In The Name Of Allah, The Most Beneficent, The Most Merciful

رَبِّ اشْرَحْ لِیْ صَدْرِیْ ۞ وَ یَسِّرْ لِیْ اَمْرِیْ ۞ وَ احْلُلْ عُقْدَۃً مِّنْ لِّسَانِیْ ۞ یَفْقَھُوْا قَوْلِیْ ۞

پروردگار، میرا سینہ کھول دے، اور میرے کام کو میرے لیے آسان کر دے اور میری زبان کی گرہ سلجھا دے تاکہ لوگ میری بات سمجھ سکیں

رَّبِّ زِدْنِیْ عِلْمًا

MY LORD! INCREASE ME IN KNOWLEDGE.

FSQM - Dr. Shahid Mahmood Rana   2

FOOD SAFETY AND QUALITY MANAGEMENT

DHND

YEAR-V
Session: 2015-2020

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FSQM

L # 31. FOOD SAFETY SURVEILLANCE SYSTEMS

FOOD SAFETY SURVEILLANCE SYSTEMS

Systems for Food Safety Surveillance

- GMP

- TQM

- HACCP

- FSMS-ISO22000:2005

- Halal Certification

FSSS: MONITORING & SURVEILLANCE

- Monitoring can be defined as: "the performance and analysis of routine measurements, aimed at detecting changes in the environment or health status of populations".

- Surveillance can be defined as: "the ongoing systematic collection, collation, analysis and interpretation of data, followed by the dissemination of information to all those involved so that directed actions may be taken."
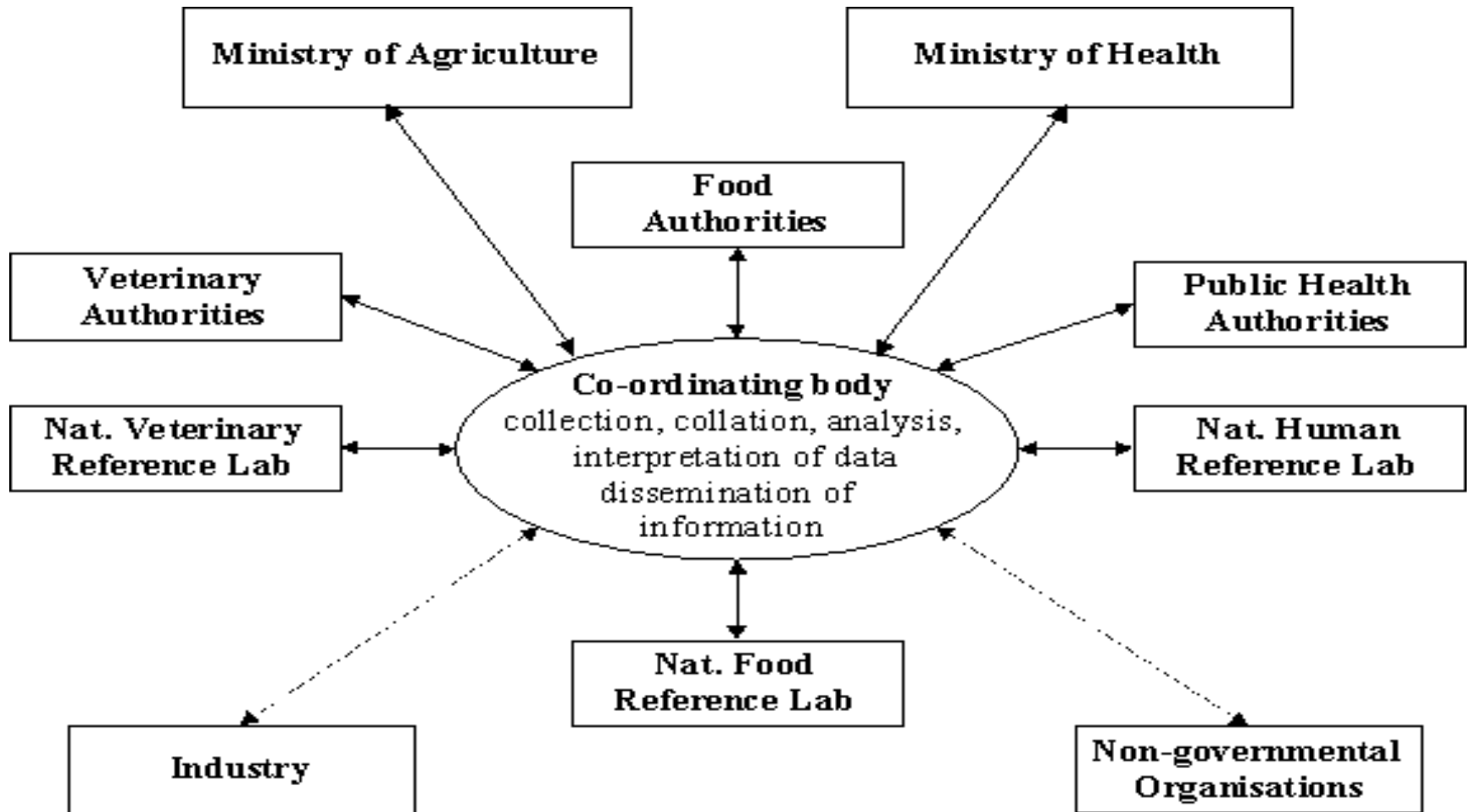
(WHO/CDS/CSR)

FSSS: MONITORING & SURVEILLANCE
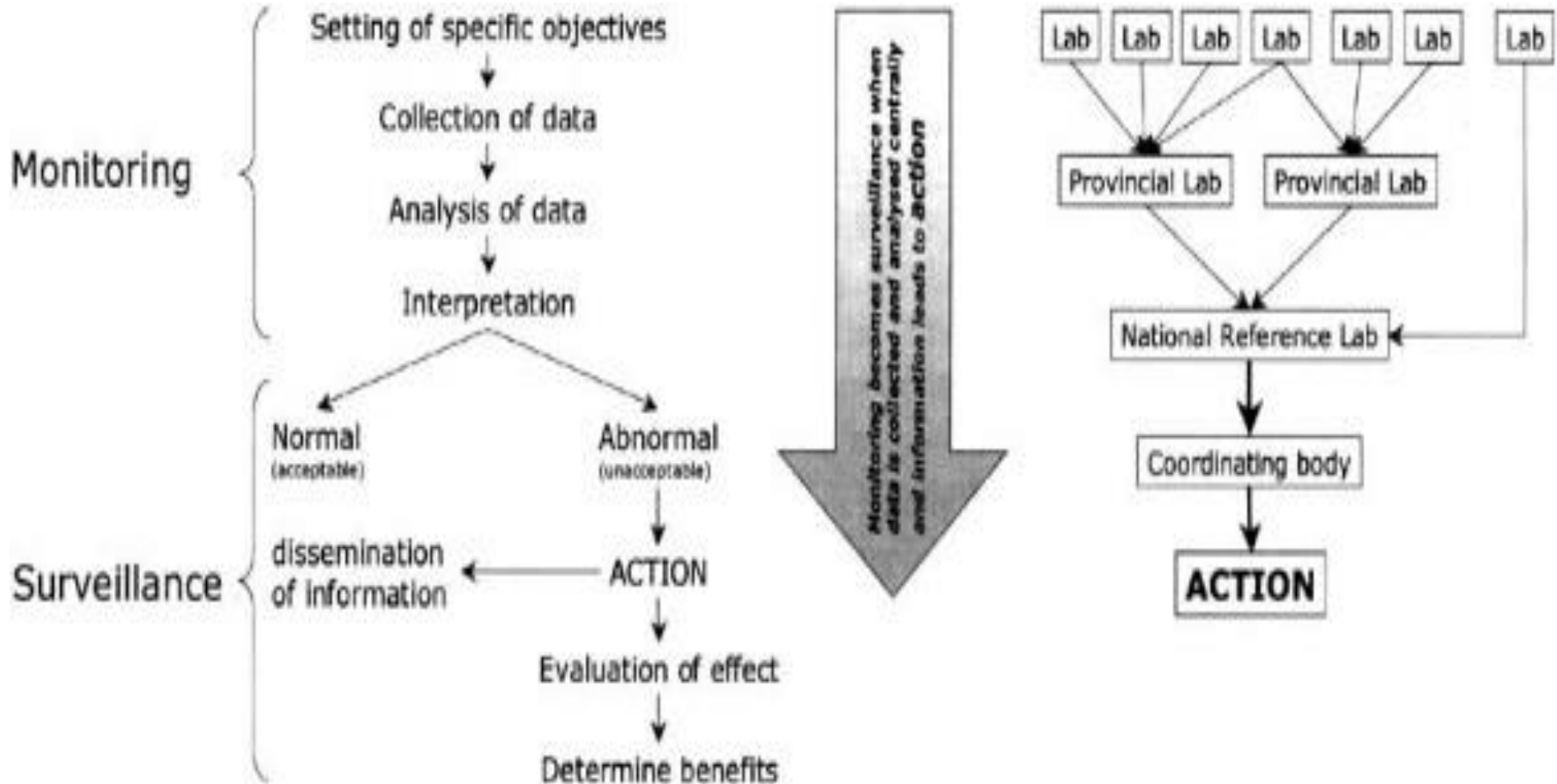
Graphic presentation illustrating the relation between monitoring and surveillance

FSSS: MONITORING & SURVEILLANCE

Schematic presentation of the collection, collation, analysis and interpretation of surveillance data and the subsequent dissemination of information to all the major stakeholders in food safety

FSSS: MONITORING & SURVEILLANCE
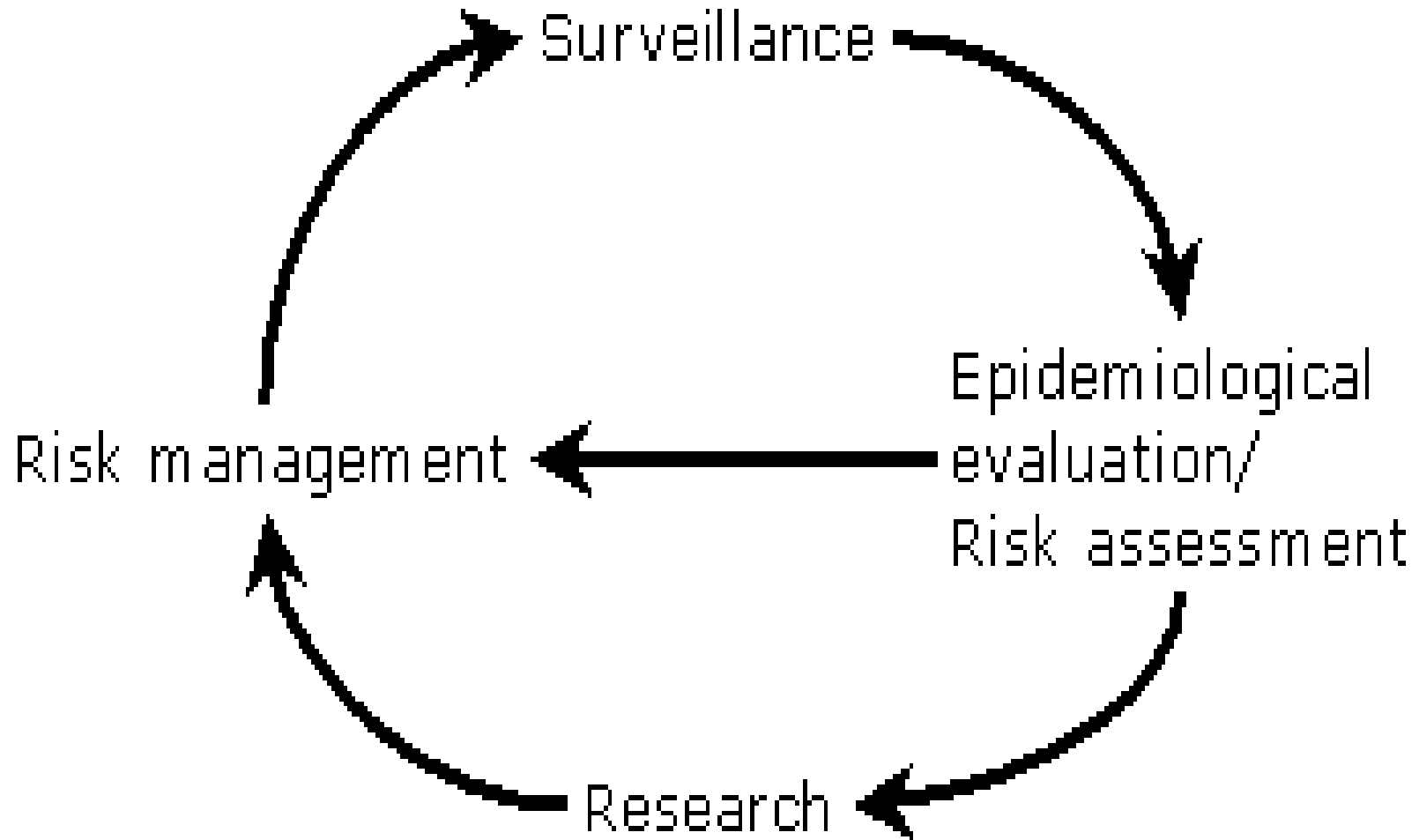
The cycle of public health protection, illustrating the role of surveillance in supporting risk assessment, risk management and formulating new research efforts

Centrally Co-coordinated Microbiological Projects Performed in Denmark in 2003, with the Number of Samples Investigated
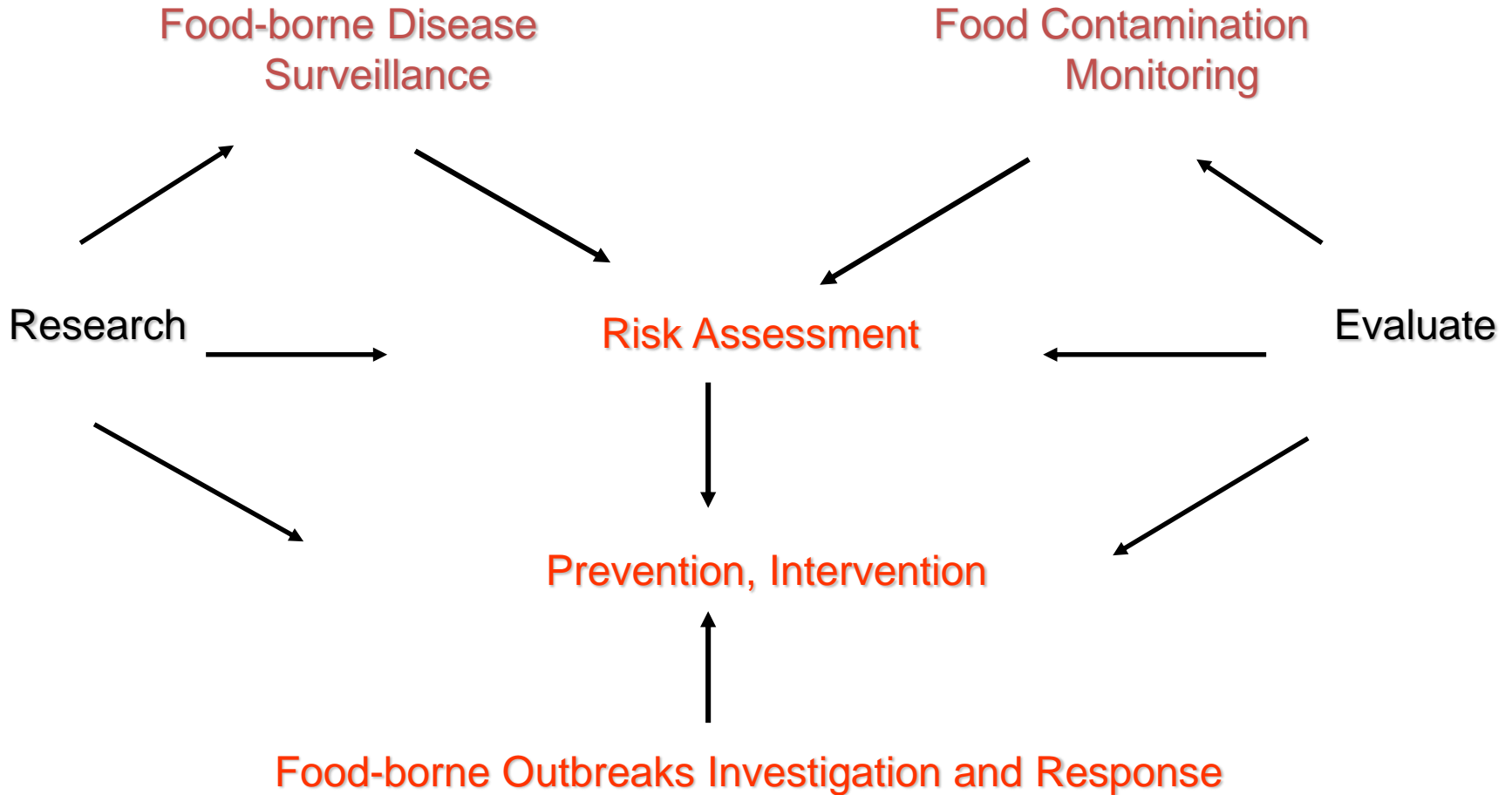
Aim	Project	Samples
Risk Profiling	Presence of VTEC O26, O103, O111 and O143 in beef cattle	1500
	Presence of Campylobacter in pre-cut ready-to-eat salad	500
Risk Assessment	Effect of different reduction strategies on the number of Campylobacter on broilers at slaughter level	2000
	Presence and number of Campylobacter on turkeys during slaughter combined with antibiotic resistance testing	1500
Risk Management	Surveillance programme on antibiotic resistance in bacteria from foods (DANMAP)	1000
	Listeria monocytogenes in ready-to-eat foods	1200
	Vibrio in seafoods (EU control campaign)	1000
	Total	8700

FOOD SAFETY SURVEILLANCE SYSTEMS
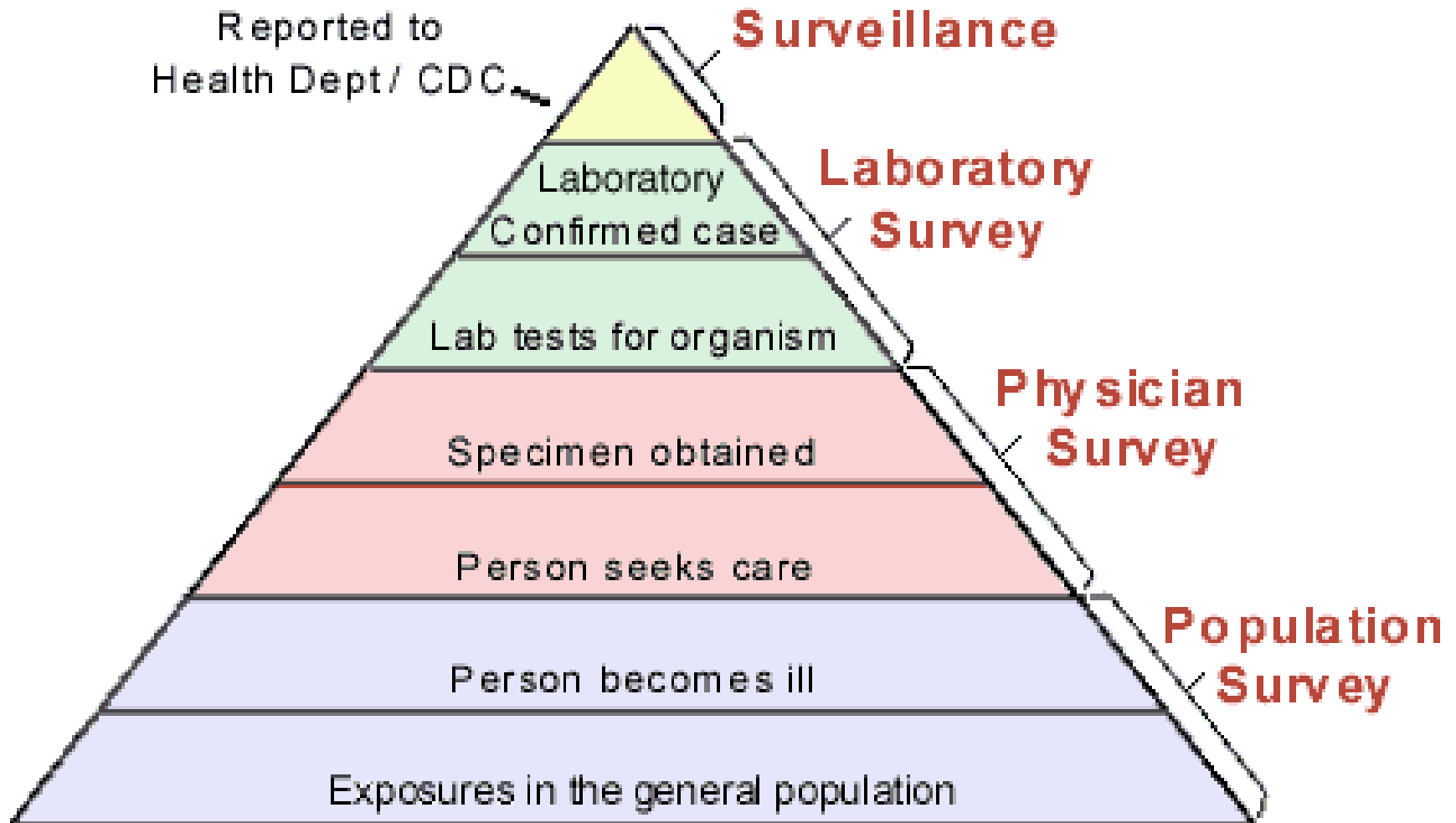
Food Safety Surveillance System

- The **surveillance systems** have a twin purpose.

- Initial is to notice, control and stop foodborne disease outbreaks.

- Most of the countries have such **surveillance** and response **systems** in place; however, the effectiveness and coverage of these **systems** vary from country to country.

FRAMEWORK

Food-borne Disease
Surveillance

Food Contamination
Monitoring

Research

Risk Assessment

Evaluate

Prevention, Intervention
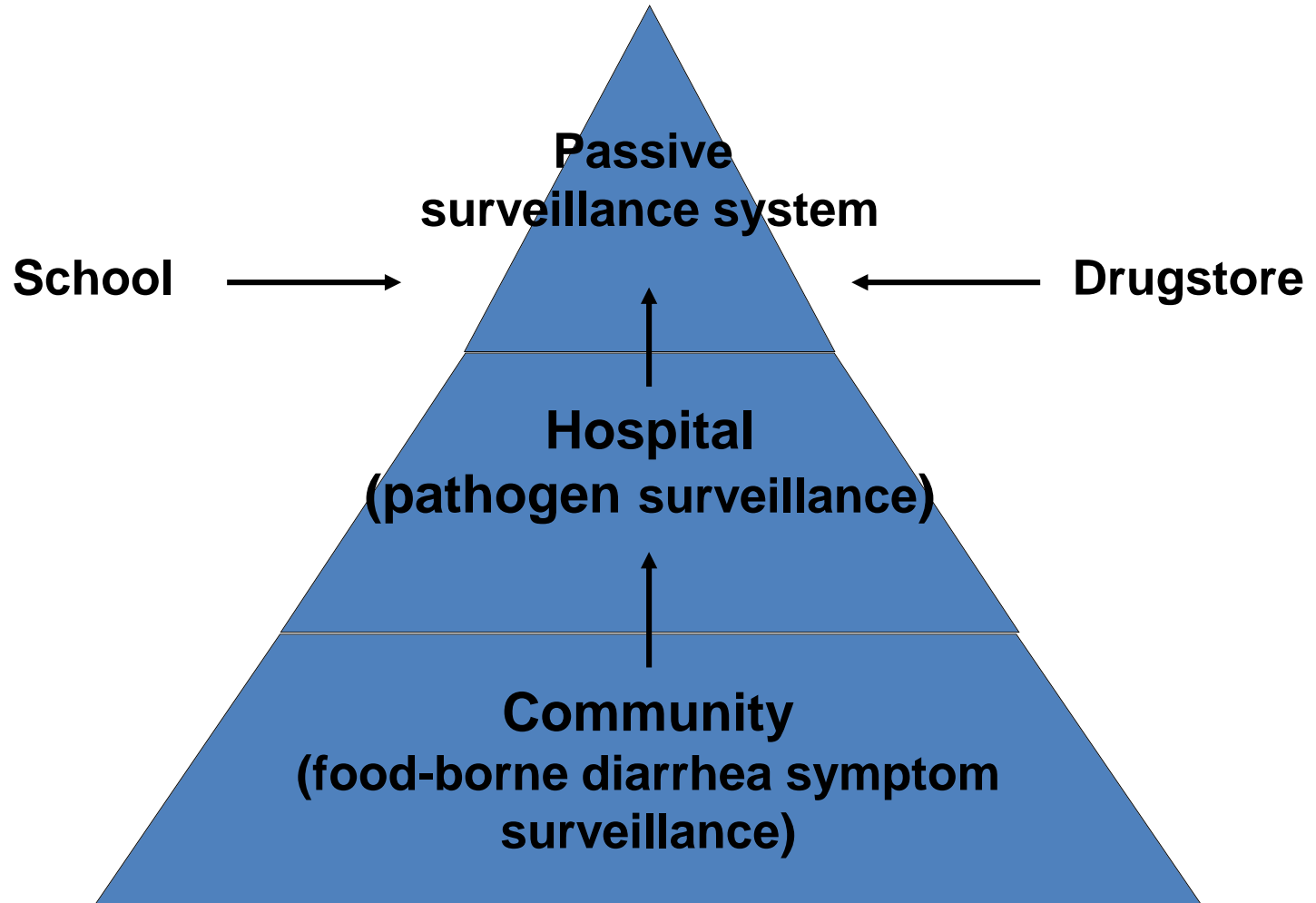
Food-borne Outbreaks Investigation and Response

BURDEN OF ILLNESS PYRAMID
Cases reported through passive surveillance represent fraction of actual number of cases in community

FOOD-BORNE DISEASE SURVEILLANCE

School →   **Passive surveillance system**   ← **Drugstore**

Hospital (pathogen surveillance)

Community (food-borne diarrhea symptom surveillance)

The Current Surveillance Pyramid

FSQM

L # 32. FOOD SAFETY SURVEILLANCE SYSTEMS - DETAILS

INTRODUCTION

- Food safety is defined as the provision of safe, nutritious and wholesome food to the masses.

- It provides the assurance that food will not cause any harm / hazard to the consumer when it is prepared or eaten according to its intended use.

- The basic aim of any food safety system is to protect the food from possible contamination and especially the consumer from toxicity, diseases or ailments caused due to the intake of unsafe food.

- Keeping customers and employees **safe** will help to make the industry a better location to work in and a place where customers will willingly return.

INTRODUCTION

- According to **FAO/WHO**, food control **syst**em is the **mandatory regulatory activity** of **en**forcement by **nat**ional and **loca**l authorities to provide consumer **pro**tection and **en**sure that all foods during **pr**oduction, **ha**ndling, **sto**rage, **pro**cessing and **distr**ibution are **safe**, **wholesome** and **fit** for human **co**nsumption; **co**nform to **sa**fety and **qua**lity requirements and are **hon**estly and **acc**urately **la**belled as prescribed by law.

- There are several quality systems in vogue to achieve the targets set by FAO/WHO. These include Total Quality management (TQM), Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Point (HACCP), and Food Safety Management System (FSMS-ISO 22000:2005).

INTRODUCTION

- For ethnic foods, a number of certification systems have emerged, among which Kosher and Halal Food Certification deal with foods consumed by Jews and Muslims, respectively.

- The primary mandate of all these systems is to provide the consumer with food which is safe and according to his desires.

L # 33. TOTAL QUALITY MANAGEMENT

TQM

TOTAL QUALITY MANAGEMENT

- Total Quality Management (TQM) is a set of management practices or approach throughout the organization, geared to ensure that the organization consistently meets to customer requirements.

- It places strong focus on process measurement and controls as means of continuous improvement.

- TQM improves the quality by ensuring conformance to internal requirements.

- The main driving force of TQM is long term success through customer satisfaction.

TOTAL QUALITY MANAGEMENT

- TQM is often **asso**ciated with the **deve**lopment, **depl**oyment and **main**tenance of **org**anizational **sys**tems that are required for various business processes.

- The basis of TQM is to minimize the errors occurring during the manufacturing or service process, increase customer satisfaction, streamline supply chain management, modernize the equipment and ensure job oriented training.

- In a TQM effort, all members of the organization participate in improving processes, products, services and the culture in which they work.

- One of the principal aims of TQM is to limit errors to 1 per 1 million units produced.

L # 34. GOOD MANUFACTURING PRACTICES

GMP

GOOD MANUFACTURING PRACTICES

- Good manufacturing practice (GMP) is a quality system designed to ensure production of good quality products in a clean and safe environment.

- Quality, in a nutshell, relates to consumer satisfaction.

- This system is composed of guidelines that outline different aspects of production and testing which can have an impact on the quality of a product.

GOOD MANUFACTURING PRACTICES

Good manufacturing practices lie at the heart of quality and comprise a variety of practices that include:

- Quality assurance of raw materials
- Record keeping of all materials throughout the manufacturing process
- Standards for cleanliness and safety
- Qualifications of manufacturing personnel
- In-house testing
- Production and process controls
- Warehousing and distribution.

GOOD MANUFACTURING PRACTICES

- Thus GMP involves basic guidelines starting from receiving of raw materials till the final production and also the recall traceability procedures.

- These guidelines are a series of general principles that must be observed during manufacturing.

- When a company is setting up its quality program and manufacturing process, there may be many ways it can fulfil GMP requirements.

- It is the company's responsibility to determine the most effective and efficient quality process.

L # 35. HAZARD ANALYSIS CRITICAL CONTROL POINTS

HACCP

HAZARD ANALYSIS CRITICAL CONTROL POINTS

- Hazard analysis critical control points (HACCP) is a concept that has its origin in the US army and NASA.

- The idea behind the HACCP approach is to develop a plan that anticipates and identifies places in the production process known as critical control points (CCPs) where contaminants might be introduced or other food safety concerns can be identified.

- Where critical limits are exceeded corrective action must be taken and documented.

HAZARD ANALYSIS CRITICAL CONTROL POINTS

HACCP comprises of Seven basic Principles

1. Analyze hazards
2. Identify critical control points
3. Establish preventive measures with critical limits for each control point
4. Establish procedures to monitor the critical control points
5. Establish corrective actions to be taken when monitoring shows that a critical limit has not been met
6. Establish verification procedures
7. Establish effective record keeping to document the HACCP system

L # 36. FSMS ISO 22000:2005

FSMS ISO 22000:2005

- Food Safety System (HACCP) and Food Quality System (ISO-9001) were amalgamated to form a new system i.e. Food Safety Management System (ISO-22000).

- This system specifies requirements for a **Food Safety Management System** where an organization in the food chain needs to demonstrate its ability to control food safety hazards to ensure that food is safe at the time of human consumption.

FSMS ISO 22000:2005

- It is applicable to all organizations, regardless of size, which are involved in any aspect of the food chain and wish to implement systems that consistently provide safe products.

- The means of meeting any requirements of ISO-22000 can be accomplished through the use of internal and/or external resources.

FSMS ISO 22000:2005

ISO-22000 specifies requirements to enable an organization to:

- Plan, implement, operate, maintain and update a **food safety management system** aimed at providing products that, according to their intended use, are SAFE for the consumer.

- Demonstrate compliance with applicable statutory and regulatory food safety requirements.

- Evaluate and assess customer requirements and demonstrate conformity with those mutually agreed customer requirements that relate to food safety, in order to enhance customer satisfaction.

FSMS ISO 22000:2005

- Effectively communicate food safety issues to their suppliers, customers and relevant interested parties in the food chain.

- Ensure that the organization conforms to its stated food safety policy.

- Demonstrate such conformity to relevant interested parties.

- Seek certification or registration of its food safety management system by an external organization, or make a self-assessment or self-declaration of conformity to ISO 22000.

L # 37. HALAL FOOD CERTIFICATION

HALAL FOOD CERTIFICATION

- Halal Food Certification is basically not a safety surveillance system *per se*, but it is a system by which foods are certified based on the Islamic Injunctions.

- Muslims have been ORDERED to eat only Halal (Lawful, Permissible) foods and refrain from the Haram (Unlawful, Prohibited).

HALAL FOOD CERTIFICATION

- The **Halal** or **Lawful ani**mals are all those that have **split hooves** and **masticate** the cud (ruminants).

- These include cows, buffaloes, camels, llama, deer, and the like.

- Halal birds are poultry, duck, turkey, quail and similar species.

- As far as foods of water origin are concerned, according to "*Sunnih*" school of thought, all fish are lawful, while the "*Asna Ashria*" ('Shia') school of thought consider only fish with fins and scales are lawful

HALAL FOOD CERTIFICATION

- Another requirement for Halal is that all land animals and birds must be slaughtered in specific manner that ensures complete bleeding.

- From amongst foods of plant origin, all plants that nourish and do not cause harm to the human body are permitted.

- All intoxicants are prohibited in Islam

HALAL FOOD CERTIFICATION

- On the other hand, the UNLAWFUL animals are all those that either do not have split hooves, or do not chew the cud.

- This includes pork, carnivorous animals, etc.

- Birds of prey are not permissible in Islam.

- Moreover, all reptiles, amphibians and poisonous animals are UNLAWFUL.

- Thus snakes, lizards, frogs, crocodiles and similar animals are not permitted in Islam.

HALAL FOOD CERTIFICATION

- Another requirement for a food to be HALAL is its being "TAYYAB" or CLEAN.

- This ensures that the food produced for the Muslims must be clean and without any health hazards.

- Halal food certification involves procedures that whatever food is being processed in a facility meets the Islamic injunctions.

- The HALAL certification body receives information on the ingredients and processes from the applicant company.

- It then analyses this information and determines whether any unlawful ingredient is being used or not.

HALAL FOOD CERTIFICATION

- If the certification body is satisfied that the ingredients are LAWFUL then it sends its Audit Inspector(s) to visit the facility.

- The equipment, the process and the premises are inspected that there is no contamination especially, from any non-halal source.

- The Audit Inspectors also ensure that the company is following all the hygienic principles for the production of SAFE or 'TAYYAB' food.

- Once satisfied, a certificate is issued to the company for the specific products.

HALAL FOOD CERTIFICATION

- Halal certificate is an authority that the particular industry is following the Islamic Principles and is producing HALAL and SAFE foods for the specifically for Muslims or any one

- It is, in fact, a Safety Certificate as well and non-Muslim consumers also attracted.