

BUILDING A SURVEILLANCE MODEL FOR DETECTING ZOO- NOTIC SPILL OVER IN INCREASED ANIMAL-HUMAN INTERACTION SETTING USING A ONE HEALTH APPROACH: A STUDY AT SELECTED SLAUGHTER HOUSES

The Indian Council of Medical Research (ICMR), in collaboration with the Indian Council of Agricultural Research (ICAR) and the Department of Animal Husbandry & Dairying (DAHD), and National Centre for Disease Control (NCDC) launched a collaborative study on 'Building a surveillance model for detecting zoonotic spill over in increased animal-human interaction setting using a one health approach in selected slaughter houses on



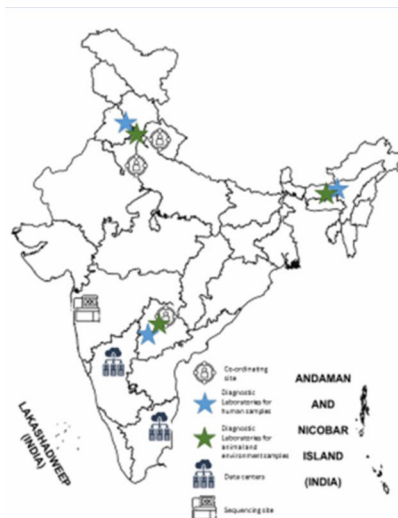
Fig: Launching of the study at the ICMR Hqs., New Delhi

August 01, 2024 at the ICMR Hqs., New Delhi. The study is being initiated in selected slaughter houses in the states of Punjab, Assam and Telangana with an aim to build a

real time surveillance model for detecting zoonotic diseases among slaughter house workers and to detect potential zoonotic spill-over in selected slaughter house sites using a one health approach.

Study Objectives

- To set up a model surveillance system for zoonotic diseases among slaughter house workers.
- Detect and diagnose symptomatic illness among slaughterhouse workers.
- To conduct periodic sampling of animal and slaughterhouse environment to screen them for one-health priority diseases and zoonotic food borne disease, respectively.
- To strengthen diagnostic capabilities including Next Generation Sequencing for early identification of unknown/novel pathogens.



S. No	State	Veterinary Institute/Laboratories (Animal/ environment)	Laboratories (Human)
1	Punjab	Guru Angad Dev Veterinary & Animal Sciences University (GADVASU), Ludhiana	Dayanand Medical College and Hospital, Ludhiana
2	Telangana	National Research Centre on Meat (ICAR-NRCM), Hyderabad	Gauhati Medical College, Guwahati, Assam
3	Assam	College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati	All India Institute of Medical Sciences, Bhubaneswar

S. No	State	Name of the site	Role
1	Chennai	ICMR-National Institute of Epidemiology, Chennai	Data center
2	Karnataka	ICAR - National Institute of Veterinary Epidemiology and Disease Informatics, Bangalore	Data center
3	Maharashtra	ICMR-National Institute of Virology, Pune	Sequencing facility

S. No	State	Name of the site	Role
1	New Delhi	Indian Council of Medical Research, New Delhi	Central Co-ordinating site for human
2	Uttarakhand	ICAR - Indian Veterinary Research Institute	Central Co-ordinating site for animals
3	Telangana	National Research Centre on Meat (ICAR-NRCM), Hyderabad	Central Co-ordinating site for animals

Fig: Implementing Partners

Work Plan

A slaughterhouse worker of any age, complaining of any syndrome (acute fever, respiratory and diarrhoea, and skin lesions) is being enrolled into the study for surveillance after obtaining consent. Surveillance in abattoir workers is done following a longitudinal study design. Appropriate samples are collected from abattoir workers with symptoms and are being tested syndromically for identified priority pathogens as per the testing algorithm. Appropriate samples from animals are also collected following a repeated cross-sectional study design every month and are tested for identified priority pathogens. Environmental samples are collected based on composite sampling on quarterly basis from unloading pan/place, lairage, slaughtering hall, sludge or effluent plant, common drainage channel, water for washing, and drinking water and tested for identified priority pathogens. A proportion of specimens negative in all tests are subjected to next generation sequencing to detect an unknown aetiology. A dedicated Slaughterhouse Disease Surveillance dashboard has been created to enhance the effectiveness of surveillance.

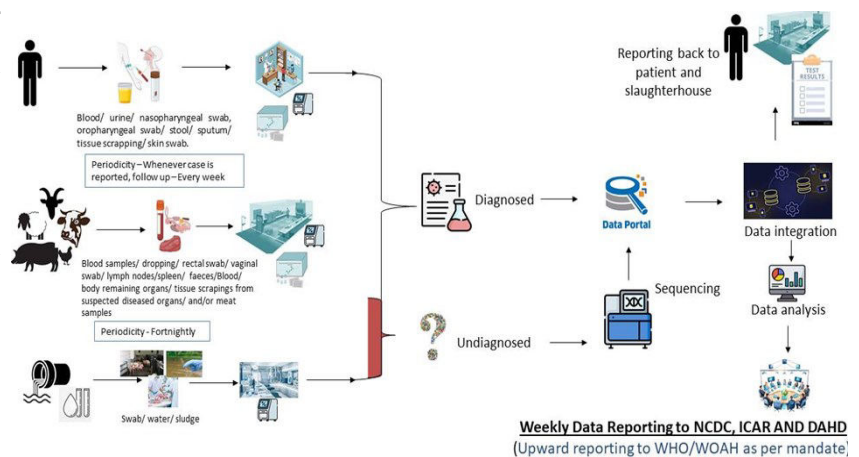


Fig: Schematic representation of the workplan

Expected outcomes

- Establishment of model surveillance systems among slaughterhouse workers for baseline data will aid in active disease surveillance.
- Early detection of zoonotic spill-over of pathogens from animals to humans.
- Prevalence of infections among animals at slaughterhouses.
- Incidence of zoonotic diseases among the workers in slaughterhouses.
- Identification of One Health priority pathogens spread/likely to spread through slaughtering of animals.
- Comprehensive knowledge of disease dynamics, integrating an early warning system, effective risk assessment and prevention strategies.