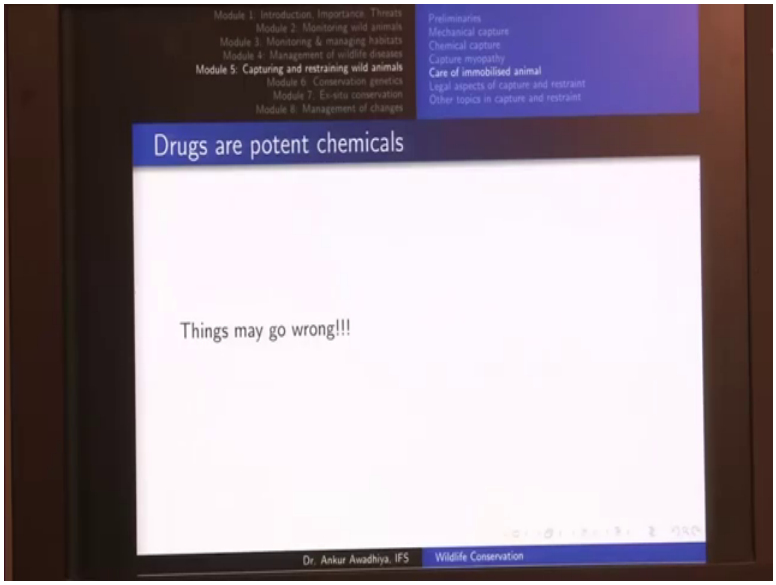

Now, this is especially important, when we are using chemical immobilization. Since, drugs are potent chemicals and things may go wrong. So for instance, when we are making use of say narcotics, now narcotics are extremely potent chemicals. Give them in a larger dose, and the and the animal might even get into a depression of the respiration. So, the animal might even stop breathing. And will then die of lack of air or for instance in certain situations, the heart might get into a depression and might stop pumping at all. So, things may go wrong. And so there is an urgent need to monitor any of the animal that has been immobilized.

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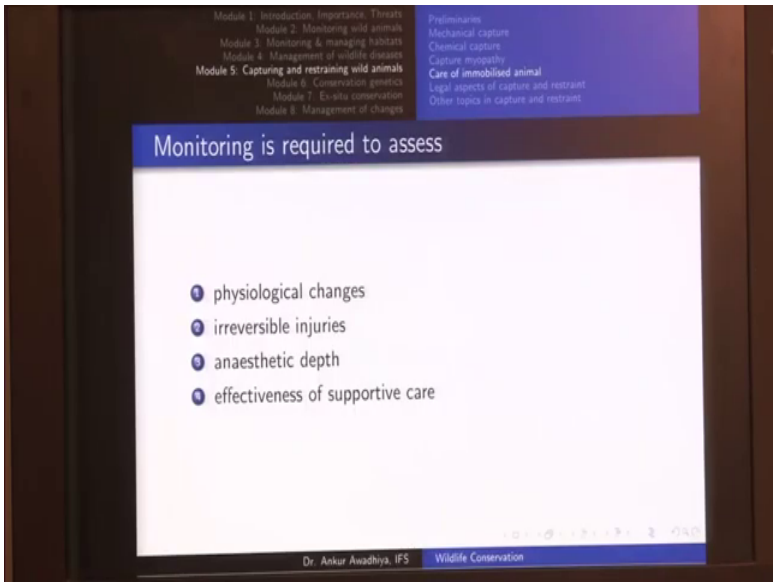

So, we will now look at each of these one by one.

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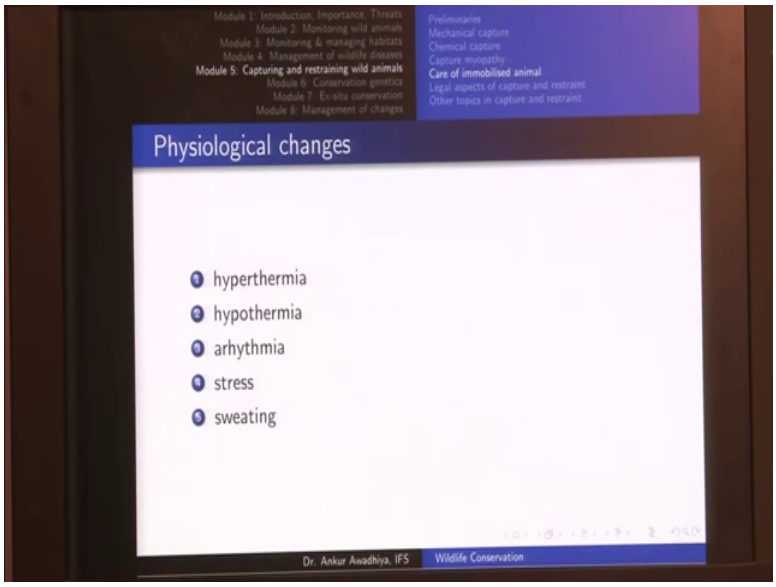

The first is physiological changes. The most important is the temperature of the animal, hyperthermia means an increase in the body temperature, and hypothermia means a decrease in the body temperature. So, now consider a situation in which you darted an elephant. Now, after getting this dart this elephant moved out in an open area, and there it became immobilized. Now, while the animal is lying there, and remember that this is a five ton animal. So, you do not have an option of moving this animal once it has become

immobilized. So, once it has become immobilized and it is out there in the sun, then because of the dark colour of its skin, it would be absorbing quite a lot of heat from the sun and the body temperature will start rising.

Now, if this body temperature rises beyond critical point, then it might result in an irreversible harm to the animal. So, this is hyperthermia. Hypothermia similarly may occur, when you have darted in an animal. And this animal goes and falls into say a pond in the predicted area. So, while this animal is there in the pond, it is losing out heat from its body through the action of water. And so in a short time the body temperature may go down, and it may even go down to a level that the animal might die out of hypothermia.

Similarly, we have things like arhythmia. Now, arhythmia is a condition in which the heartbeats lose their rhythm. So, they start beating out of sync. Similarly, other physiological changes that may occur are stress and sweating. So, stress is something that we can observe in an animal in the form of an increased heart rate, an increased rate of breathing, sweating in the body and so on. So, physiological changes are those that need to be monitored.

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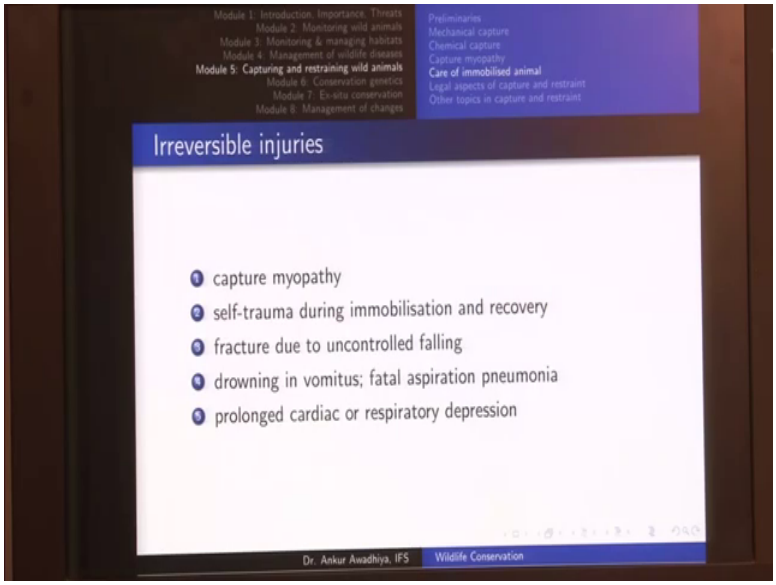

Similarly, we need to monitor any irreversible injuries that might happen. So, the one that we saw in the last lecture is capture myopathy. So, capture myopathy is an irreversible injury, once it has said in there is hardly anything that we can do. So, monitoring is crucially important to see that the animal is not getting in to capture

myopathy. And how do we know about it, we will know by looking at its physiological conditions.

Other irreversible injuries include self-trauma during immobilization and recovery. So, what happens during immobilization and recovery is that the animal does not have a full control over its body. So, it might be in a state of hallucination, it might be in a state of extreme level of stress. And in that hallucinating state, it might even see that its that when it looks at its foreleg, it might see that this is also some sort of a danger, and it might bite on onto its own leg.

So, this kind of injuries go by the name of self-trauma. So, it is a trauma that is inflicted by the animal itself. During immobilization and recovery phases especially, because the animal does not know what it is doing, because it is under the action of these drugs. Also fractured due to uncontrolled falling, so when consider a person who is undergoing the surgery.

So, during this period, the person is made to lie down on an OT table on an operation theatre table. Now, on that table when the person is lying down, and then this person is given anesthetics. So, there is hardly any chances of this person falling down anywhere. But, in the case of animals, so when we darted these animals, these animals are in most situations either standing or maybe even walking.

So, like we saw in the case of an elephant, the elephant was darted using a helicopter, when this when this animal was feeding. So, once you dart on this animal, it gets a very sharp pain or a prick somewhere in its body. And then just out of fear it might start running. Now, when this animal is running and your drugs that are extremely potent drugs and taking effect on the body, then suddenly it might happen that this animal loses the consciousness.

Now, at that point of time, it is quite possible that this animal was standing on the top of a cliff. It loses consciousness there, and then it starts falling, and then it gets a severe fracture. So, fractures are very common, when immobilizing animals. So, fractured due to uncontrolled falling is also another thing that needs to be monitored. How do we monitor it, we need to ensure that this animal is not in a place, where it can fracture itself.

So, essentially when we go for areas that are clean areas that are not extremely rugged area, so that when the animal loses the consciousness, it only falls onto the ground and not any further. Other irreversible injury is drowning in the vomitus, and which also goes by the name of fatal aspiration pneumonia.

What happens in these cases is that, when this animal was feeding. So, it had food in its mouth, it also had food in its stomach, when these drugs act, some of these drugs may also result in spasms in the body. During, those spasms there might be an a spasm in the abdominal cavity, and then all the food that was inside may come out as a vomitus.

Now, when the animal is conscious, then in most cases it will not drown in its own vomitus. But, when this animal has is lying down, it has lost its consciousness. And when this vomitus comes out of the body, then it might even get it back into the air passage. In those cases, this animal might get fluids into the air passage into its lungs, and might just drown in its own vomitus. So, it may die out of pneumonia. So, this is another a irreversible injury, because it will lead to the death of the animal.

Then prolonged cardiac or respiratory depression. So, whenever these drugs are acting on the body, so they are reducing the activity of the nervous system. Now, nervous system is also required for the functioning of the heart and for the functioning of the lungs. So, essentially when we do not get any signal to breathe, we may stop breathing. And similarly, this the heart means stop pumping. So, whenever there is a depression in the activities of the heart or the lungs, it needs to be monitored, so that this depression is not prolonged. So, the tissues of the animals body are getting oxygen overall.

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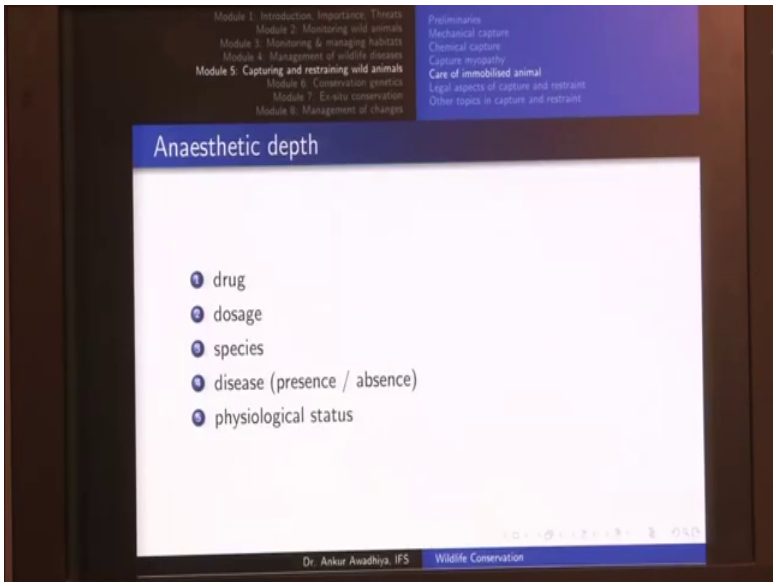

Now, in the case of anesthetic depth, it tells so this is also another thing that needs to be monitored. And in this case, we are concerned about knowing whether are anesthesia is acting as it should or not, so what is the depth of its action. So, it depends on the drug that is being used. So, there are some drugs that are more potent, there are some drugs that are less potent, it would also depend on the dosage. So, if you are having a less potent drug, but you give it in a very large dose, then there might be a very great depth of the anesthetic action. It will also depend on the species.

So, different species will have different responses, it will also depend on the diseases that are present or not present in the body. So, essentially in the case of the action of anesthetics, if there is any disease, it may modulate the effects that this drug will have on the body. And it will also depend on the physiological status of the animal, whether this animal was a lactating, whether this animal was pregnant and so on.

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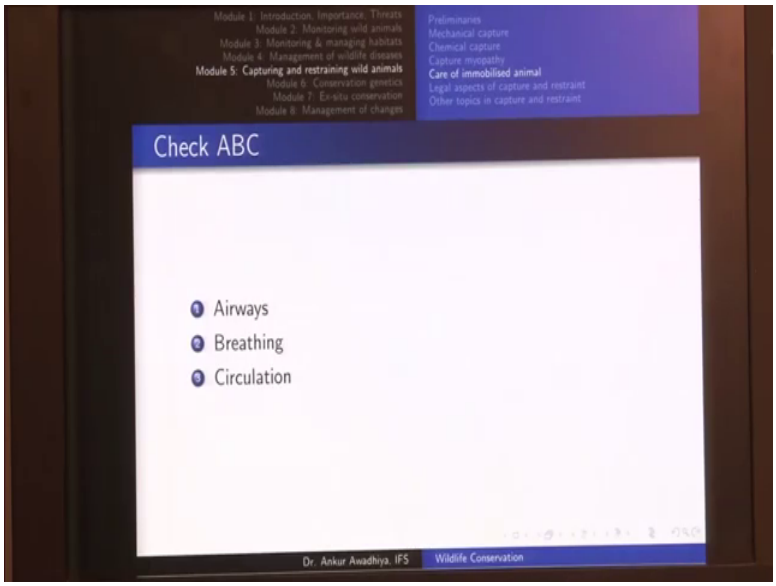

So, whenever we have immobilized an animal, whenever there is an anesthesia given to the animal, so we need to check for most importantly the A, B and C. Now, A, B and C stands for Airways, Breathing, and Circulation. Now, if any of these goes wrong in the animal, may die or may suffer from irreversible injuries even brain damage. Now, what do we mean by A, B and C. A is airways, now in the case of airways, we need to ensure that the airways are open.

So, for instance, if there is an elephant that you have a that you have immobilized, if it is trunk gets, beneath its body, so the it is trunk will be will be will be pressed by the body, and this animal will not be able to breathe. So, whenever we are we are immobilizing an elephant, we ensured that its trunk is taken out and maybe even rested on a stick, so that it is open at all times. The airway needs to be open at all times. Similarly, you also need to ensure that the tongue of the animal does not get into the airways to choke it.

In the case of breathing, we need to ensure that the animal is breathing properly. In some instances, when the drugs are more potent, the animal may have a respiratory depression in which case the rate of breathing may go down, and it may even cease at times. Now, how do we check for breathing, we may just put our fingers in front of its nose to see, the amount of air that is coming in and out or we may look at the body of the animal whether it is going up and downs as the animal is breathing or not or we may go for an

auscultation. Now, in the case of an auscultation, we make use of a stethoscope to see the rate at which the animal is breathing.

The third thing is circulation. Now, circulation means whether the heart is pumping properly or not. So, in this case as before, if there is any circulatory depression, the heart rate might go down or it may even stop itself. So, in those cases when we see a large amount of depression in the respiratory or the circulatory system, we may even have to revive the animal. So, we will forego any of our activities that that we had planned to perform on an animal, we will just revive it. Then in death, so that the life of the animal is saved. And in the case of circulation as well we can use a number of methods that we just discussed.

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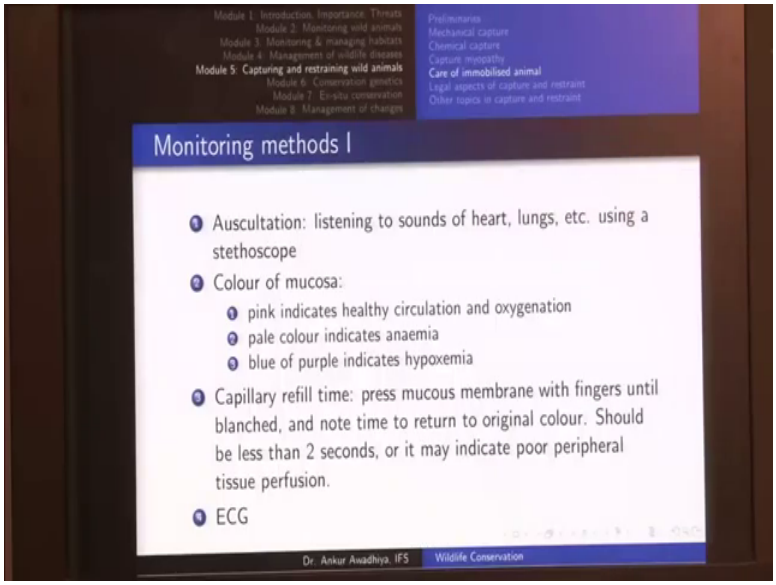

So, how do we monitor all of these, so monitoring methods include first is auscultation. Now, in the case of auscultation, you listen to the sound of the heart and lungs etcetera using stethoscopes. Second is the colour of mucosa. So, mucosa is the lining that can be very easily seen in the case of the mouth of the animal. Pink indicates a healthy circulation and oxygenation. Pale colour indicates anemia and blue or purple colour indicates hypoxemia. So, what do we mean here. Now, in the case of colour of mucosa, it is very easy to see in the insides of the mouth of the animal or you can just pull over the skin and you can look at the colour here.

Now if this colour is pink, it means that why do we go for these reasons, because they do not have any pigments and also because they are heavily supplied with the blood vessels. So, if this region is pink or red in colour, it would tell us that the animal is getting enough amount of oxygenated blood into these areas. If the area is pale in color that would tell us that this animal is suffering from anemia, because it does not have enough amount of iron or hemoglobin in its blood.

Now, if an animal is suffering from anemia, then it becomes a much more crucial to ensure that this animal is getting sufficient amount of oxygen into all its tissues. So, in the case of animals, we might just give them some iron or maybe some injections, and we may have to revive that animal. In case we see that that this colour becomes blue or purple in colour, it would tell us that the animal is suffering from hypoxemia. It means that the blood is not getting enough amounts of oxygen, so which is why it is turning blue in colour.

Now, this could happen in the case of a respiratory depression, so the animal is not breathing at a fast rate. It will also happen, when it is airways have been choked, so even though it is trying to breathe, but air is not getting inside. It may also happen, when there is a circulatory disordered. So, the animal is able to breathe properly, but the heart is not pumping properly. So, the blood is not reaching into these areas. So, any of these would be sign that there is something seriously wrong going on, and we need to check that then end there. So, monitoring of A, B and C and also the colour of the mucosa has to be done periodically, whenever we are handling any animal.

Next is the capillary refill time. Now, it tells us that press mucous membrane with fingers until blanched, and note time to return to the original colour. Should it should be less than 2 seconds, or it may indicate poor peripheral tissue perfusion. Now, we can do it in the mucosa of the animal. So, we can press this area and then we can release it to see, how much time it takes, but then an easier way. So, for you to understand very easy way would be to just pinch on the nail of your fingers. So, when you pinch on it, this region becomes white in colour. So, it means that just because of the of this pressure that you are applying to the fingers, the blood has drained out.

Now, when you release it, you should note how much time it takes to get back to the pink colour that was originally there, which is telling you the presence of blood in that area.

Now, this thing should take less than 2 seconds or it would if it takes more than 2 seconds, then it would tell us that probably the circulation is not proper or probably there is excessive amount of blood that has that is being infused out into the peripheral circulation. Another monitoring method is ECG, which stands for Electrocardiogram. So, these days we have portable ECG machine. And when we are going out to immobilize an animal, we could hook up our animal with an ECG machine just to see whether the heart is functioning properly or not.

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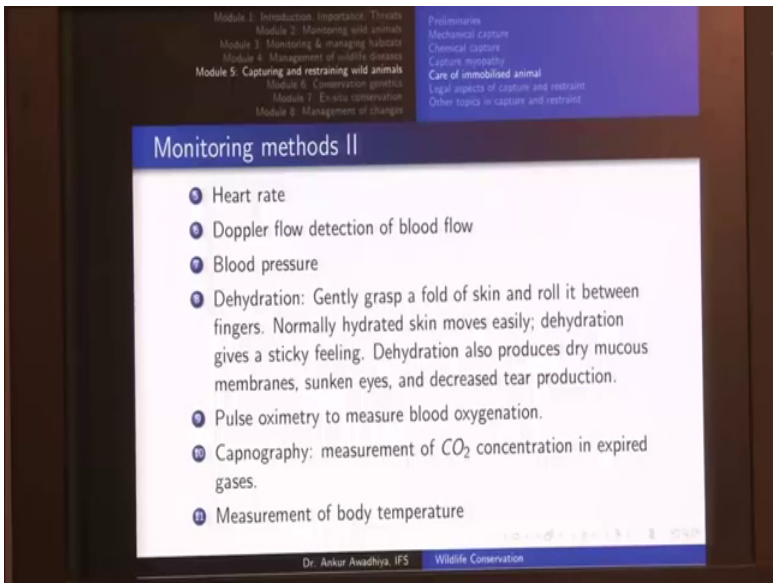

Other methods include the heart rate. Now, heart rate can be just felt using fingers or it may be discerned using auscultation. In some cases, we also make use of droplet flow detection of blood flow, in case of animals such as fishes. So, in the case of fishes, how do we know that the hardest functioning properly. So, we can make use of a Doppler flow detection. We also need to monitor the blood pressure of the animal and also dehydration.

Now, how do we understand about dehydration, gently grasp a fold of skin and roll it between the fingers. Normally hydrated skin moves easily; and dehydrated gives a sticky feeling. Dehydration also produces dry mucous membranes, sunken eyes and also decreased tear production. So, how do we know with it an animal is suffering from dehydration or not. So, an easy way is to is to pick up the skin of the animal, and then try

to move it between two fingers. So, when we are moving it between two fingers, if the animal is hydrated enough, then it will glide past very easily.

And if the animal is getting dehydrated, so in those situations we would get a sticky feeling, we would not be able to move this skin against itself. Another way of knowing dehydration is when we observe the mucous membranes of the animal. So, we look at inside the mouth of the animal or we look at its eyes, and if the inside of the mouth is dry, if the eyes are dry, then we can say that the animal is getting dehydrated.

Next, we also make use of pulse oximetry to measure blood oxygenation. Now, what is pulse oximetry, this is a small device that you can clip onto some portion of the animal. And when you have clipped it to the to the portion, then it detects whether the blood is getting oxygenated or not. Next we can make use of capnography.

Now, capnography is a measurement of carbon dioxide concentration in the expired gases. So, in the case of some animals you can even put a small mask in front of the animal, and this mask is then connected to an equipment that is known as a capnograph. And in that situation, it measures the concentration of carbon dioxide that is coming out in the exhaled castles.

Then we also measure the body temperature. In this case not only is the surface body temperature essential to be measured, but also the core body temperature. So, in some cases, we may even go for a rectal thermometer in which a thermometer will be put inside the rectum of the animal to measure the internal body temperature.

Now, in this case it is also important to note that when we are dealing with animals are thermometers should not be made of glass. Because, once you have put it inside the animal, and this animal moves, it may even break inside the animal. So, in most cases the kinds of thermometers that we use for our veterinary use are very different than what we use in the case of humans. And these days, we are making more and more use of digital thermometers.

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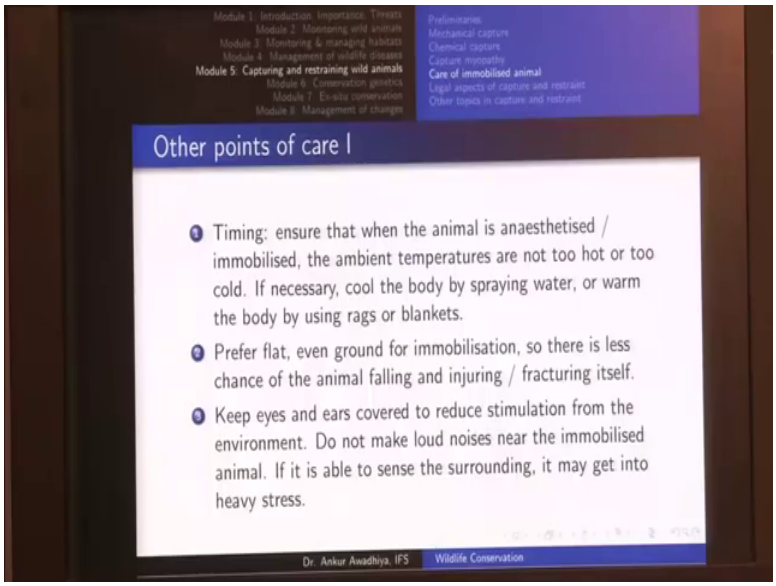

Other points of care. So, one is the timing, when should you immobilize an animal. So, ensure that when the animal is anesthetized or immobilize, the ambient temperatures are not too hot or not too cold. So, basically it means that in the case of Indian scenarios, in the case of tropical areas like in the case of Madhya Pradesh. If you are trying to immobilize an animal, this immobilization should not occur at the peak of the day. It should not occur at say 1'o clock in the afternoon, because in at 1'o clock in the afternoon the ambient temperatures are too high, and the animal may suffer from hypothermia.

If necessary cool the body by spraying water, or warm the body by using rags or blankets This is especially important in the case of dark coloured animals such as elephants. So, if we have immobilized in an elephant, we will be spraying water on it from time to time to ensure that the body temperature remains normal. Prefer a flat even ground for immobilization. So, there is less chance of the animal falling and injuring or fracturing itself. So, we should not go for immobilization in very steep terrace, but we should prefer flat ground. So, even when the animal falls, there is a very less chance of it getting a fracture or an injury.

Next keep the eyes and ears covered to reduce stimulation from the environment. Do not make loud noises near the immobilized animal. If it is able to sense the surrounding, it may get into a heavy stress. Now, in the case of elephants, so when this elephant is

immobilized, we generally cover its eyes with its ears. So, we will bring the ears in the front and they will be used to cover the eyes, and at the same time cover the ears.

But, in the case of most of other animals, we make use of a blindfold. So, there would be a dark coloured cloth that will be tied in front of the eyes, so that this animal does not get any sensation of light from outside. We should not be making quite a lot of noise near this animal. So, essentially even if you have to talk to one of your colleague, this talking has to be in low voices. Do not go for a photography of this animal at this stage, when it is immobilized and especially flash photography, because that might give it quite a lot of stress. In some situations, we may even go for ear plugs for the animals to reduce the sensation of noise from the surroundings.

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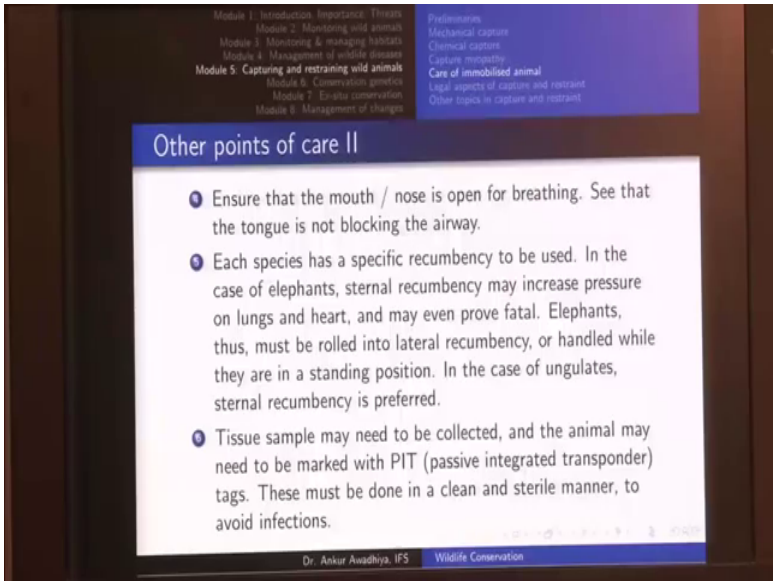

Ensure that the mouth and nose is open for breathing. See that their tongue is not blocking the airway as we saw before. Each species has a specific recumbency to be used. In the case of elephants, sternal recumbency may increase pressure on lungs and heart, and may even prove fatal. Elephants, thus must be rolled into lateral recumbency or handled while they are in a standing position. In the case of ungulates, sternal recumbency is preferred.

Now, what do we mean by a recumbency. Now, if there is an animal you have darted that animal, and this animal is now going down. So, how would this animal come down, it might just go on its sides or it may just go down like this. So, the forelegs will be like

this, and the hind legs will be behind and its stomach and the in its chin will be touching the ground, so it will be like this. Now, this position goes by the name of sternal recumbency. And when it goes on the sides, so essentially one two of its legs, one foreleg and one hind leg will be touching the ground. And two of those will be there in the air, so that goes by the name of lateral recumbency.

Now, in the case of some animals such as the elephant if you put it into a sternal recumbency, if it goes down like this, so because it has quite a lot of muscles its body. So, they would be a huge pressure on its chest and also on its heart. Now, under this huge pressure, these organs may start feeling. So, sternal recumbency is a is a position that needs to be avoided in the case of elephants.

So, mostly if we find that any animal is therein in sternal recumbency, we will use six or seven people to turn it to its sides, so that it gets into a lateral recumbency or in cases when the animal becomes immobilized by in a standing position, we will handle it in the standing position itself. However, in the case of herbivores, they normally get into a sternal recumbency mostly the ungulates. They get into a sternal recumbency and that is a preferred mode, it is a safe mode in which those species can be handled. So, species like Cheetal or Barasingha can be handled during their sternal recumbency.

Next in a number of conditions, tissue samples may need to be collected, and the animal may need to be marked with PIT tags. So, pit tags are passive integrated transponders. And these must be done in a clean and sterile manner, to avoid infections. So, basically whenever we are taking out a tissue sample or a blood sample from the animal, remember that this is a living organism.

So, just like when we go to a pathologist and when they are taking out blood from our body, they normally clean this area using spirit, and then use a clean needle or clean syringe to take the blood out. A very similar process should also be used in the case of the animals also, because they are under your care. It does not mean that that you can use dirty syringes or dirty needles between animals, so as to spread infections between them.

Now, in certain situations when's we have immobilized animal, we also install pit tags into those. Now, pit tags are like the green of size they are like this bit bags, which are put inside the body of the animal. So, they are mostly put behind the ears or say on the back. So, when those tags are inserted into the body, then we can very easily know which

animal it is by reading those tags. Now, whenever such operations are being done, it is crucial to ensure that all the operations are very clean are and are done in a sanitary manner, so that the animal does not get any infections.

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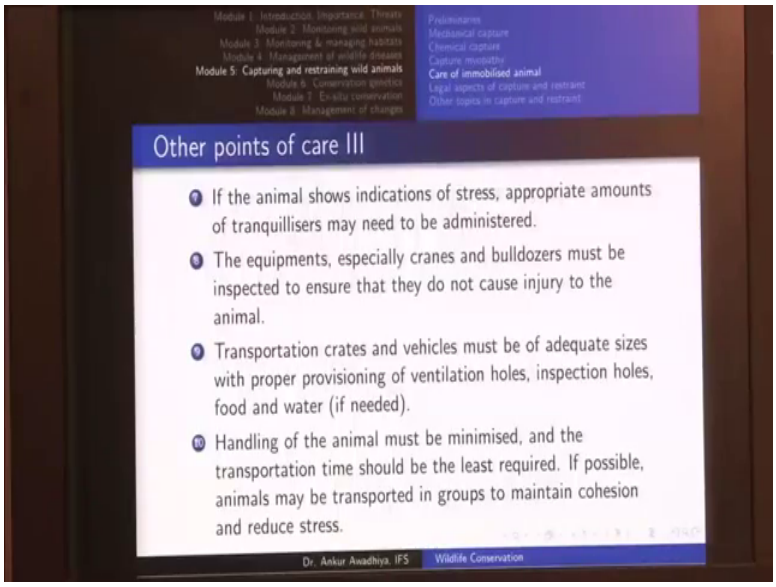

Next, if the animal shows indicates of stress, appropriate amounts of tranquilizers may need to be administered. So, if it is in stress, give it some tranquilizer to come it right. The equipments, especially cranes and bulldozers must be inspected to ensure that they do not cause injury to the animal. Transportation crates and vehicles must be of adequate sizes with proper term provisioning of ventilation holes, inspection holes food, and water if needed.

So, essentially you cannot put an animal into a very cramped space, and also you should not put an animal in a very large space. Now, a large space is important, because say in the case of elephants. If I am an elephant, and if my crate starts here and ends here, then during this journey I will be in this standing position. However, if my crate is too wide, then I might even fall down on my sides. And these crates being very having a very smooth surface, they are mostly made out of metal.

So, the animal finds it very difficult to get up once it has fallen down. So, in those situations, it is essential to ensure that that the size of the crate is just proper for the animal, and for its journey. And provide it with ventilation holes, it should get enough amount of air. There should be inspection holes, so that during the process of transport

also the veterinarian can go to the animal and inspect whether it is doing fine or not it. And if it is going on a long journey, give it some food and water.

Then handling of the animal must be minimized, and the transportation time should be the least required. If possible, animals may be transported in groups to maintain cohesion and reduce stress. So, this is something that we saw in the in the lecture on capture myopathy. The handling has to be minimized, so that the amount of stress is less and as far as possible the group animals should be transported as a group.

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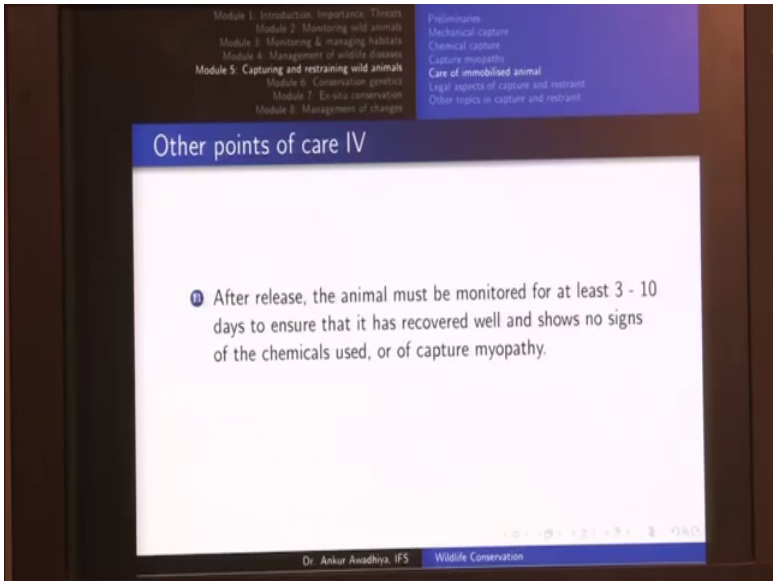

After release, the animal must be monitored for at least 3 to 10 days to ensure that it has recovered well and shows no signs of the chemicals use or of capture myopathy. Now, as we saw in the case of capture myopathy, in the case of chronic capture myopathy, it may take as much as 10 days for the animal to start showing the symptoms. But, at the same time when we are monitoring the animal, we also need to ensure that this animal does not show any signs of the chemicals.

So, essentially if you had given it some opioid, some narcotic, so when you before releasing this animal from the enclosure into the complete wild situations, we need to ensure that this animal has completely come out of all the effects of the narcotics. So, it must be before release, in the best of its senses. It must not be having a dull sense, it must not be feeling sleepy, because in those situations it may fall prey to a predator very easily. So, essentially all the drugs that have been used on the animal, their science

should have one of before this animal is released into the wild condition, before these effects have (Refer Time: 29:32) we should keep these animals in the enclosure. So, they will help to monitor the animals.

So, in this lecture, we looked at the care of an immobilized animal. We looked at what are the do's and do not's while we are caring for any immobilized animal. What will things that what are the things that need to be monitored, and what are the equipments that we use to monitor these things, for instance a pulse oximeter or an ECG machine and so on.

So, that is all for today.

Thank you for your attention. [FL]