HACCP & PRE-REQUISITES

Healthy animals

A healthy community

Affordable food
In the food chain quality control system, the role of the veterinarian starts on the farm and ends as the meat leaves the abattoir, or the milk reaches the processing plant. Thereafter, food safety and quality control lies with the Dept of Health.

This, in itself, is under debate as many commercial and small-scale producers are embarking on value-added processes on-farm, such as the slaughter and packaging of poultry portions, or the manufacture of cheese and yoghurt.
LIVESTOCK PRODUCTS ARE IMPORTANT TO FOOD SECURITY IN SOUTH AFRICA
Food safety or Food security?

The life expectancy in developing countries, where food security is often seen as more important than food safety due to the high level of under-nourishment in the population, is low (WHO, 2007).

Why can’t we have food safety and food security?
No data on impact of food safety...

- Impact of food safety unknown why?
  - Autopsies on people culturally unacceptable
  - Death certification may not exist in rural areas
  - Diagnosis mainly symptomatic not aetiological
  - WHO statistics are mainly estimates
  - Global data for zoonoses are lacking
What price food safety?

- Annually, up to one third of people in developed countries are affected by food borne diseases and that 2.2 million people die in less developed countries (WHO, 2007).

- Affordability of food also comes in – how much food safety can a consumer afford who is spending less than $1 per day on food? (Schillhorn van Veen, 2005).

- Yet we must also ask the other question – how much medical treatment is available or affordable for the same person afflicted by food poisoning or a zoonotic disease?
This argument is even heard from politicians who motivate strongly for the softening of food safety regulations with the excuse that people have to eat and there is not enough food, or they cannot afford safe food.

THE POOR CANNOT AFFORD TO GET SICK!
Effect of zoonoses on the poor

• A person who is suffering from malnutrition does not need a tapeworm (*Taenia saginana*) sharing what little food he is getting.

• An subsistence farmer would not be able to continue milking his cows while suffering from the lassitude and arthritis caused by chronic Brucellosis.
Effect of zoonoses on the poor

- A person suffering from HIV/AIDS is not helped if he gets intractable diarrhoea caused by *Campylobacter jejuni*, from eating infected chicken entrails.

- A toddler with Kwashiokor is much more likely to get tuberculosis from unpasteurised milk, than a well nourished child, and his parents would be unlikely to even be able to afford the transport to get him to a clinic or hospital for treatment.
Some more effects of being careless about food safety.....
Cysticercosis in skin of person
ANTHRAX: Eschar on hand and face (over 7 days)
Cow with rabies ....
Cold slaughter.....
Rabies - hydrophobia
Where do these diseases come from?

They are all food associated diseases that are prevalent where the poor have access to food of animal origin that is not:

- Hygienically handled
- Inspected for safety
- Sufficiently heated to destroy pathogens

FOOD SAFETY IS A PART OF FOOD SECURITY
Economic aspects

- Export of livestock products provides an income for developing countries
- WTO – trade barriers in place for uncertified food of animal origin
- EU regulations
- OIE regulations
- Codex alimentarius: Trade harmonisation!

QUALITY ASSURANCE IS ESSENTIAL FOR EXPORT!
What can be done?

- In poor communities infrastructure is lacking
- The infrastructure required for VPH:
  - meat and milk inspection
  - access to livestock producers at every level
  - traceability
  - residue and microbial testing
- Limited scientific and technical expertise
- Limited education
- RISK ANALYSIS ESSENTIAL
Risk analysis basics

1. Hazard identification and characterisation
2. Risk/Exposure assessment
3. Risk management/mitigation
4. Risk communication
**CODEX : hazard categories**

- **Biological hazards**: bacteria, protozoa, fungi, natural toxins like mycotoxins
- **Physical hazards**: foreign objects like lead shot, broken needles, physical appearance of the food
- **Chemical hazards**: drug residues, pesticides, heavy metals, radiation, toxic chemicals
Let’s compare:

- consumer differences
- quality and food safety control in pathways or value chains

for food production in formal and informal markets
### AVERAGE CONSUMER IN DEVELOPED COUNTRY

- Daily food basket costs > $5 per day
- "Life-style" food, often oven-ready
- Vulnerable to exotic pathogens because no exposure
- Per capital health expenditure >$500 per year
- Expects "instant" or "ready-made" processed foodstuffs
- Expects to buy pathogen-free food
- Extensive, vertically integrated, industrialised foodchain
- Full compliance with Codex and other regulations

### AVERAGE CONSUMER IN DEVELOPING COUNTRY

- Daily food basket costs < $1 per day
- Basic commodities (fruit, vegetables, staples, meat)
- Resistant to pathogens because of regular exposure
- Per capita health expenditure <$100 per year
- Prepare food for themselves, which takes considerable time
- Takes precautions to make food pathogen free (selection at purchase, cooking for long periods)
- Short food chain
- Informal, unregulated markets common
The formal food-chain in developed countries......
The formal market for meat

**QUALITY CONTROL AT MANY POINTS IN THE CHAIN**
Buy with confidence...

...buy approved meat

Be a health conscious and informed consumer
The informal food chain...
The informal market for livestock

QUALITY CONTROL RESTS WITH THE CONSUMER
Crossovers

- Informal production
- Informal processing and marketing
- Formal production
- Informal processing and marketing

Monitoring?
Can we use HACCP and prerequisites?
HACCP principles

- Assemble HACCP team
- Describe product and distribution
- Identify use and consumer
- Develop flow diagram
- Verify flow diagram
- Conduct hazard analysis
- Identify CCP’s
- Establish monitoring system for CCP
- Establish corrective plan
- Establish verification process
- Record keeping and documentation
CCP decision tree

Q1 Do corrective measures exist? Modify step, process or product

NO

YES

Is control needed for food safety?

Q2 does the step eliminate the hazard?

NO

YES

Q3 Could contamination occur at unacceptable levels?

Q4 does a subsequent step eliminate the hazard?

NO

YES

CCP
For a HACCP plan to be effective, a strong foundation of safety-related prerequisites is **essential**. Such programs are not specific to a single product, as is the case with CCPs. Instead, they serve to control the **environment** in which processing occurs. Prerequisite programs include implementation of Good Manufacturing Practices (GMP), Sanitation Standard Operating Procedures (SSOP), recall programs, employee **hygiene** and training, **labelling** and coding, **facilities design**, **equipment maintenance**, and **equipment calibration**.
INPUTS: prerequisites

- Potable water
- Traceability
- Correct use of antimicrobials, pesticides
- Minimal environmental pollutants
- Registered feedstuffs/ quality assured feedstuffs
- Animal health and disease control
- Registered stock remedies used
- Regular, certified vaccination against zoonoses (anthrax, brucellosis)

HEALTHY ANIMALS
Healthy animals = Healthy people
SOME SIMPLE RULES FOR INFORMAL PRODUCTION

• Keep animals healthy: vaccinate against botulism and anthrax annually
• Do not use the meat of dead or sick animals (the “kosher” rule!)
• Owners should learn what normal organs should look like. If not normal – burn or bury them
• Keep water drinkable!
• Feed clean hay or feed to animals
• Slaughter on a clean surface
• Do not let ingesta spill on meat
• Bleed the animal out completely
• Eat meat the same day it is cooked, cook it well!
• Boil milk!
CONCLUSIONS

• In Africa, tropical diseases and zoonoses are rife so food safety is as important as food security

• Prerequisites must be a focus for informal food production and processing

• Hazard identification & characterisation essential – can be participatory

• HACCP is possible only if prerequisites in place

• These include quality inputs

• Risk mitigation can be participatory as well

• Risk communication is an essential part of VPH in communities with little access to the general media
Small-scale goat farmer Eastern Cape

Let's work together so he grows up healthy!