LDFA

Livestock, Dairy, Fisheries, Poultry & Agriculture

Exhibition & Seminar

Saturday 10th & Sunday 11th February 2018

Shehr-e-Benazir Larkano

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Exhibition & Seminar

POULTRY VACCINES & VACCINATION

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POULTRY FARMING

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POULTRY SECTOR

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Type	Quantity
Domestic Poultry Birds	84.58 million
Commercial Poultry	1.054 billion
Day Old chicks	598 million
Layer	32.54 million
Broiler	542.74 million
Breeding stock	8.81 million
Eggs	8.690 billion
Meat	0.66 million Tons

	Rural Poultry	Commercial Poultry (2015-16)
Pakistan (Est. 2016)	**84.58**	**1,054.000**
Sindh (Est. 2016)	**22.45**	**322.280**
Share of Sindh	**19%**	**28%**
Annual Growth%	**5.467**	**9.500**
Targets for 2016-17*	**23.5**	**349.673**

Source: ***Economic Survey of Pakistan***

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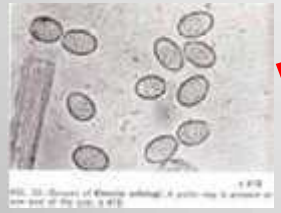
THREATS AND ENEMIES

Virus

Bacteria

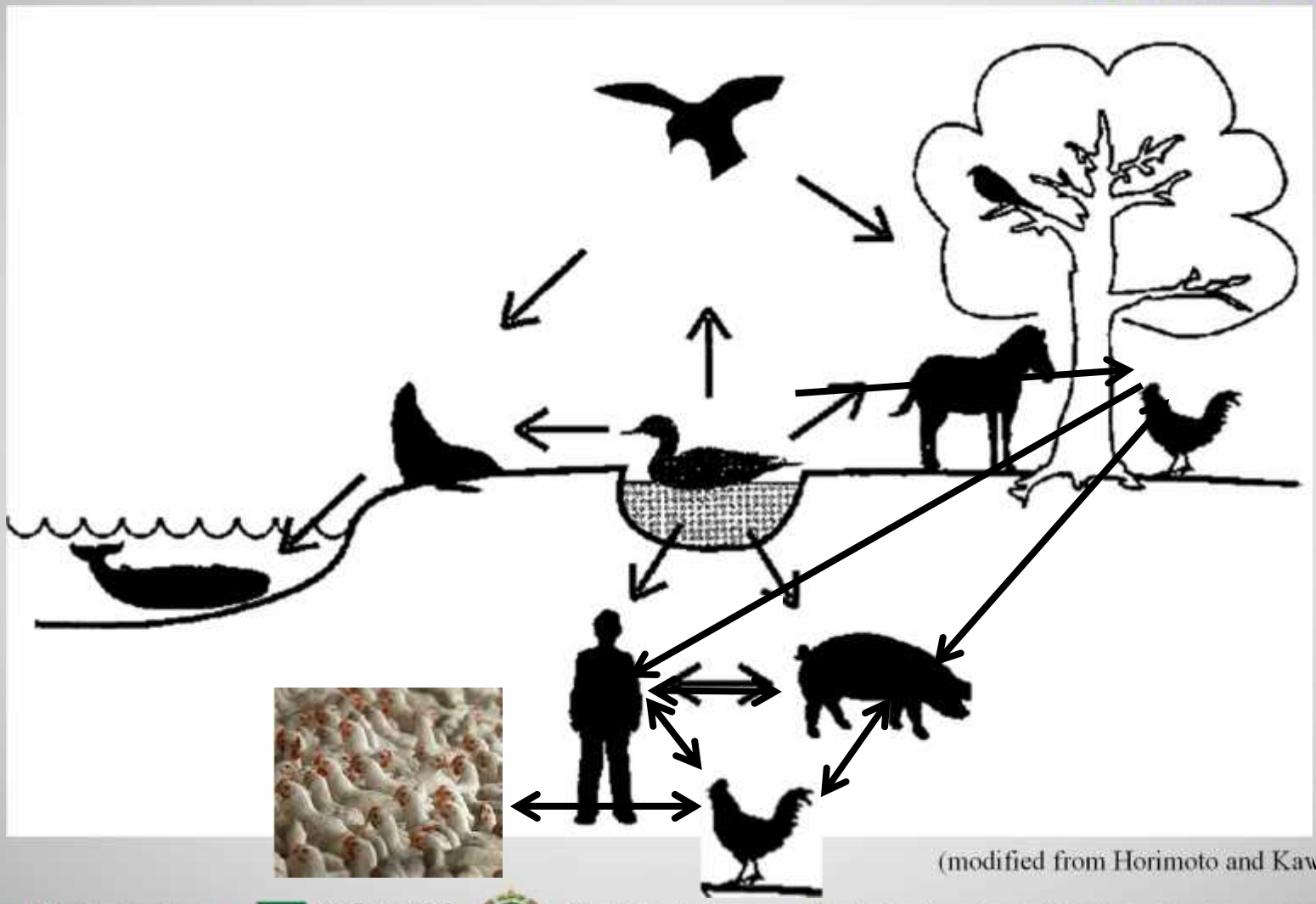
Chlamydia



Protozoa

Fungus

INTORODUCTION OF NEW PATHOGENS



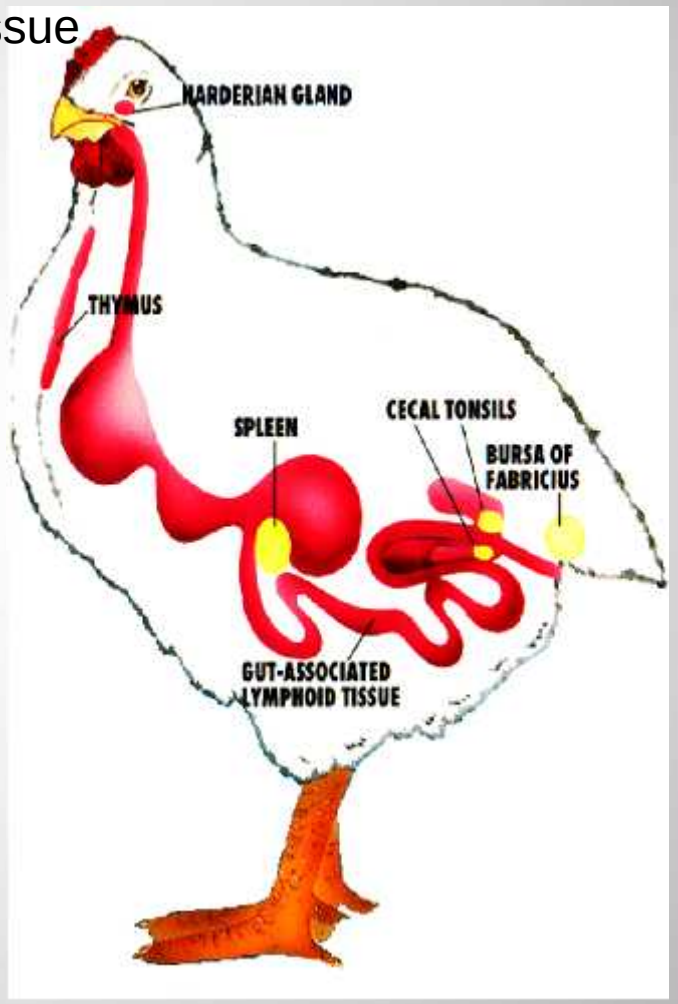
(modified from Horimoto and Kawaoka, 2001)

INTORODUCTION OF NEW PATHOGENS

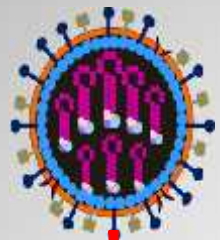
Foreign antigens/ viruses via Live vaccines

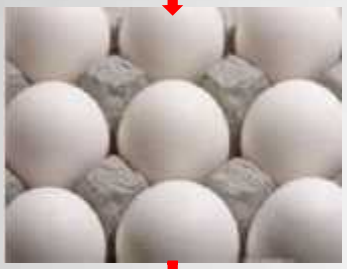
POULTRY BIRD IMMUNITY

- Primary Organs
  - Thymus gland
    - T-cell system
    - ➲ cell-mediated immunity
  - Bursa of Fabricius
    - B-cell system
    - ➲ humoral immunity
  - Bone marrow
    - Precursor blood cells
  - Yolk sac
    - Maternal immunity
- Peripheral lymphoid tissue
  - Harderian gland
  - Caecal tonsills
  - Spleen
  - GALT

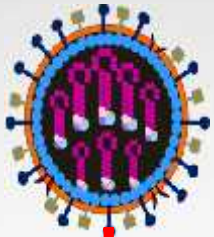


KILLED VACCINES (Alum based, oil based, inactivated, split vaccines)





Inactivation



Inactivation

splitting

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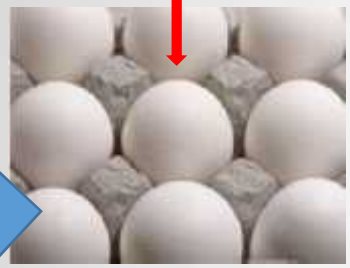
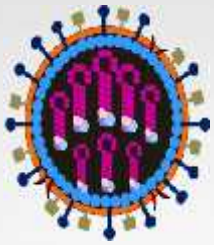
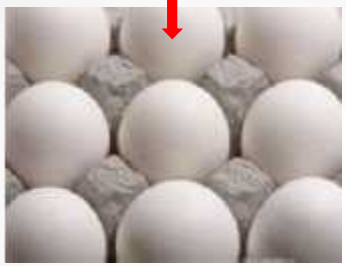
KILLED VACCINES

- Advantages
  - No introduction of a “new living agent”.
  - No shedding of the vaccine agent.
  - No post vaccinal reactions.
  - Accurate individual vaccination.
- Disadvantages
  - Reactions of hypersensitivity possible.
  - Slow onset of protection.
  - Humoral immunity only.
  - High labour costs for application.
  - Expensive production of high quality vaccines.

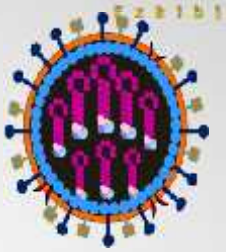
LIVE VACCINES(attenuated, recombinant, clone, single cycle vaccines)







Lyophilize



Lyophilize

LIVE VACCINES

- Advantages
  - Create complex immunity
    - Humoral + cell-mediated.
    - Different classes of antibodies.
  - Rapid onset of vaccinal protection.
  - Easy mass application.
  - No adjuvants needed.
  - No hypersensitivity reactions.
  - Production in big quantities.

- Disadvantages
  - Vaccine agent is present in poultry population.
  - Possibility of shedding of the vaccine agent.
  - Introduction of new agent
  - Post vaccinal reactions are possible.

METHODS OF VACCINATION IN POULTRY

- Individual Applications:

– Eye drop vaccination

➔ Very efficient.

↳ Highly labour intensive; use only specific diluent.

– Wing web, i.m. & s.c. injection

➔ Very efficient.

↳ Highly labour intensive; use only sterile equipment and specific diluent for live vaccines.

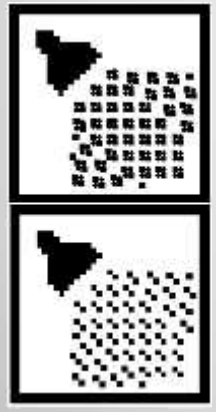
METHODS OF VACCINATION IN POULTRY

- Mass-Applications:

– Drinking water vaccination

➔ Rapid, easy, very economical, safe.

↳ No disinfectants; control water quality; control water system and drinker.

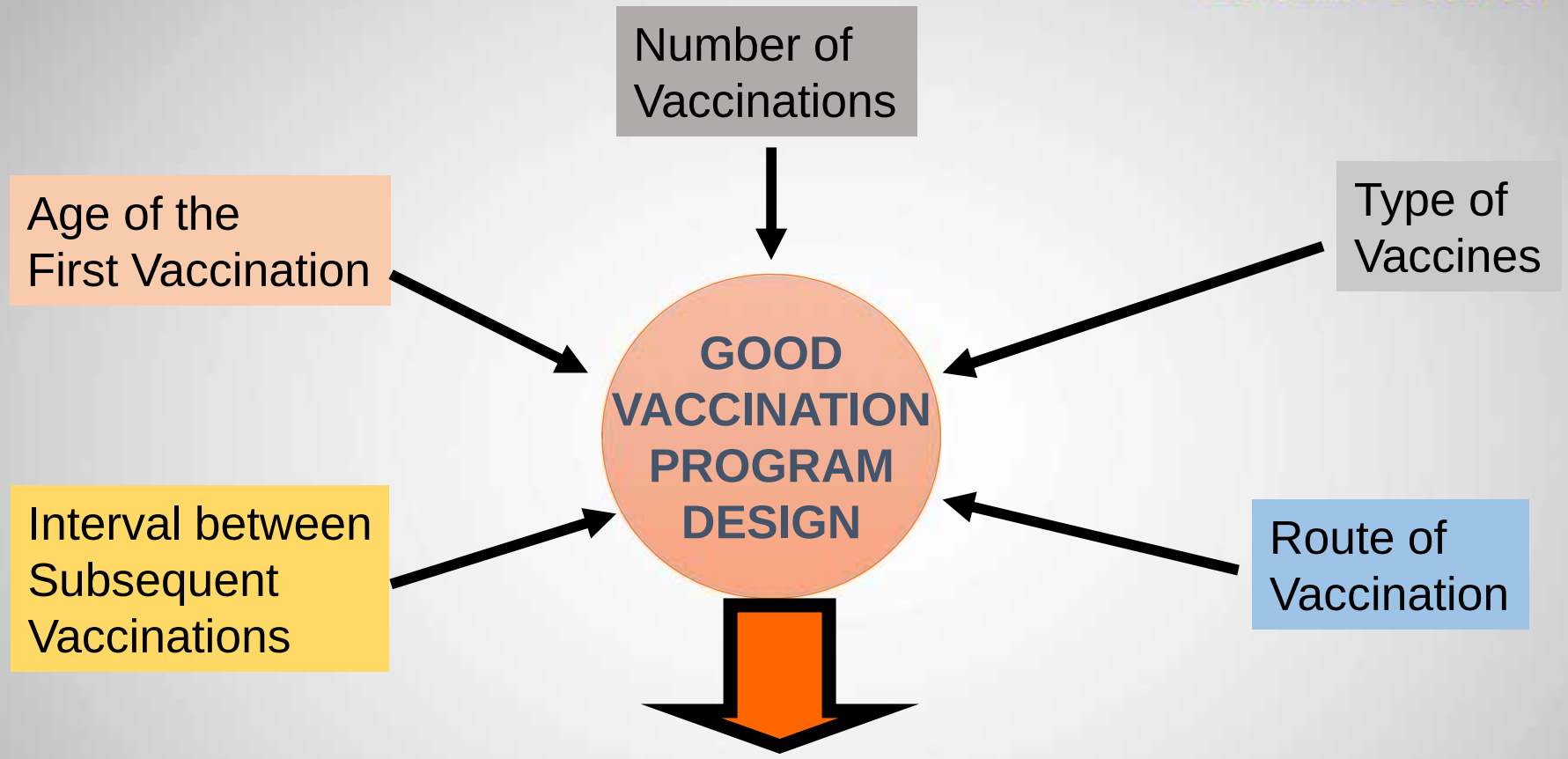


– Spray vaccination

➔ Rapid, good immune response.

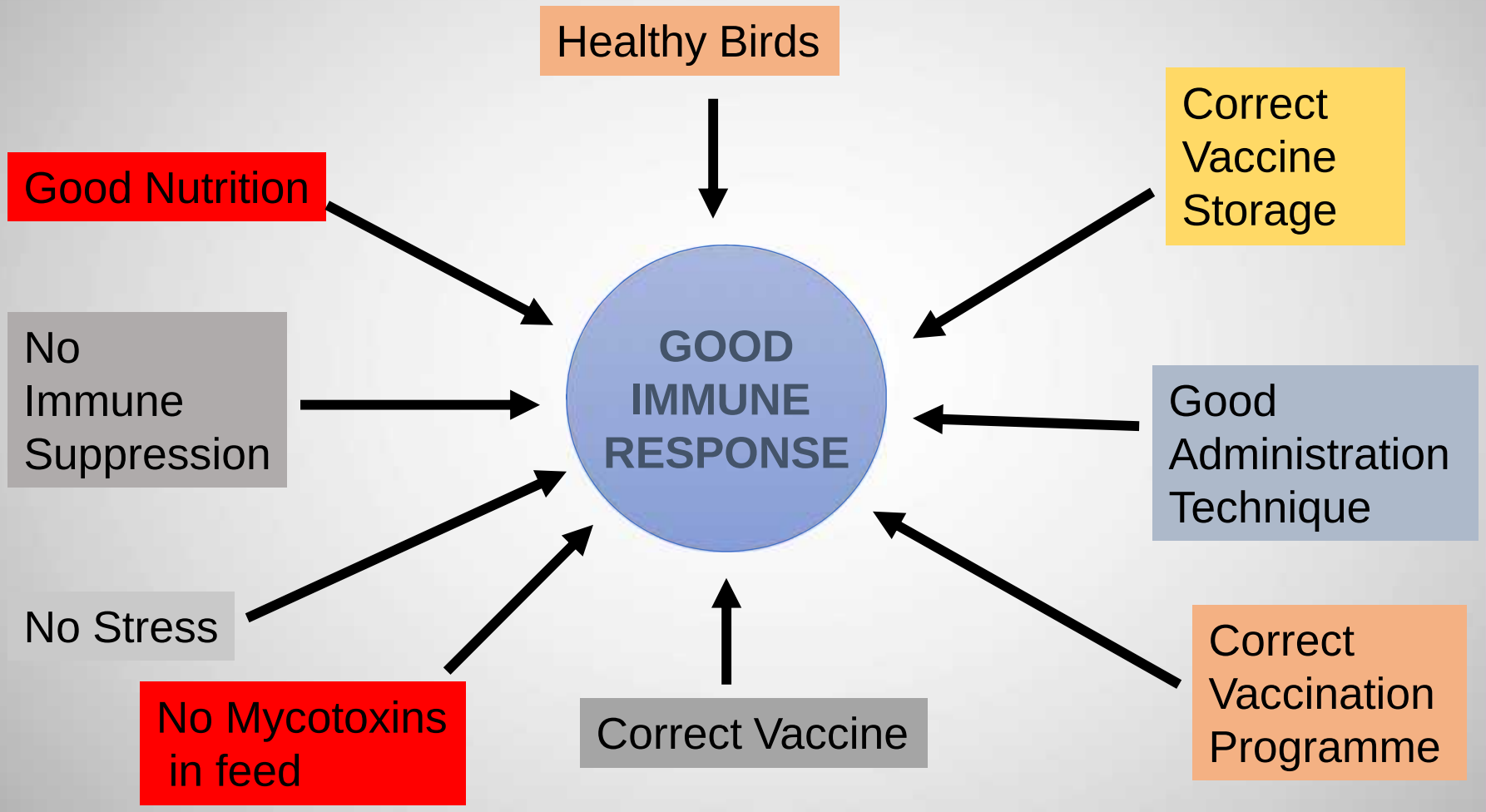
↳ Post vaccinal reactions possible (esp. in Mg+); use distilled water only; large drops for young chicken and small drops for old chicken; control correct function of equipment.

ELEMENTS OF VACCINATION IN POULTRY



1. Stimulation & Maintenance of Protective Immunity
2. Development of Immunologic Memory

FACTORS OF EFFECTIVE VACCINATION IN POULTRY



VACCINATION FAILURE IN POULTRY

- Administration of a sub-optimal dose of vaccine.
  - Poor vaccine quality (rare).
  - Improper handling of the vaccine during transport and storage.
  - Errors in the vaccination technique.
- Immune suppression.
  - Immune suppressive viral infections.
  - Stress.
  - Mycotoxins.
- High levels of maternal antibodies.
- Strong field challenge.

VACCINATION FAILURE IN POULTRY

- Heterologous
- The causative agent is not covered by the used vaccine (e.g. IBV variants, AIV subtypes, E. coli serotypes).

- Vaccination is too late.
  - Birds are already infected at time of vaccination.
  - Field infection occurs before development of vaccinal immunity.

- Weaning of vaccinal immunity after time.

TAKE HOME MESSAGE ON VACCINATION IN POULTRY

- Vaccines are complex subject and is not only limited to titres
- Protection is not only achieved through serum titres but involve many more mechanisms
- It is not the vaccine but the bird who develops immunity and protection against the disease
- Good vaccination need huge planning, proper storage, handling and techniques
- Vaccines do not only protect but sometimes become source of new infection
- Increased mycotoxin level in feed, malnutrition and stress factors are major factors for failure of immunity

POULTRY VACCINE PRODUCTION

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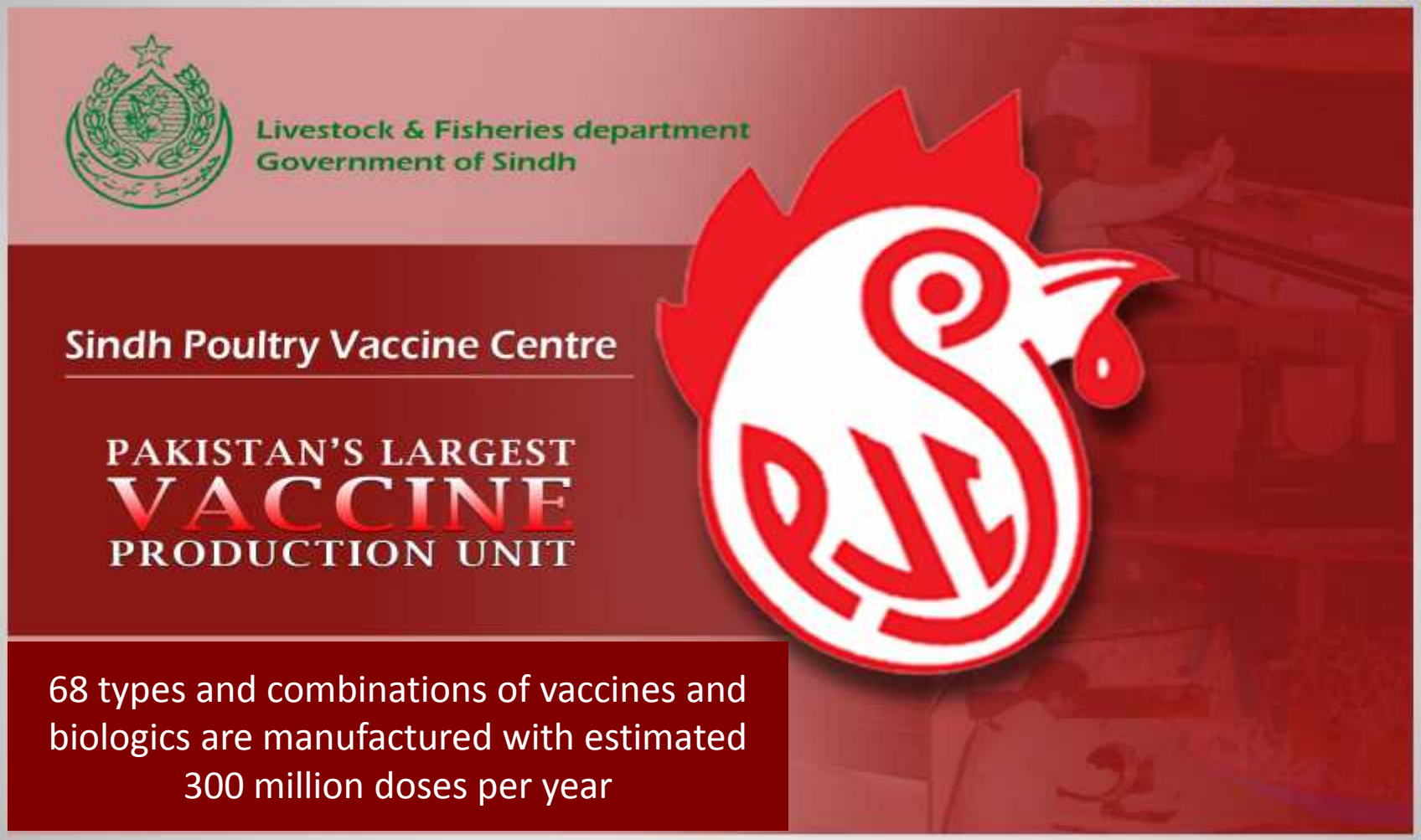

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Vaccine Production

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Product Line

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Newcastle Disease:

Species: Broiler, layer, breeder, pigeon, peacock, and fancy birds

Mortality: 20% to 75%

Mukteswar **LaSota** **Komarov** **ND (Oil base)**

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Avian influenza:

Species: All types of birds

Mortality: 20% to 99%

AI (H5N1)

AI (H7N3)

AI (H9N2)

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Gumboro (IBD)

Species: All types of chicken

Mortality: 10% to 70%

Hot Strain (M38)

Intermediate (AK-3)

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Infectious Bronchitis (IB)

Species: All types of chicken and birds

Mortality: 10% to 50%

IB (SR.1 Strain)

ND+IB

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Fowl Fox

Species: Layer

Mortality: 10% to 30%

Production: dec. 50%

Fowl Pox

Diluent

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Hydropericardium Syndrome (Angara Disease)

Species: Broilers

Mortality: 20% to 70%

Angara Disease Vaccine (Aqua)

Hydro Clear

Angara Disease Vaccine (Oil)

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***E. coli* vaccine**

Species: Chicken

Mortality: 10% to 30%

E. coli Vaccine

E. coli Oil Vaccine

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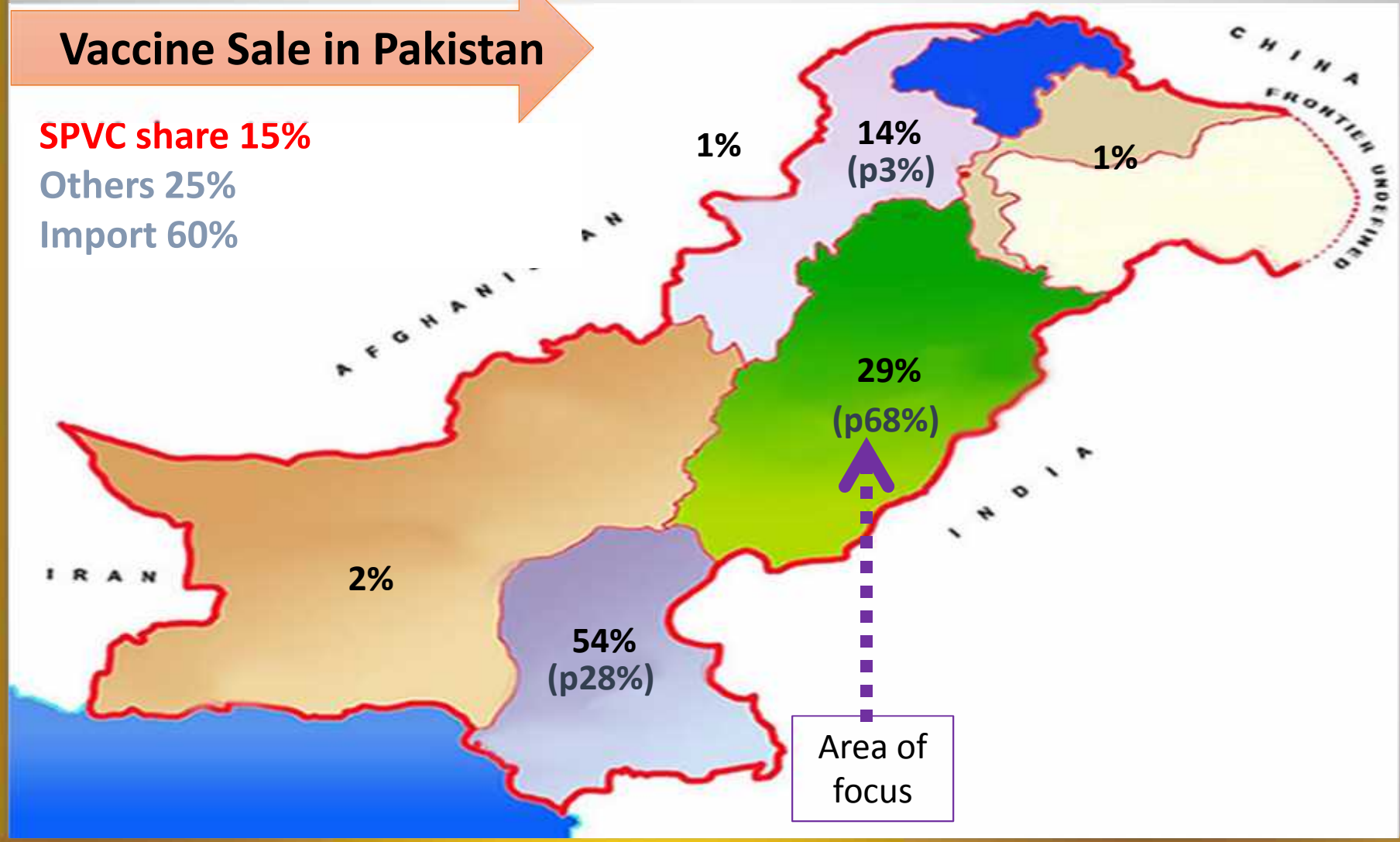
Vaccine Sale in Pakistan

SPVC share 15%
Others 25%
Import 60%



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We offer investment opportunities in

- Marketing of SPVC vaccines in Pakistan (Punjab province)
- Export of Vaccines in Middle East, Afghanistan, Africa & Europe
- Contract (third party) manufacturing of poultry vaccines
- Contract manufacturing of Biologics
- Contract Research
- Establishment of SPF chicken

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We need very focused approach

Thanks for caring about Poultry

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