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UNIT IV:

SWINE MANAGEMENT

The advantages of the pig farming are:

- The pig has got highest feed conversion efficiency than any other class of meat producing animals except broilers.
- The pig can utilize wide variety of feed stuffs viz. grains, forages, damaged feeds and garbage and convert them into valuable nutritious meat.
- They are prolific with shorter generation interval. A sow can be bred as early as 8-9 months of age and can farrow twice in a year. They produce 6-12 piglets in each farrowing.
- Pig farming requires small investment on buildings and equipments
- Pigs are known for their meat yield, which in terms of dressing percentage ranges from 65 - 80 in comparison to other livestock species whose dressing yields may not exceed 65%.
- Pork is most nutritious with high fat and low water content and has got better energy value than that of other meats. It is rich in vitamins like thiamin, Niacin and riboflavin.
- Pigs manure is widely used as fertilizer for agriculture farms and fish ponds.
- Pigs store fat rapidly for which there is an increasing demand from poultry feed, soap, paints and other chemical industries.
- Pig farming provides quick returns since the marketable weight of fatteners can be achieved with in a period of 6-8 months.
- There is good demand from domestic as well as export market for pig products such as pork, bacon, ham, sausages, lard etc.

Comparison between desi Vs. Exotic

	Desi (Local)	Exotic
Litter size at birth	7.5	10
Birth weight (Kg.)	0.91	1.4
Weaning weight (kg.)	4.1	13.5

Weaning percentage	54	78.5
Dressing percentage	66	68
Maturity (Months)	14	8 - 10
Growth rate (gm)	70-100	over 300 gm.
Back fat thickness – (cm)	3-7	4-5

Nomen clature/ Terminology

Species : Sus scrofa vittatus

Sus scrofa indicus

Group : Stock / Drove

New Born : Piglets (Last born piglet- Runt)

Young male : Boarling

Yong female : Gilt

Adult Male : Boar

Adult female : Sow

Castrated male: stag / Hog

Parturition : Farrowing

Mating : Coupling

Sound : Grunting

Breeds: Large white Yorkshire, Chester white, Middle white Yorkshire, Tamworth,

Berkshire, Landrace, Poland china, Spotted Poland china, Duroc , Hampshire

1. Large white Yorkshire : UK

- White, occasionally black spots
- Erect ears and dished fore head
- Long and deep body
- Snout length is medium
- Mature body weight : Male : 300-400 Kg.
- Female : 230 – 320 Kg.

2. Middle white Yorkshire : UK

- Developed from crossing Small and Large White Yorkshire □ Extensively used to upgrade desi pigs as it is smaller in size
- Early maturity, rapid growth and can be raised on pasture
- But not prolific as that of Large white Yorkshire
- mature body weight Male : 250-350Kgs.
- Female-180-270Kgs.

3. Land race : Denmark – Bacon Breed

- White with blackspot,
- Long snout
- Excellently suited for upgrading desi pigs as it needs less feed resources for their maintenance and efficient converter of feed.
- Suitable for breeding smaller desi pigs
- Mature body weight : Male : 270 – 360 Female : 200-300

HOUSING OF PIGS

- The house should give adequate protection against direct sunlight and rain. Hogs are sensitive to heat and cold.
- The floor and wall should be strong to withstand the rooting habits of pigs. Concrete flooring is durable and easy to clean. The walls may be of bricks, finished smoothly and doors of strong wooden planks or iron.
- Feed troughs and water troughs may be placed along the front to facilitate feeding from outside.
- Pigs thrive well in temperature range of 20-25°C. Provide shade, wallowing tank, cooling devices such as sprinkling of water, washing etc. to maintain thermal comfort.
- Design should be such that all animals are observable easily from outside and the labour requirement is less.
- Boars, pregnant and dry sows, gilts and growing pigs are usually kept in open yards with partially sheltered area. Farrowing sows are housed in completely enclosed houses or pens.

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- Simple low cost houses constructed with locally available materials as per above guidelines are preferred in rural areas. Multipurpose pens, which can be used, for all categories of pigs can also be designed meeting the floor space requirement.
- Individual or group housing in cages made up of vertical G.I. pipes/M S rods and also farrowing crates can be adopted in large high-tech farms.
- Uncastrated males and females should not be housed together beyond the age of four months.

Housing of Boars

Boar pen should have covered area of 6.25-7.5 m² and open area of 8.8-12 m² for exercise. The walls should have a minimum height of 1.5 m.

Housing of Female

Open yard type with partial roofing as in the case of boar may be provided. A total of 10-15 females can be grouped in a pen. An area of 2 m² per animal may be provided.

Housing of Farrowing sows

Farrowing sows may be housed individually in a farrowing pen of 2.5 x 4.0 = 10.0 m² having guard rails, creep area, feed and water troughs.

Space requirement of pigs

Type of animal	Floor space requirement (m ² /animal)		Maximum number of animals per pen
	Covered area	Open paddock	
Boar	6.0-7.0	8.8-12.0	Individual pens
Farrowing pen	7.0-9.0	8.8-12.0	Individual pens
Fattener (3-5 months old)	0.9-1.2	0.9-1.2	30
Fattener (above five months)	1.3-1.8	1.3-1.8	30
Dry sow/gilt	1.8-2.7	1.4-1.8	3-10

Housing of growing and finishing pigs

A covered concrete yard for feeding and resting having feed and water trough arranged in the front side and an open yard in the rear will suffice for fatteners. The total space requirement may be 2 m² per grower/fattener pig.

FEEDING MANAGEMENT

- Pigs are monogastric animals and can utilize fibrous food only to a limited extent. Adult pigs can utilize fibrous food better than young stock.
- Part of the protein in the diet of pigs should come from animal source such as fish, meat etc.
- Pigs should be fed at regular intervals.
- Fresh feed should be put only after removal of the previous feed from the feed trough.
- Pig rearing based on commercial pig feed is not economical and hence feeding based on swill is recommended. On an average, pig requires 4-8 kg swill per day.
- All categories of pigs can be given small quantity of fodder or may be sent to pasture.
- Ad libitum feeding using an automatic feeder (which can be fabricated using 200 litre oil drum) may be practiced for weaned pigs to avoid post-weaning weight depression

Feeding of boars

A breeding boar requires 2-2.5 kg concentrate per 100 kg weight depending on the age, condition and breeding demand. Feed allowances should be so adjusted that the pig is neither fatty nor run down. Greens should be provided if kept indoors. Year-round pasture is excellent if it could be provided from the stand point of providing both the needed exercise and valuable nutrients.

Feeding of female

The demands resulting from pregnancy and need for conserving nutrients for ensuing lactation are accelerated during the later stage of pregnancy. The increased needs are for proteins, vitamins and minerals.

Mature sows gain 30-35 kg and gilts 40-45 kg during pregnancy. Feed should be so regulated that sows and gilts are never over fat or thin. Individual feeding is preferred. Flushing is a practice of giving extra feed to sows and gilts from 1-2 weeks prior to mating and returns to normal feeding after mating.

Feeding of Farrowing Sow and Litter

Feed lightly with bulky laxative feed immediately before and after farrowing. Bring the sow to full feeding in 10 days. Plenty of greens may be provided. Feed allowance may be calculated as 2.5-3 kg/100 kg body weight plus at the rate of 0.2 kg feed per piglet with the sow. Thus, a sow weighing 100 kg with 8 piglets should receive 4.6 kg feed per day. The piglets may be provided with special nourishing diet called creep feed separately.

Creep feeding:

The practice of self-feeding concentrates to young piglets in a separate enclosure away from their mother is known as creep feeding. Creep feed should be given when piglets are two weeks old. Each active and healthy piglet may consume about 10 kg feed before reaching the age of 8 weeks and two-third of this consumed between 6-8 weeks.

SWILL FEEDING

Swill (kitchen waste including left over of human food, vegetables, meat and fish cuttings): Composition and quantity vary so greatly that it is difficult to indicate feeding values. It has been observed that pigs weighing 30 kg reached a body weight of 70 kg in 70 days when fed exclusively on kitchen waste. Ensure that swill feed is not old and putrified.

On an average 4 – 8 kg swill is needed per pig per day.

Feeding of growing and finishing pigs:

The pigs may be given complete feed they can consume to attain maximum growth. Alternatively, they may be fed a fixed quantity twice or thrice a day. Yet another method that they may be fed all the quantity they consume within a fixed time of 30-45 minutes or so. On an average, the post-weaning feed conversion efficiency till market weight may be about 4 i.e. this much quantity of feed would be used by the pig to gain one kg of weight. However, it varies considerably with age and ambient temperature. Protein requirements are greater during early life. As fattening progresses, protein per cent in the ration may be decreased.

This period may be considered from weaning (9-10 kg) to the slaughter weight of 90-100 kg. Entire males, castrates and females can be fattened for meat purposes. The entire males and females may have higher feed conversion efficiency than castrates. Castration if required may be done at the age of 3-6 weeks. Castrates are more docile and put on slightly more fat. Growers may be grouped according to sex, size and weight as uniformly as possible. The difference in weight between the small and large pig in a lot should not be more than 20%. Up to 15 pigs may be conveniently put together in a pen. In summer, sprinklers, wallowing tanks etc. may be provided in addition to shades to cool pigs. Poor growers may be identified, culled and removed from the lot at the earliest.

Deworming may be done two weeks after weaning and may be repeated once in two months if necessary.

Orphan pigs:

When a sow dies or fails to produce milk or does not claim her pigs, the piglings should be promptly shifted to a foster mother. Some sows may refuse to suckle alien piglings. Care should be taken to simulate the conditions including the odour and body size of piglings when admitted to a foster mother or another suckling sow. If a suckling sow is not available, hand feeding would be necessary. Cow's milk is the best substitute for sow's milk. Buttermilk or sweet skim milk can also be used. Each pigling may consume 300-500 ml milk per day. Best results may be secured by feeding 5-6 times a day for the first few weeks and thereafter the frequency may gradually be reduced to 2-3 times. Any standard vitamin preparation two or three times the quantity used for infants may be administered to the piglings until they start taking feed. Injectable iron preparation (e.g. Imferon) may be given as usual. A 60-Watt electric bulb may provide enough warmth for the piglings during the early days of life.

Ration formulation: Requirement

Age	Preweaning	Grower (20 – 90Kg.)	Adults
CP%	22%	18-13	14-15%
ME (k.cal/kg.)	3500	3500-3800	3300

Ca : 0.5 – 0.8%, P : 0.4 – 0.6%, Salt : 0.5%.

Model composition

	Creep mixture	Grower	Adult
Maize	53	53	50
Cakes	22	16	7
Wheat Bran	7.5	17	35
Fishmeal	15	12.5	6.5
Mineral mixture	2	1	1
Salt	0.5	0.5	0.5

Allowance

Creep mixture : 0.2 – 0.6 kg, Grower : 0.6 – 2.0kg, Adult : 2 – 3kg **MANAGEMENT PRACTICES**

Breeding care

- Pigs are highly prolific in nature and two farrowings in a year should be planned by adopting optimal management conditions.
- For every 10 sows one boar must be maintained for maximum fertility.
- Breed the animals when it is in peak heat period (i.e. 12 to 24 hours of heat).

Care during Pregnancy

Give special attention to pregnant sows one week before farrowing by providing adequate space, feed, water etc. The sows as well as farrowing pens should be disinfected 3-4 days before the expected date of farrowing and the sows should be placed in the farrowing pen after bedding it properly.

Care of Piglets

- Take care of new born piglets by providing guard rails.
- Treat / disinfect the navel cord with tincture of iodine as soon as it is cut with a sharp knife.
- Feed on mothers' milk for first 6-8 weeks along with creep feed.
- Protect the piglets against extreme weather conditions, particularly during the first two months.
- Needle teeth should be clipped shortly after birth.
- Vaccinate the piglets as per recommended vaccination schedule.
- Supplementation of Iron to prevent piglet anemia is necessary.
- The piglets meant for sale as breeder stock must be reared properly.
- Male piglets not selected for breeding should be castrated preferably at the age of 3-4 weeks which will prevent the boar odour in the cooked meat thus it enables production of quality meat.
- Additional feed requirements of lactating sow must be ensured for proper nursing of all the piglets born.

Care and management of sow:

Care and management of sows are very essential since they are retained in the herd mainly for breeding. Good management and feeding will minimize problems related to breeding. Sows should be looked after with particular care so that the piglets are delivered normally and nursed properly.

Farrowing Sow and Litter:

- Clean and disinfect the farrowing pen with a solution of 2 % of phenyl lotion and keep it vacant for a week.
- The pregnant female may be dewormed 2-3 weeks before farrowing and prior to admitting into the farrowing pen. Spray with external parasiticide (1% solution of malathion/cythion, butox. 0.05 %). Scrub the under surface, sides, interdigital space and udder to remove dirt, eggs of parasites, disease germs etc. with soap and water just before moving into the farrowing pen.
- Move the clean animal to the clean pen 10 days before farrowing.
- Provide light bedding of chopped straw 2-3 days before farrowing.
- Appearance of milk in teats when pressed indicates the approach of farrowing time.
- Attend the farrowing throughout. It may last up to 24 hours.
- Wipe the piglets clean with towel/straw. Disinfect the naval cord with tincture of iodine. Normal healthy piglets suckle teats within 10-30 minutes. Help small piglets to suckle.
- Placenta, dead piglets, soiled bedding etc. may be removed and buried in time with least delay. The placenta will be expelled generally within a short while.
- Provide 50 mg iron (Imferon 1 ml) on the second day intra-muscularly to prevent piglet anaemia. Oral administration of iron solution (1 g Ferrous sulphate in 25 ml of water) 1 ml per piglet once a week can be tried. A second injection may be given at 5 weeks of age.
- Keep the farrowing pen warm, dry and clean.
- Needle teeth may be removed carefully.

The time taken for expulsion of litter vary from 1 hour to 5 hours. The interval between the birth of the first and that of successive piglets vary from a few minutes to 3 hours. About 30 per cent of piglets are usually born in posterior presentation. Generally placenta is shed only after all

Dr. Abha Nutan Kujur, YBN University

the piglings are born. Expulsion of placenta is usually within 3 hours after expulsion of foetus.

Piglets start suckling within 10-15 minutes after birth. Artificial heat may be provided by using an infrared lamp / ordinary electric bulb during cold and rainy season to avoid death due to chilling.

Breeding management: The sows come to heat once in about 21 days. Good feeding and management induces heat (estrus) makes breeding easy, and larger litter size. Along with grains, fish meal, skim milk or butter milk may be given 2-3 weeks prior to breeding to allow a body weight gain of 200-300 gm/day.

Mating:

The average gestation period of sow is about 112-115 days the normal litter size is 8-10 piglets. Older sows as larger litter size with high birth weight.

Care at farrowing time:

The pregnant sow should be shifted to farrowing pen 3-4 days before farrowing to avoid disturbances and to settle down in new surroundings. The farrowing pen should be dry, well ventilated and lighted. Bedding material should be provided in the farrowing pen.

Prior to farrowing time, the ration of sow should be reduced to half and should contain laxative ingredient like wheat bran. The sow should be left undisturbed at farrowing and may be helped during emergencies. Remove piglets from a nervous sow and allowed to suckle under supervision. As soon as the piglets are born, they are dried with a cloth and placed in warm enclosure pig brooder.

Brood sows should be given well-balanced rations. Feeding should be started in small quantities of concentrate mixtures along with laxatives like wheat bran.

Care and management of sucking sows:

A sow gives about 150-200 kg of milk during 8 week suckling period. Sows milk is more concentrated than cows milk hence sow require more feed. Allow 1.5kg of feed for the sow and add 0.5 kg of feed per piglet to a maximum of 5-6 kg of total ration. Plenty of

Lucerne hay and succulent fodder may be provided.

A few days prior to weaning, the quantity of feed is gradually reduced to restrict milk flow and dry the udder.

Care and management of boar

The boar should be maintained in a separate pen. They should neither be overfed nor underfed, since both will affect its breeding capacity. It should be fleshy, and thrifty but not too fatty. The feed requirements include both the demands for maintenance and reproduction.

Dr. Abha Nutan Kujur, YBN University

During off-season the boar should be given plenty of grasses and legume hay and 2kg of concentrate mixture. An additional 0.5 kg of concentrate may be given 2 weeks prior to breeding season.

Boars should not be used for breeding earlier than 8 months of age. A young boar can be used for 15-20 sows in a season and older ones may be used for about 25-45 sows. A boar can be allowed to serve before being fed. Not more than one service per day is allowed during breeding season. Older sows may be used for breeding season. Older sows may be used for breeding with younger boars.

Gilts Exposed to Boar

Boar should have free access to water and boar pen is kept clean and dry. Dampness should be avoided. The boar should be scrubbed and washed daily and kept clean. Trimming of boar's feet periodically will prevent lameness in boars. The bolt cutters can be used to remove tusks of boars to avoid injuries to sows and attendants.

Newly purchased boars should be kept separately for 2-3 weeks to avoid risk of introducing any disease into the farm.

Care and management of piglets

- The piglets are removed as they are farrowed and kept warm in creep space until farrowing is complete.
- Each piglet is cleaned of all mucous to ensure that the breathing passage is clear
- The navel cord should be tied 2.5 cm away from the navel, remaining portion is removed hygienically and stumps are painted with iodine.
- Piglets should be nursed after birth. They nurse 8-10 times in a day.
- Piglets are born with 4 pairs of sharp teeth (2 pairs on each jaw) which may injure udder or teats. Hence clip these teeth soon after birth.
- Piglet anemia (Thumps) : Since sows milk is deficient in iron and copper piglets suffer from serious deficiency resulting in anemia. Affected piglets become weak, dyspeptic, and have distressed breathing.

Milk Feeding

This disease is also called thumps because of their difficulty in breathing. To prevent piglets anemia udder of sow may be swabbed daily with a saturated solution of ferrous sulfate for 4-6 weeks so that piglets can get these minerals while suckling the milk. Another effective method is injection of iron - dextran compounds available commercially.

- **Creep feeding:** Piglets take dry feed at 2-3 weeks. Provision of additional nutrients at this time is essential to have maximum growth and development. Creep feed is also called as pig starter for vigorous growth the thriftiness, sows milk alone .is not sufficient for piglets. Creep feed contains 25-30% CP.

Creep is a device by which piglets are allowed access to the concentrate mixture. It may be arranged of the corner of farrowing pen. Creep feed is' fed from 14-56 days. The composition is as follows.

Ingredient	Parts
Maize	65
GNC	14
Molasses	5
Wheat bran	10
Fish meal	5
Mineral mixture	1
Antibiotics	-

- **Weaning of piglets:** Usually weaning is done at 7-8 weeks. The sow should be separated from the piglets for a few hours each day to prevent stress of weaning and its feed is reduced gradually.
- **Orphan piglets :** Can be raised either with a foster sow or the use of milk replacer

Manure disposal

The dry solid dung may be collected morning and evening and stored in the dung shed. The liquid part of urine and washings may be taken to settling tanks.

Integration

Pigs can be effectively integrated to a biogas plant for meeting the cooking /lighting demand of the farmers. It can also be integrated to agriculture and fish culture thereby increasing the overall economic efficiency of the system. The pig dung is good organic manure in dried form or as compost.

SWINE DISEASE:

Classical swine fever

Classical swine fever (CSF) is a contagious viral disease of pigs. CSF is caused by a virus belonging to the family Flaviviridae and the genus **pestivirus**.

SYMPTOMS

- **Acute infection**
- In acute form the pigs appear sick, inactive and drowsy with arched back. Some pigs stand with droopy head and straight tail. Huddling, vomiting, high fever anorexia and constipation. Conjunctivitis, staggering gait, posterior weakness and purple discoloration of abdominal skin
- In last stage of the infection, pigs will become recumbent, and convulsions may occur shortly before death. Sever diarrhoea will also occur during last stages.
- **Chronic form**
- Dullness, capricious appetite, pyrexia and diarrhoea for up to 1 month. Weight loss, hair loss, dermatitis and discoloration of abdomen or ears are the other symptoms. A chronically infected pig may have a disproportionately large head relative to the small trunk.

Diagnosis

- Based on high morbidity and mortality, high fever, diarrhoea. Kidney and lymph node lesions will help in field diagnosis.

Treatment & Vaccination

- Modified live vaccines (MLV) are used to control CSF.

SWINE INFLUENZA

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- Swine influenza is a highly contagious respiratory viral infection of pigs caused by swine influenza virus, characterized by coughing, sneezing, nasal discharge, elevated rectal temperatures, lethargy, difficult breathing, depressed appetite and rarely associated with reproductive disorders such as abortion.
- The first clinical signs are fever (40.5-41.5°C), puffy eyes, anorexia leading to loss of weight, depression, prostration and huddling leading to weakness. These signs are followed by sudden onset of acute respiratory signs, which include paroxysmal coughing, sneezing, irregular abdominal breathing and ocular and nasal discharges.
- In breeding stock, abortions, infertility, production of small weak litters and increased stillbirths.

PREVENTION AND CONTROL

Good husbandry practices including All-in/All-out to limit the spread of the disease, provision of fresh clean drinking water, avoiding ducks and turkey contamination's/contact including staff and proper use of disinfectants to clean infected buildings.

FOOT AND MOUTH DISEASE

Viral disease of pigs caused by FMD virus of the genus Aphthovirus. Characterized by fever (40-40.6°C), anorexia, reluctance to move, and scream when forced to move. These signs are followed by vesicles on the coronary band, heels, inter digital space and on the snout. Mouth lesions are not too common and when they occur are smaller and of shorter duration than in cattle and tend to be a "dry"-type lesion. There is no drooling. Sows may abort. Piglets may die without showing any clinical sign.

DIAGNOSIS

- Based on symptom and lesions

Control and eradication program

- Prevention of movement of animals and animal products in the area affected.
- Destroy carcasses
- Disinfect vehicles leaving the infected area.
- Perform vaccination.

PIGLET MORTALITY

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The major task in pig husbandry is avoiding piglet mortality and raising piglets successfully up to weaning. After weaning the mortality is comparatively less. Pre-partum death may be due to deficiency of iron, which can be prevented by injection of sow with iron. Intrapartum death is due to anoxia induced by lack of placental blood flow associated with uterine contraction or premature rupture of umbilical cord. This intra-partum death occurs mostly in aged sows.

Pre-weaning mortality

The pre-weaning mortality ranges between 12-30%.

Causes of mortality

Sl. No	Reasons	%
1	Still birth	17.4
2	Eaten by the sow	0.50
3	Genetic defect	1.60
4	Over laid (crushing by mother)	66.30
5	Enteritis	2.20
6	Pneumonia	0.50
7	Unknown	11.50

Starvation and overlying by the pig

70% of death is due to starvation and overlying by the sow, which can be avoided by

1. Improving birth weight and vigor of newborn piglets
2. Minimizing risk of chilling or hypothermia
3. Minimizing agalactia

MMA (Mastitis Metritis Agalactia).

It is a part of complex condition of **MMA** (M= mastitis, M= metritis & A=agalactia). The MMA syndrome can involve metabolic, bacterial and hormonal factor with stress plays a part. Since its main effect is loss of milk in the first three days after farrowing, the condition contributes to piglet loss from starvation. **Reason and control of MMA**

- Elevated temperature of sow is associated with this condition, hence regular monitoring of sows rectal temperature and treatment with antibiotic and oxytocin is essential to avoid this condition. Such conditions which are not detected earlier, it can be noticed by loss of body condition of piglets and it is very difficult to recover the condition quickly. In refractory case

prompt provision of an alternative source of food for piglet by foster sow or artificial feeding will minimize the loss

- The udder and teat of sow should be dry and kept hygiene to avoid such problem

Piglet anemia

The newborn piglet has only limited reserve of iron in the liver for hemoglobin synthesis. This is due to poor placental transfer of iron to foetus. The sow milk is very low in iron and the suckling pig should be supplemented with iron during first few days to prevent piglet anaemia.

Symptom

- Pale in the region of ears and belly
- Listlessness
- Rapid breathing
- Often exhibit diarrhea **Control**
- Placing fresh, clean earth in the piglets pen each day
- Using soil drenched with a solution made from 500 gm ferrous sulphate, 75 gm copper sulphate and 3 litter of water
- Daily administration of 4 ml of 1.8 percent ferrous sulphate solution
- The daily painting of the mother's udder with ferrous sulphate solution and sugar [0.5 kg of ferrous sulphate in 10 liter of water]
- All these methods are labour intensive and the safest and easiest method of combating piglet anaemia is to inject the piglet with 100-150 mg of iron in the form of iron dextron 3 days after birth. If necessary a second and slightly smaller injection can be made some 3 weeks later