



Experiences and results of herbal mastitis control in Indian smallholder dairy

Dr A V Harikumar
Deputy General Manager and Group Head (Animal Health)
National Dairy Development Board



Presentation overview



- About NDDB
- The Problem
- The Proposal
- The Progress



National Dairy Development Board

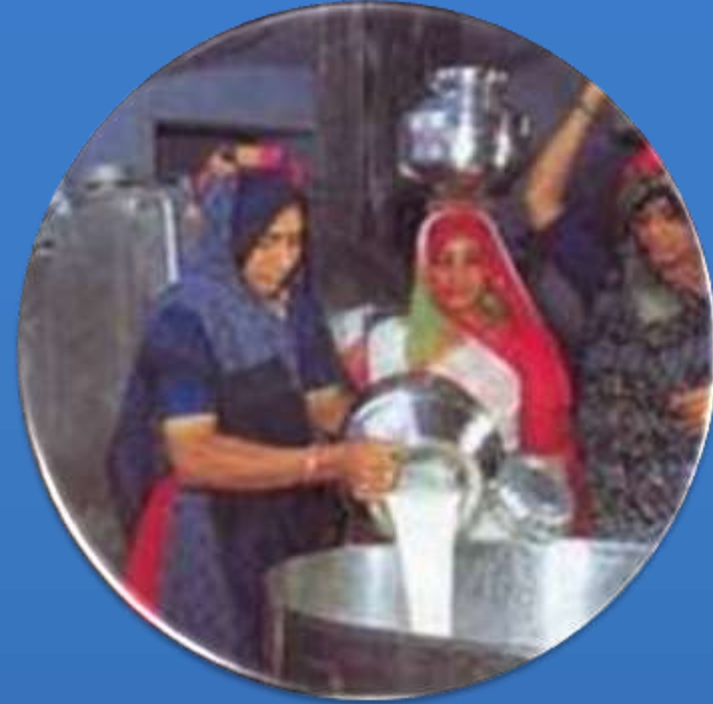
**Registered as society in September 1965, declared as an Institute of National Importance
in 1987 by an Act of Parliament**

Objectives:

- To promote Anand Model of Cooperatives across the country
- To promote, finance and support producer-owned and controlled organizations
- To strengthen farmer cooperatives and support national policies that are favorable to the growth of such institutions



The Anand pattern



15.4 million milk producers

165,835 village dairy cooperative societies

Local sales, sale of cattle feed, testing of milk, payment



210 district milk unions

Collects and processes milk, operates processing plants, provides inputs - health, breeding and cattle feed



25 State milk federations

Markets milk & milk products, coordinates inter-state sales





Operation Flood and other programmes by NDDB

- ❑ Operation Flood (1970-1996): the dairy development programme undertaken by NDDB, made India self sufficient in milk and brought lasting changes in the socio-economic development of millions of small and marginal farmers involved in dairying business.

“A twenty-year experiment confirming the Rural Development Vision” : World Bank Report 1997c.

- ❑ Perspective plan

- ❑ National Dairy Plan : 2011-12 to 2018-19

Year	1970	1996	2020-21
Milk production in Million MT	21.2	66.2	>200

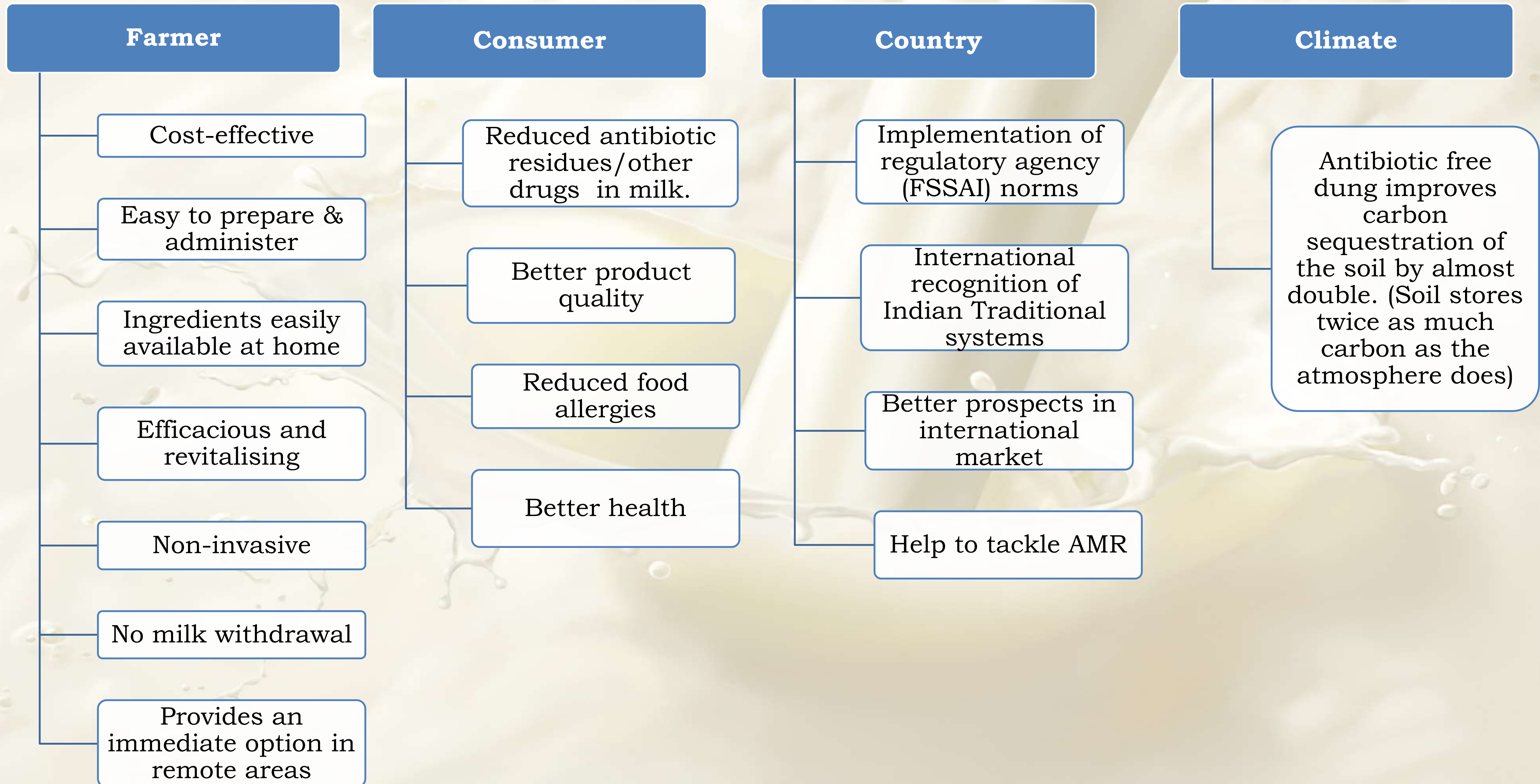


The problem

- **Indiscriminate** use of drugs and antibiotics:
 - Species destruction
 - Emergence of AMR
- **Prohibitive** treatment costs
- ~**85%** of bovines are with landless, marginal and small farmers.
 - Limited access to veterinary care
 - Cannot afford conventional treatment options
- Drug and antibiotic **residues** in milk and milk products
 - Lower product quality, especially fermented products
 - Promotes emergence of AMR



EVM-The rationale





Part of curriculum

136

THE GAZETTE OF INDIA : EXTRAORDINARY

[PART III—SEC. 4]

(xvi) **DEPARTMENT OF VETERINARY MEDICINE**

VETERINARY MEDICINE

Credit Hours: 4+1

THEORY

THEORY

UNIT-1 (GENERAL)

History and scope of Veterinary Medicine, concept of animal diseases. Concepts of diagnosis, differential diagnosis, treatment and prognosis. General systemic states, hyperthermia, hypothermia, fever, septicemia, toxemia, shock, allergy, anaphylaxis, oedema, coma, anaemia, common clinical poisonings and dehydration.

Estimates of diseases, patterns of disease, disease monitoring and surveillance, herd health and quarantine.

UNIT-2 (SYSTEMIC DISEASES)

Etiology, clinical manifestations, diagnosis, differential diagnosis, treatment, prevention and control of the following diseases of cattle, buffalo, sheep, goat, horse, pig, dog, cat and poultry: Diseases of digestive, respiratory, cardiovascular, urinary, nervous, musculoskeletal, haemopoietic, and lymphatic systems, skin, sense organs

including affections of peritoneum, liver and pancreas. Emergency medicine and critical care.

UNIT-3 (METABOLIC AND DEFICIENCY DISORDERS)

Diagnosis and management of diseases caused by deficiency of iron, copper, cobalt, zinc, manganese, selenium, calcium, phosphorus, magnesium, iodine, vitamin A, D, E, B complex, K and C. Diseases of neonates, **Alternative or integrated or ethno veterinary medicine in animal disease management**. Aetiology, clinical manifestations, diagnosis, differential diagnosis, treatment prevention and control of metabolic or production and endocrine diseases of cattle, buffalo, sheep, goat, horse, pig, dog, cat and poultry i.e. Milk fever, eclampsia, osteodystrophy fibrosa, lactation tetany, downer cow syndrome, ketosis, fat cow syndrome, hypomagnesaemia, Nutritional haemoglobinuria, azoturia, diabetes, hypothyroidism, Cushing syndrome, Addison's disease and Gout.

UNIT-4 (ZOO AND WILD ANIMAL MEDICINE)



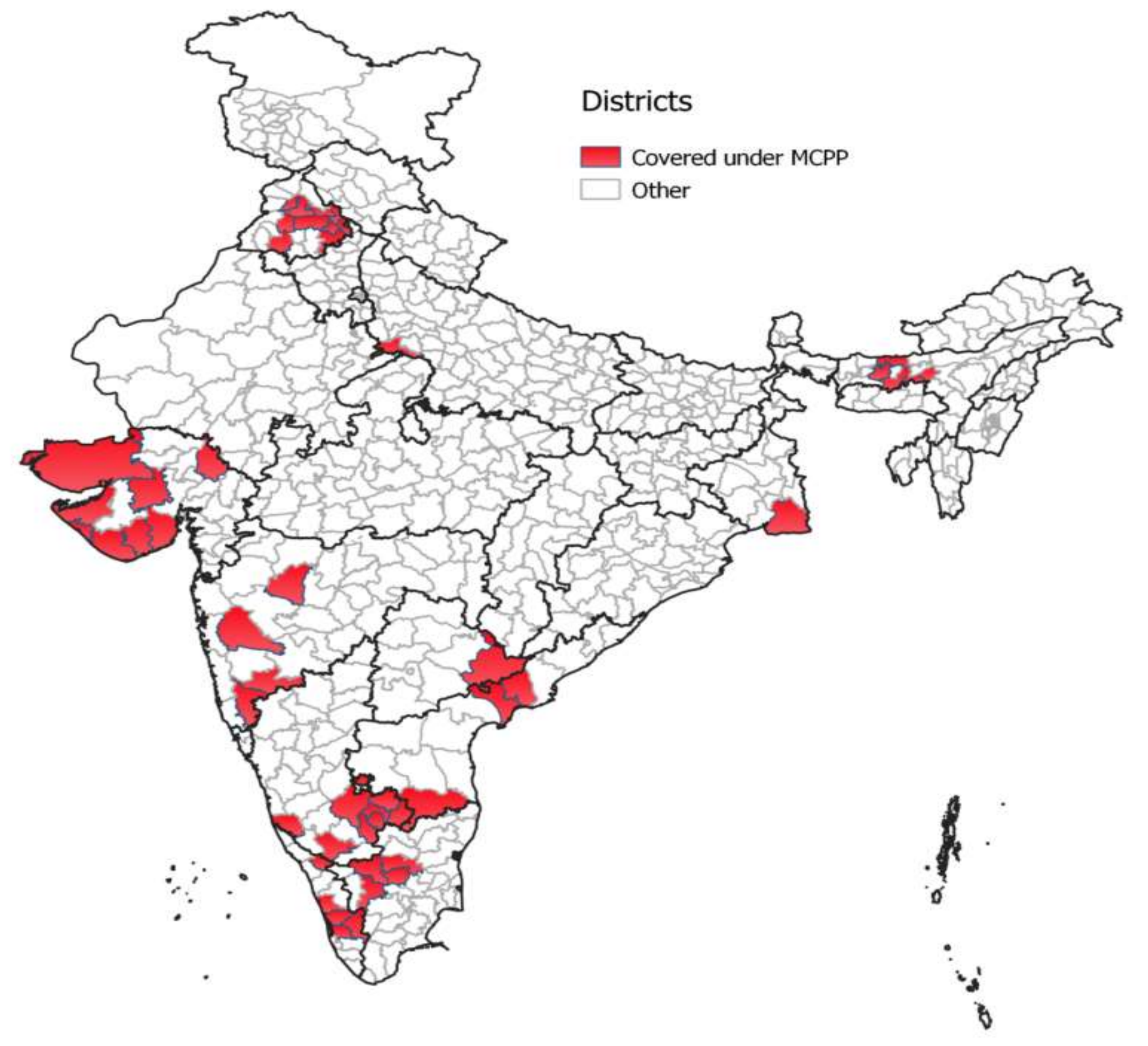
EVM propagation

Project coverage

- ❑ ~1000 DCSs
- ❑ >16 Milk Unions
- ❑ 9 States

Training on EVM

- ❑ 1134 vets trained
- ❑ 10076 AH personnel



Period

- ❑ Since 2017-18

Case records

- ❑ >8.00 lakh cases recorded for various ailments

Demo plots

- ❑ 613 demo plots established



Training

- **259** core group veterinarians
- **875** veterinarians trained by core group locally
- **10076** DCS/MCC personnel trained by Milk Union(MU)/Producer Company(PC)

Demo plots

- **173** at MU/PC level; **440** at DCS/MCC

Increase in awareness

- **Triple fold** increase in awareness on SCM
- **Double fold** increase in awareness on EVM for mastitis
- **Six fold reduction** in antibiotic preference for mastitis treatment
- **Double fold** increase in awareness on antibiotic residues in milk



Extension and awareness (in 11 vernacular languages and English)

- [Brochures](#)
- [Posters](#)
- [E Gopala](#)
- **264** EVM films/WhatsApp formats
- [Facebook](#) page to document success stories
- [IDF](#) Health report, various journals
- [International seminar](#)
- IDF Conferences
 - Nantes
 - Dublin
 - Copenhagen
 - New Delhi
- OIE Conference, Marrakesh

Ailments
Mastitis
Bloat
Blood in milk
Deworming
Diarrhoea
Downer
Ectoparasites
Fever
FMD foot lesion
Prolapse
Repeat breeder
Teat obstruction
Udder Oedema
Wart
Wound

Ailments
Retention of placenta
Swelling of joints
Leucoderma
Anoestrus
Endometritis
Milk fever
Joint ill
Teilitis
Metritis
Pyometra
Cystic ovary
Poisoning
Indigestion
Agalactia

Database Creation

>800,000 empirical records
~80% cure rate
 +
>121,000 individual records
>80% cure rate **2022**

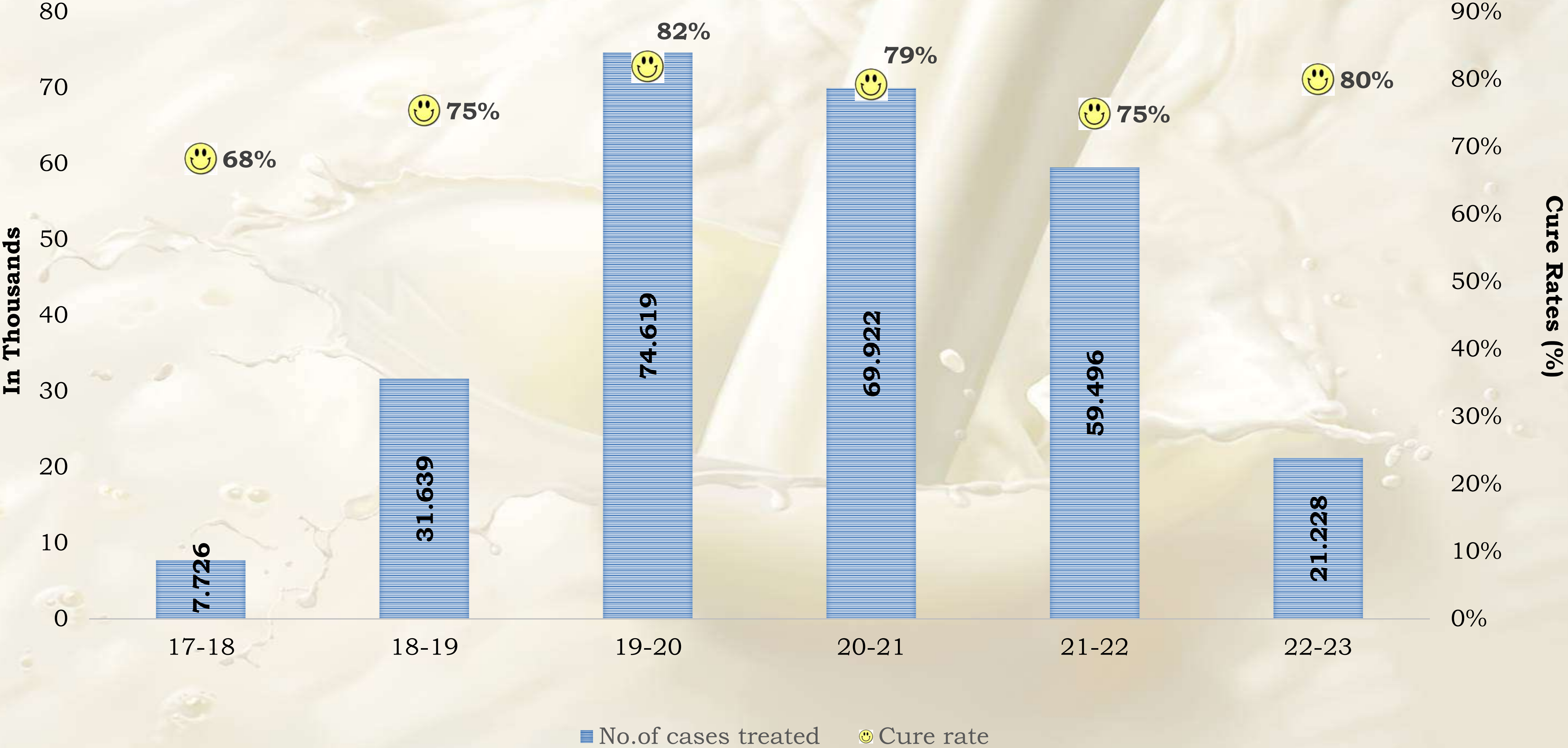


**8100 cases with
 78% cure rate
 in 2017-18**

**Data captured through an
 online system**

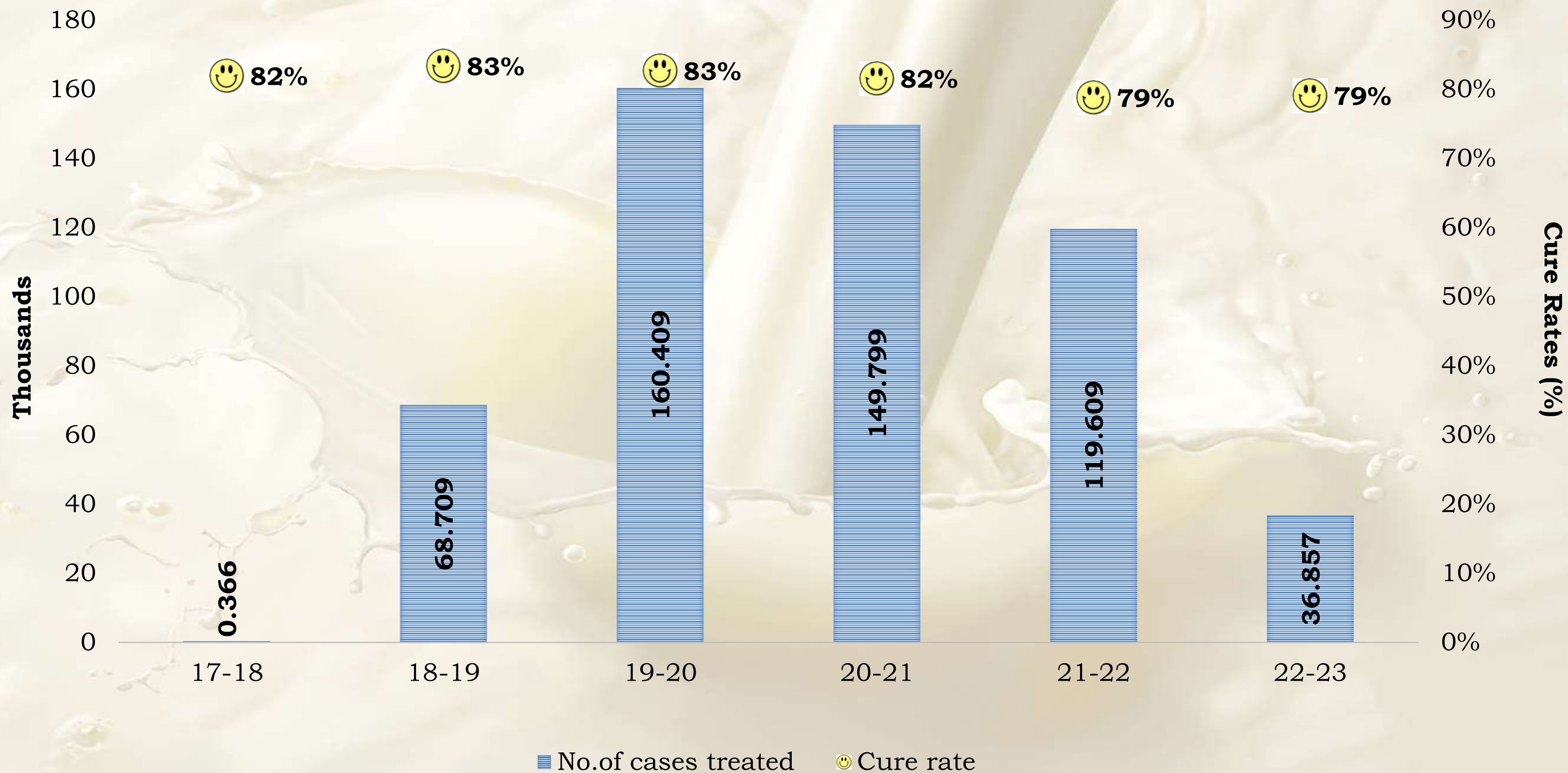


Cure rates from empirical data on EVM for mastitis



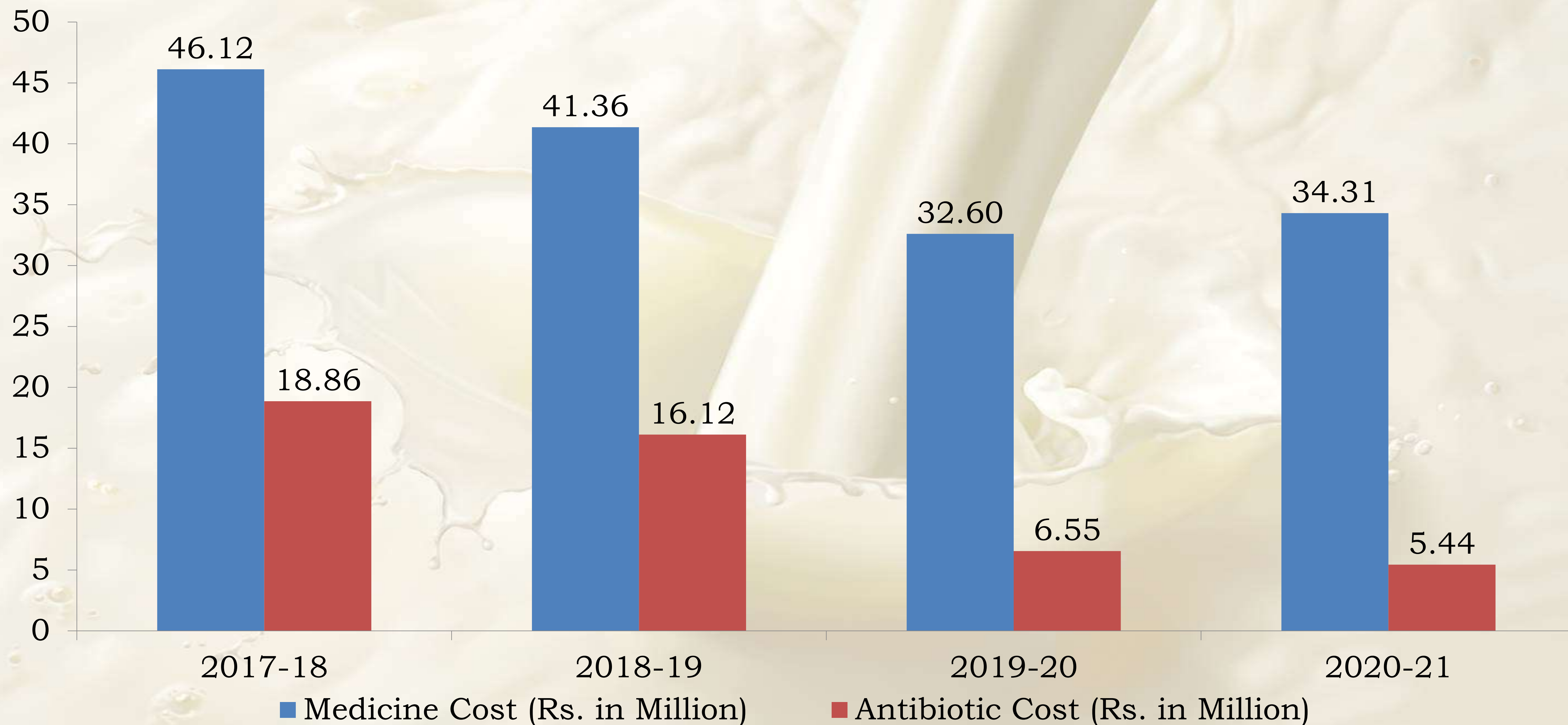


Cure rates from empirical data on EVM for other ailments



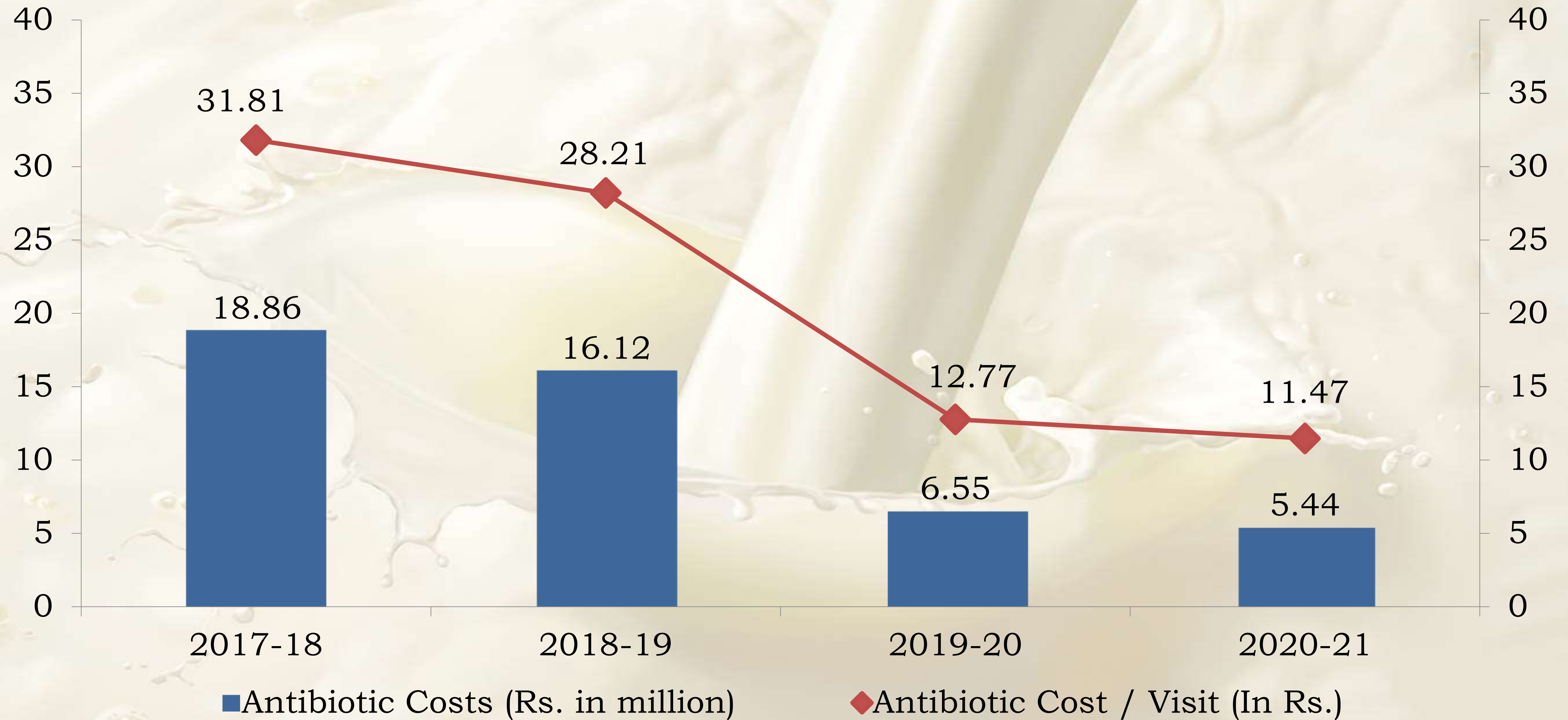


Impact of extensive use of EVM in a milk union

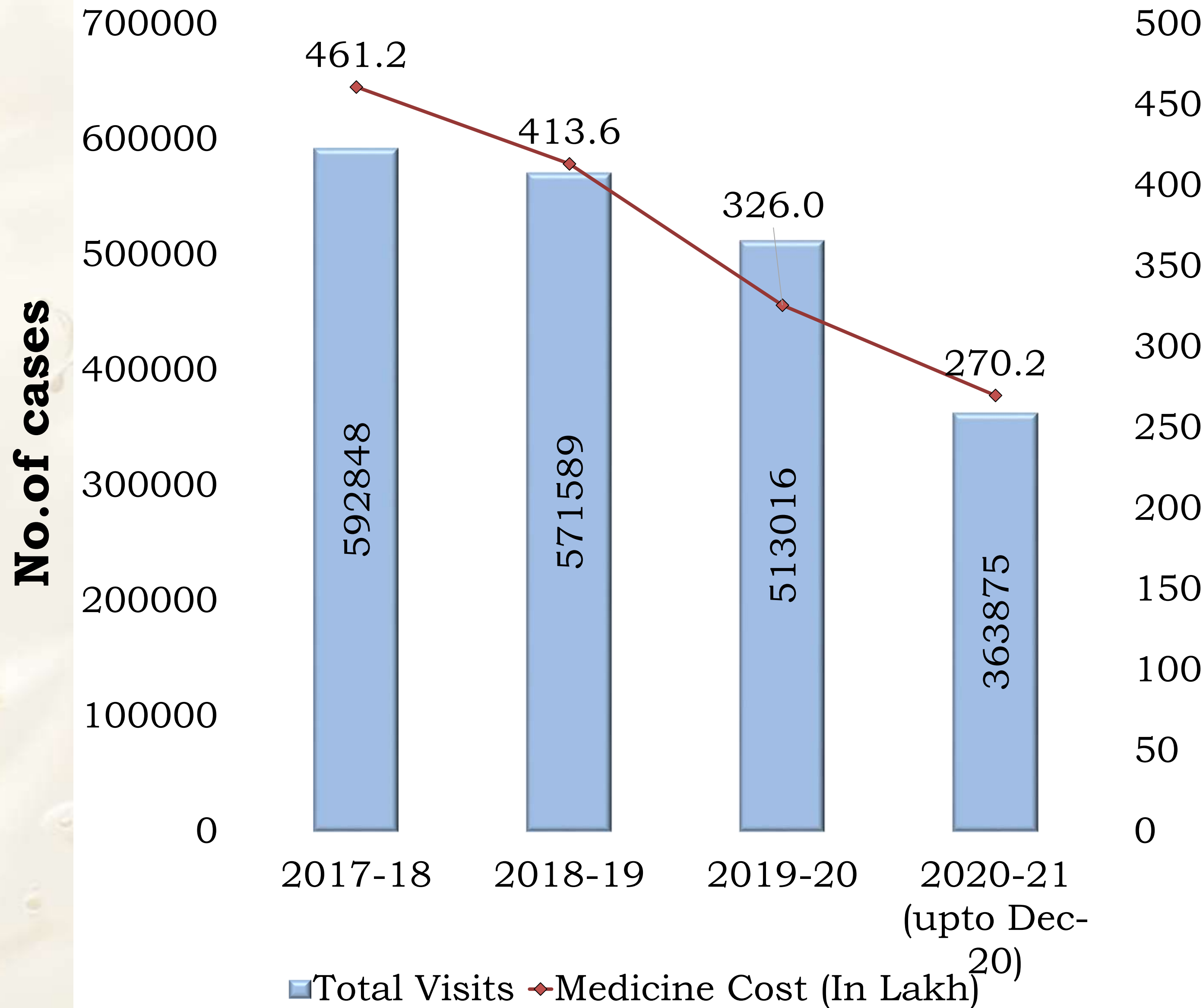




Impact of extensive use of EVM in a milk union



EVM impact in a milk union



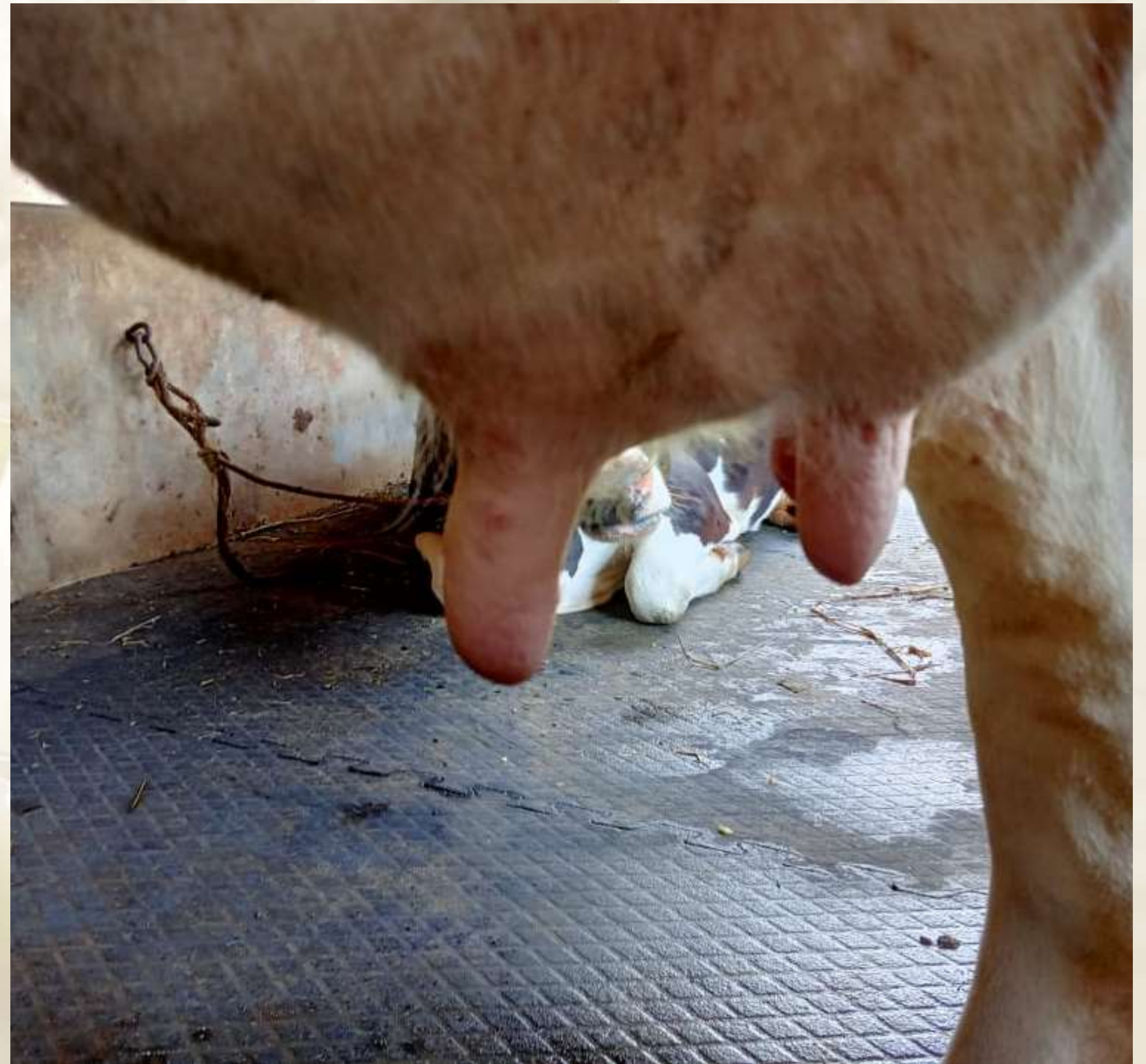
Rs. in lakh

- The medicine costs (antibiotics, NSAID and other supplements) are reducing at the compounded annual rate of around **16%** over the last 3 years.
 - *Over 191 lakh saved*
- A total of **79,832 veterinary calls** have reduced in 2019-20 compared to 2017-18.
 - *Percolation of the EVM concept to the farmers*
 - *More focus on field activities like infertility/health camps etc by vets.*

Wart- Before & after EVM



Wart- Before & after EVM





Way forward- EVM

- Global alliances on EVM
- International seminars/workshops involving IDF, FAO, OIE, DAHD, FSSAI, IVC etc
- More elaborated in veterinary curriculum
- Linkages with premier traditional medicine institutes /practitioners.
- Research on the mode of action of formulations : Active principles, miRNAs ..
- Integrating with the [One Health concept](#)
- Extensive use of various e-media in all major vernacular languages
 - Brochures, posters and videos
 - E-Gopala App available on Google play store
- Animal wise documentation
 - Using Information network for animal productivity and health (INAPH)
 - E-Gopala app
- Formulations for chronic diseases – brucellosis, Bovine TB, anaplasmosis, theileriosis etc
- Documentation of success stories – FB page(Traditional herbal formulations for cattle and buffaloes-)
- Design specific control projects for tick control/infertility management/deworming using EVM.

Acknowledgements





Thank You

Please visit us at:

1. NDDB Dairy Knowledge Portal- <https://www.dairyknowledge.in/section/manuals>

2. FB : <https://www.facebook.com/groups/2319967778024417/>






International Seminar on Veterinary Ayurveda – 17th December, 2018




Popularisation measures - Facebook page on success stories



 Traditional herbal formulations for cattle and buffaloes 




 Hari



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 +



Traditional herbal formulations for cattle and buffaloes
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Posts

 **Traditional herbal formulations for cattle and buffaloes**  ...
Published by Pankaj Dutta (?) · August 20 · ⚙️

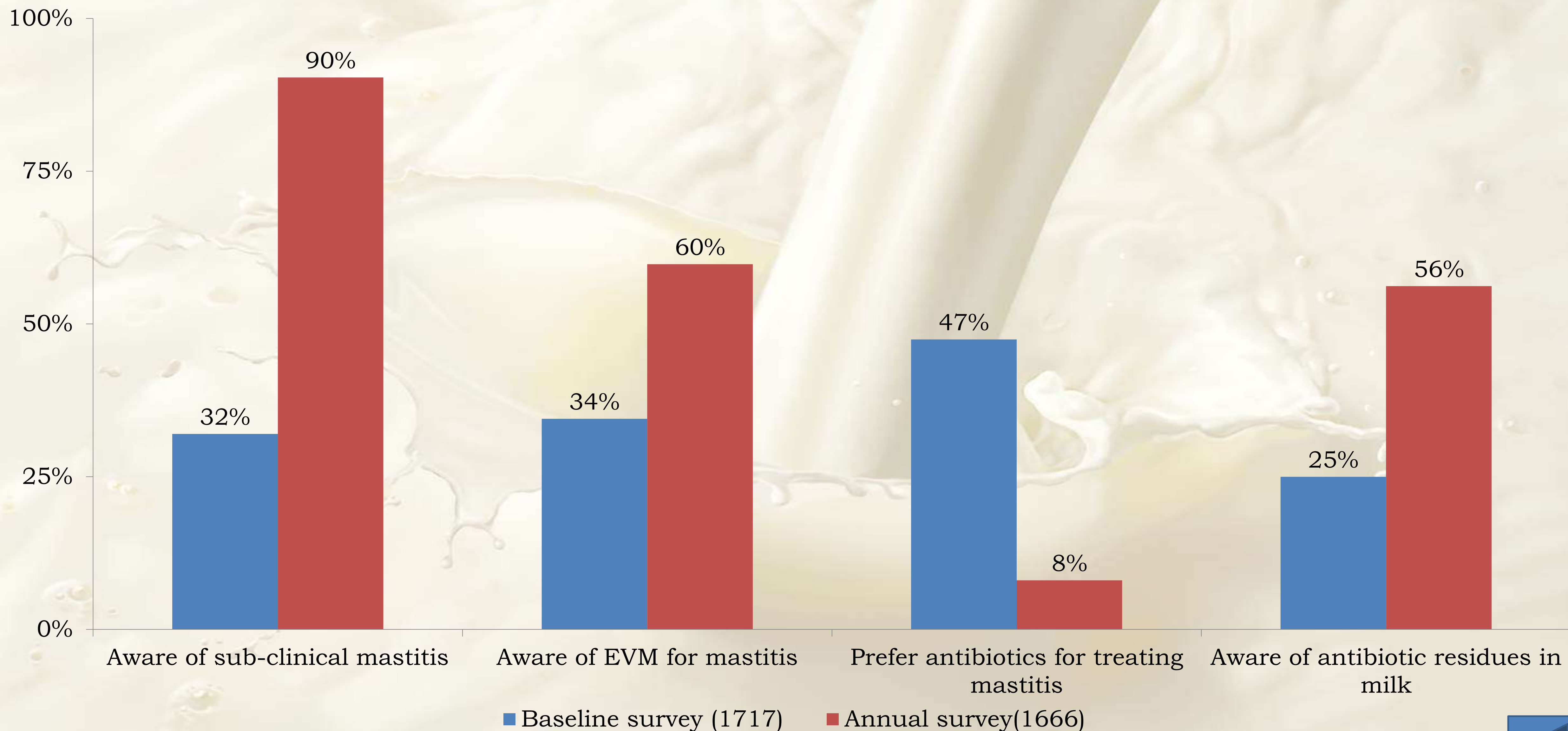
Successful treatment with EVP: A Case of bovine mastitis with thelitis in a primiparous Buffalo

Name of the Owner : Sri Tatineni Raghava.
Village : Chipuru gudem.
District : Krishna district, A.P.... [See More](#)



Effect of field model on awareness levels





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The Pharma Innovation



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Management of common ailments of dairy animals with ethno-veterinary herbal preparations in Gujarat

P Dutta, AV Hari Kumar, SK Rana, SB Patel, DD Patel, KR Patel, N Punniamurthy, MNB Nair and GK Shrama

HEALTH – MASTITIS

Mastitis control: a sustainable model for the developing world

AUTHOR

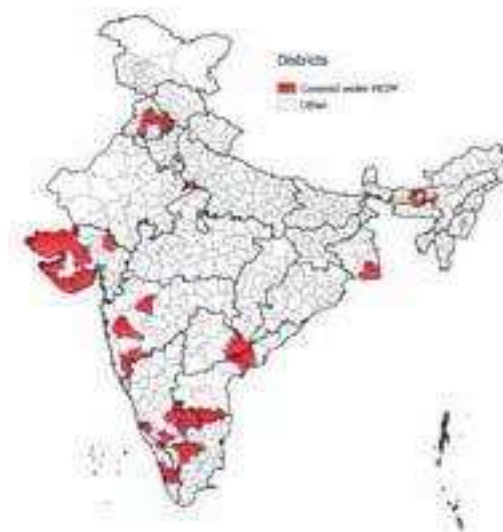
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UN SDGs



SUMMARY

- **Locations:** National Dairy Development Board's (NDDB) model for control of bovine mastitis titled Mastitis Control Popularisation Project (MCPP) is being implemented in more than 1500 dairy cooperative societies (DCS) across nine states in India (Figure 1) focusing on a simple, cost-effective, efficacious, environmentally friendly and sustainable approach.
- **IDF Welfare Action Area:** Animal Health management
- **Resource based measures:** (i) Reduction in treatment costs in bovine mastitis (ii) Dissemination of knowledge to the farmers, especially ethno-veterinary medicine (EVM) (iii) Management of many other common bovine ailments (other than mastitis) by EVM.
- **Animal based measures:** (i) Increase in milk production (ii) High cure rates (iii) Non-invasive and therefore painless.



GLOBAL AGENDA FOR
SUSTAINABLE LIVESTOCK

Good practices for responsible use of antibiotics



Testing of pooled milk samples by California Mastitis Test (CMT) at Dairy Cooperative Societies

System 3. Mastitis prevention in effective and sustainable dairy production system

Mastitis is the most important disease in dairy production. It has been responsible for up to 85% of the antibiotics used. During the last decades, a successfully large improvement in udder health has taken place. Udder health mismanagement can threaten human health due to zoonotic or antimicrobial resistant pathogens adapting different environment. High quality milk with low somatic cell counts is crucial for product quality and better organoleptic quality for consumers. Good prevention, management and excellent animal welfare will reduce food loss in the whole chain from barn to table. A tailored plan for each country and herd should be applied.

Diminishing mastitis to limit antibiotic use

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Case reports on management of LSD like conditions with ethno-veterinary practices

Dr. Pankaj Dutta, AV Hari Kumar, AC Mahajan, S Shroff, SK Rana, PJ Sahariah, P Gogoi, D Borah, N Punniamurthy and MNB Nair

Indian J. Comp. Microbiol. Immunol. Infect. Dis.
Vol. 42 (Special Issue) November, 2021: 83-87

Technical Article

USE OF ETHNOVETERINARY MEDICINE FOR MANAGEMENT OF COMMON AILMENTS OF DAIRY ANIMALS

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Management of repeat breeding in bovine by herbal combination

Dr. Pankaj Dutta, Harikumar AV, Shroff SI, Rana SK, Mogale UV, Magare V, Punniamurthy N, Nair MNB and Gorhe SB




Popularisation measures- Brochures





Popularisation measures- Posters (12 languages)




















































NATIONAL DAIRY DEVELOPMENT BOARD

ETHNOVETERINARY FORMULATIONS FOR IMPORTANT AILMENTS IN BOVINES

The common plants, spices and other materials mentioned here are generally regarded as safe and these are only suggestive. Nearby veterinarian may be consulted for proper disease diagnosis and management.

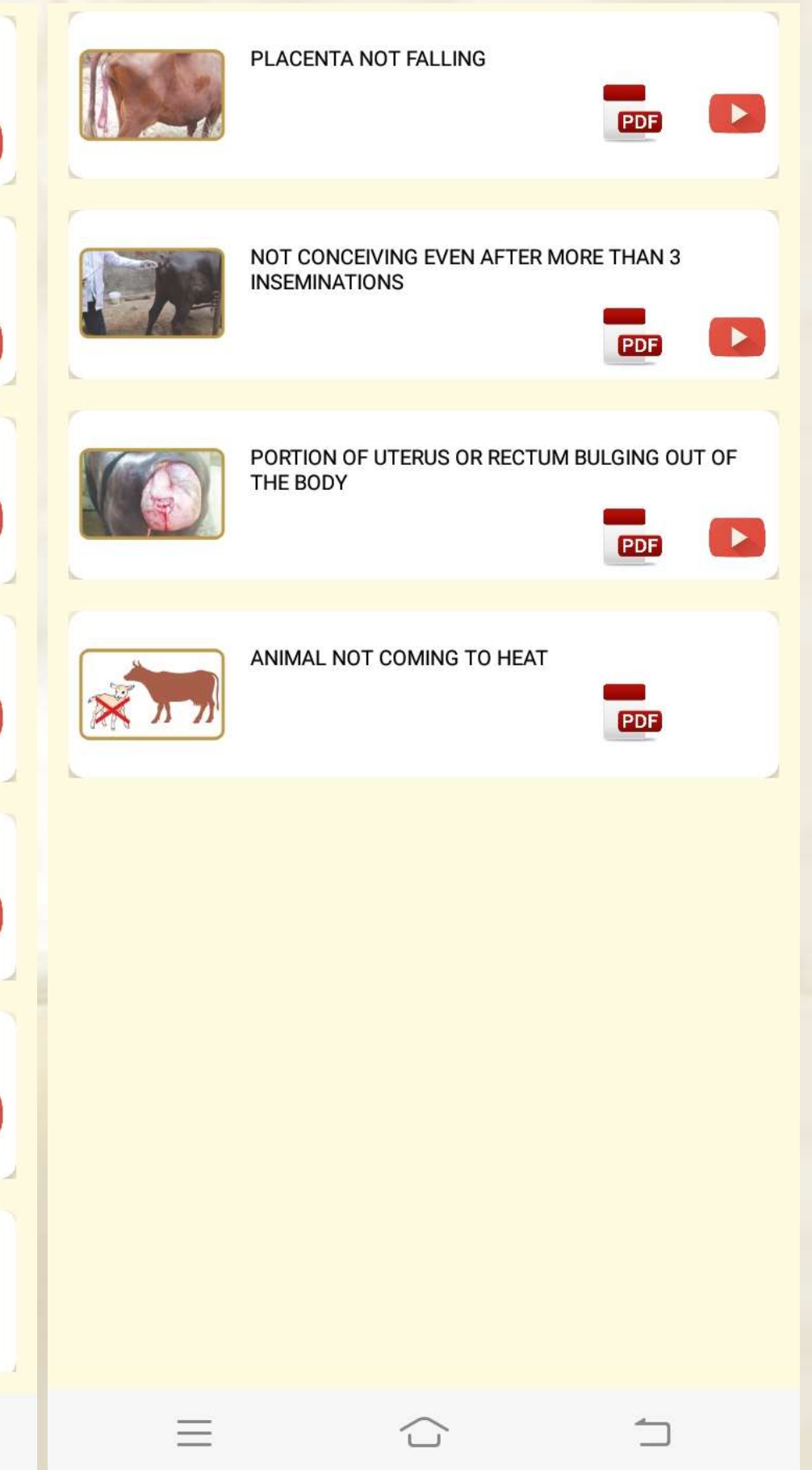
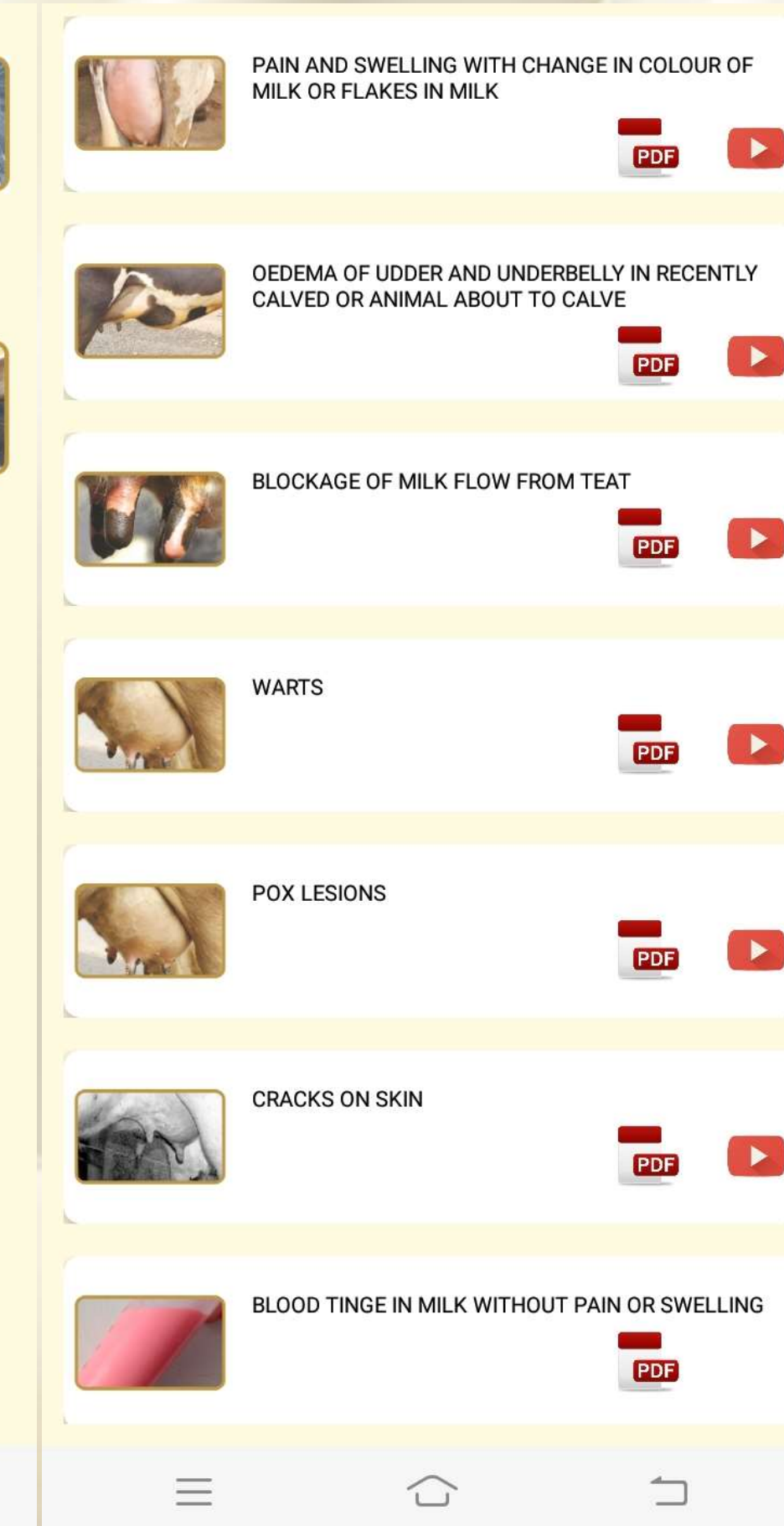
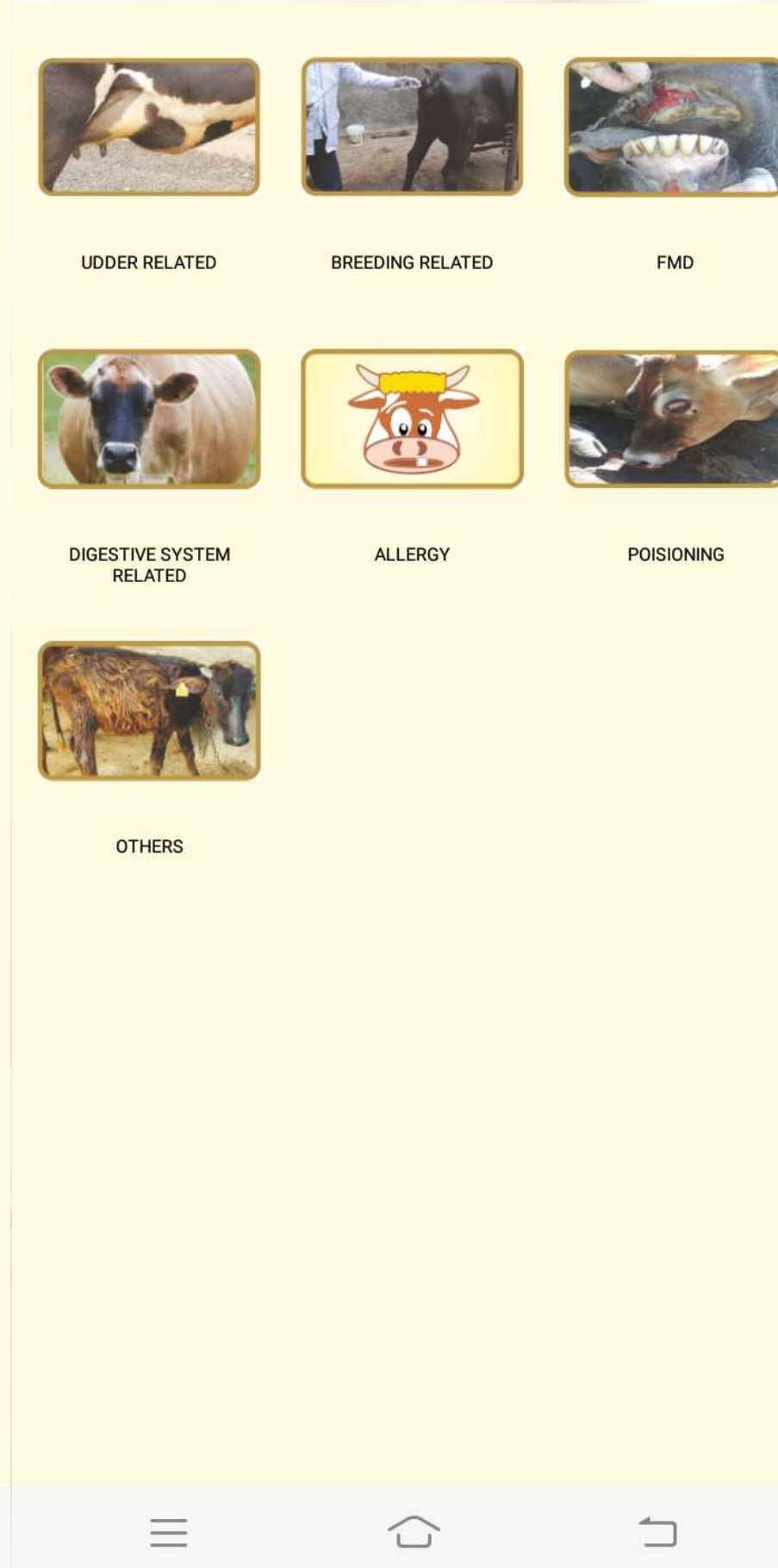
Prepared with technical inputs from Prof. N. Punniyamurthy (profpunniya@gmail.com), For further information contact: anand@nddb.coop



<h3>Mastitis (all types)</h3>  <p>Water based Preparation</p> <p>Ingredients: For one day a) Aloe vera - 250 g. b) Turmeric powder - 50 g. c) Calcium Hydroxide (lime) - 15 g. d) Lemon - 6 nos.</p> <p>Preparation: (i) Cut Aloe vera whole leaf into small pieces (after removing the thorns). (ii) Blend along with turmeric powder and lime to form a reddish paste.</p> <p>Application: (i) Wash, clean and completely milk out all quarters (including unaffected). (ii) Take a handful of the paste and add 200ml of water to make it thin. (iii) Apply the paste diluted in water ten times a day for 5 days each time after following the step (i) above. (iv) Last application of the day should be oil based preparation. (v) Feed two lemons at a time orally (cut into halves) thrice a day for 3 days.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Mastitis (all types)</h3>  <p>Oil based Preparation</p> <p>Ingredients: For one day Aloe vera (whole leaf) - 250 g. Turmeric powder - 50 g. Calcium hydroxide (lime) - 15 g. Lemon - 6 nos. Mustard or Gingelly oil - 500 ml.</p> <p>Preparation: (i) Cut Aloe vera whole leaf into small pieces (after removing the thorns). (ii) Blend along with turmeric powder and lime to form a reddish paste.</p> <p>Application: (i) Wash, clean and completely milk out all quarters (including unaffected) and dry the udder. (ii) Take a handful of the paste and add 200ml of mustard or gingelly oil to make it thin. (iii) Apply the paste diluted in oil three times a day for 5 days each time after following the step (i) above. (iv) Feed two lemons orally at a time (cut into halves) thrice a day for 3 days.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Teat obstruction</h3>  <p>Ingredients: Freshly plucked & clean neem leafstalk - 1. Turmeric powder, Butter or Ghee</p> <p>Preparation: (i) Nip the neem leafstalk from the top at the required length based on test length, leaving the base intact. (ii) Coat the turmeric powder & butter/ghee mixture thoroughly on the neem leafstalk. (iii) Clean the affected teat opening thoroughly.</p> <p>Application: (i) Insert the coated neem leafstalk with cut end up, base down into the affected teat in an anti-clockwise direction. (ii) Replace with fresh neem leafstalk after each milking.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Udder Oedema</h3>  <p>Ingredients: For one time Sesame or mustard oil - 200 ml; Turmeric powder - 1 handful; Garlic - 2 pearls.</p> <p>Preparation: (i) Heat oil, add turmeric powder and sliced garlic. (ii) Mix well and remove from flame just as the flavour develops (no need to boil). (iii) Allow to cool.</p> <p>Application: (i) Apply in a circular manner with force over the entire oedematous region and udder. (ii) Apply 4 times a day for 3 days.</p> <p>Note: Rule out mastitis before using the formulation.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Retention of Placenta</h3>  <p>Ingredients: White radish - 1 full tuber; Lady's finger - 1.5 kg; Jaggery - as required; Salt - as required</p> <p>Preparation: (i) Cut each lady's finger into 2 pieces.</p> <p>Application: (i) Feed one full tuber radish within two hours of calving. (ii) Feed 1.5 Kg of fresh lady's finger with jaggery and salt if ROP persists after 8 hours of calving. (iii) In case ROP persists even after 12 hours of calving, tie a knot very close to the base and cut 2 inches below the knot and leave it. The knot will go in. (iv) Do not try to remove the retained placenta by hand. (v) Feed one full tuber of radish once a week for four weeks.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Repeat breeding</h3>  <p>Application: (i) Start treatment on 1st or 2nd day of heat. (ii) Feed orally in fresh form in the following order once a day along with jaggery and salt. (i) white radish daily for 4 days (ii) 1 Aloe vera leaf daily for 4 days (iii) 4 handfuls of moringa leaves for 4 days. (iv) 4 handfuls of cissus stem for 4 days. (v) 4 handfuls of curry leaves with 5 gram turmeric powder for 4 days. (vi) Repeat the treatment once again if the animal has not conceived.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Prolapse</h3>  <p>Ingredients: Aloe vera gel - from one full leaf; Turmeric powder - one pinch; Mimosa pudica leaves - 2 handfuls.</p> <p>Preparation: (i) Remove the gel from a whole leaf. (ii) Wash it multiple times till the sliminess is reduced. (iii) Make volume upto 1 litre by adding water. (iv) Add a pinch of turmeric powder and boil to half the original volume and allow to cool (v) Prepare a paste of M. pudica leaves separately.</p> <p>Application: (i) Clean the prolapsed mass (ii) Sprinkle the gel on the prolapsed mass. (iii) Apply M. pudica paste after the gel dries. (iv) Repeat the process as frequently as possible till the condition improves.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>FMD mouth lesions</h3>  <p>Ingredients: For one dose Cumin seeds - 10 g; Fenugreek seeds - 10 g; Black pepper - 10 g; Turmeric powder - 10 g; Garlic - 4 pearls; Coconut - 1; Jaggery - 120 g.</p> <p>Preparation: (i) Soak cumin, fenugreek and black pepper seeds in water for 20-30 mts. (ii) Blend all ingredients to a fine paste. (iii) Add 1 full grated coconut to the paste and mix by hand only. (iv) Prepare dose freshly for each application.</p> <p>Application: (i) Apply gently inside the mouth, tongue and palate. (ii) Give the preparation thrice a day for 3 to 5 days.</p>  <p>Scan this QR code to view the video on YouTube</p>	
<h3>FMD foot lesions/wound</h3>  <p>Ingredients: Acalypha indica leaves - 1 handful; Garlic - 10 pearls; Neem leaves - 1 handful; Coconut or Sesame oil - 500 ml; Turmeric powder - 20 g; Marol leaves - 1 handful; Tulsi leaves - 1 handful.</p> <p>Preparation: (i) Blend all the ingredients thoroughly. (ii) Mix with 500 ml coconut or sesame oil and boil and bring to cook.</p> <p>Application: (i) Clean the wound and apply directly or bandage with a medicated cloth. (ii) Apply Anona leaf paste or camphorated coconut oil for the first day only if maggots are present.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Fever</h3>  <p>Ingredients: For one day Garlic - 2 pearls; Coriander - 10 g; Cumin - 10 g; Tulsi - 1 handful; Dry cumin leaves - 10 g; Black pepper - 10 g; Betel leaves - 5 nos.; Shalots/Onion - 2 bulbs; Turmeric powder - 10 g; Chitrula leaf powder - 20 g; Sweet basil - 1 handful; Neem leaves - 1 handful; Jaggery - 100 g.</p> <p>Preparation: (i) Dry fry cumin seeds, asafoetida, poppy seeds and fenugreek seeds till smoke emanates. (ii) Cool and powder the fried seeds. (iii) Blend & with rest of the ingredients to form a paste.</p> <p>Application: (i) Soak cumin, pepper and coriander seeds in water for 15 mts. (ii) Blend and mix all ingredients to form a paste.</p> <p>Application: (i) Roll the paste into small portions. (ii) Administer orally in small portions once daily for 1-3 days till condition eases.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Diarrhoea</h3>  <p>Ingredients: For one day Fenugreek seeds - 10 g; Onion - 1 no.; Garlic - 1 pearl; Cumin seeds - 10 g; Turmeric Powder - 10 g; Curry leaves - 1 handful; Poppy seeds - 5 g; Pepper - 10 g; Betel leaves - 10 nos.; Ginger - 100 g.</p> <p>Preparation: (i) Dry fry cumin seeds, asafoetida, poppy seeds and fenugreek seeds till smoke emanates. (ii) Cool and powder the fried seeds. (iii) Blend & with rest of the ingredients to form a paste.</p> <p>Application: (i) Roll the paste into small balls. (ii) Administer orally in small portions once daily for 1-3 days till condition eases.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Bloat and indigestion</h3>  <p>Ingredients: For one day Onion - 100 g; Garlic - 10 pearls; Dry Chilly - 2; Cumin seeds - 10 g; Turmeric Powder - 10 g; Jaggery - 100 g; Pepper - 10 g; Betel leaves - 10 nos.; Ginger - 100 g.</p> <p>Preparation: (i) Soak pepper and cumin seeds for 30 mts. (ii) Blend along with other ingredients to form a paste.</p> <p>Application: (i) Roll the paste into small balls. (ii) Administer orally in small portions with salt 3-4 times a day for 3 days.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Worms</h3>  <p>Ingredients: For one day Onion - 1 no; Garlic - 5 pearls; Mustard seeds - 10 g; Neem leaves - 1 handful; Cumin - 10 g; Bitter gourd - 50 g; Turmeric Powder - 5 g; Pepper - 5 g; Banana stem - 100 g; Common leucos - 1 handful; Jaggery - 100 g.</p> <p>Preparation: (i) Soak cumin, cumin and mustard seeds for 30 mts. (ii) Blend along with other ingredients to form a paste.</p> <p>Application: (i) Roll the paste into small balls. (ii) Administer in small portions with salt once daily for 3 days.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Worms</h3>  <p>Ingredients: For one day Onion - 1 no; Garlic - 5 pearls; Mustard seeds - 10 g; Neem leaves - 1 handful; Cumin - 10 g; Bitter gourd - 50 g; Turmeric Powder - 5 g; Pepper - 5 g; Banana stem - 100 g; Common leucos - 1 handful; Jaggery - 100 g.</p> <p>Preparation: (i) Soak cumin, cumin and mustard seeds for 30 mts. (ii) Blend along with other ingredients to form a paste.</p> <p>Application: (i) Roll the paste into small balls. (ii) Administer in small portions with salt once daily for 3 days.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Tick/Ectoparasites</h3>  <p>Ingredients: Garlic - 10 pearls; Neem leaves - 1 handful; Neem fruit - 1 handful; Acalypha indica - 10 g; Turmeric powder - 20 g; Lantana leaves - 1 handful; Tulsi leaves - 1 handful.</p> <p>Preparation: (i) Blend all the ingredients. (ii) Add one litre of clean water. (iii) Strain with a fine sieve or muslin cloth. (iv) Transfer to a bottle attached to a sprayer.</p> <p>Application: (i) Spray on the entire body of the animal. (ii) Also spray on any cracks and crevices in the cattle shed. (iii) Application can also be done using a cloth dipped in the solution. (iv) Repeat once a week till the condition resolves. (v) Do the application only during sunny part of the day.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Pox/wart/cracks</h3>  <p>Ingredients: Garlic - 5 pearls; Turmeric powder - 10 g; Cumin seeds - 15 g; Sweet basil - 1 handful; Neem leaves - 1 handful; Butter (preferred) or ghee - 50 g.</p> <p>Preparation: (i) Soak cumin seeds in water for 15 mts. (ii) Blend all ingredients to a fine paste. (iii) Add butter and mix well.</p> <p>Application: (i) Apply on affected part as many times as possible till condition resolves. (ii) Apply after drying the skin surface.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Allergy/Poisoning/Venomous sting/bite</h3>  <p>Ingredients: For one dose (Three Kings as per Tamil traditional Siddha lore) Betel leaves - 10 nos; Black pepper - 10 g; Salt - 10 g; Jaggery - as required.</p> <p>Preparation: (i) Blend the ingredients to form a paste. (ii) Mix with jaggery.</p> <p>Application: (i) Feed the dose in small portions. (ii) Administer 3 doses daily for 2 weeks.</p> <p>Note: Alternatively 2-3 drops may be instilled in eye every one hour in critical conditions (without jaggery).</p>  <p>Scan this QR code to view the video on YouTube</p>
<h3>Hygroma (swelling of joints)</h3>  <p>Ingredients: Aloe vera - 100 g; Lime (Calcium hydroxide) - 10 g; Cissus quadrangularis stem - 100g; Turmeric Powder - 15g; Garlic - 5 cloves; Gingelly oil - 1 litre.</p> <p>Preparation: (i) Blend all the ingredients to a paste (ii) Boil in 1 litre gingelly oil and allow to cook.</p> <p>Application: (i) Apply four or five times a day on affected part. (ii) Give hot water fomentation twice daily.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Cough</h3>  <p>Ingredients: For one day Adathoda (Adusa) - 1 leaf; Tulsi - 1 handful; Garlic - 5 cloves; Turmeric Powder - 10 g; Pepper - 10 g; Jaggery - as required.</p> <p>Preparation: (i) Soak pepper for 15-20 minutes and grind separately. (ii) Blend all the ingredients together to form a paste with jaggery.</p> <p>Application: (i) Soak cumin, pepper and coriander seeds in water for 15 mts. (ii) Blend and mix all ingredients to form a paste.</p> <p>Application: (i) Roll the paste into small portions. (ii) Administer orally in small portions once daily for 1-3 days till condition eases.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Downer (not able to get up)</h3>  <p>Ingredients: For one dose Desi chicken egg - 2; Moringa leaves - 4 handfuls; Cissus quadrangularis - 4 handfuls; Jaggery - as required.</p> <p>Preparation: (i) Take fresh unboiled egg (ii) Make a paste of Moringa and Cissus stem separately with jaggery.</p> <p>Application: (i) Feed 2 eggs (including shell) at a time, three times a day (make a small hole in the shell before feeding the egg). (ii) Feed moringa and cissus stem paste alternately every 2 hours (four handfuls at a time) (iii) Do not attempt to lift the animal till the 4th day.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Toxicity (Pesticide/HCN/Mycotoxin)</h3>  <p>Ingredients: Three kings: For one dose Betel leaves - 10 nos; Black pepper - 10 g; Salt - 10 g; Jaggery - as required.</p> <p>Other preparation: For one day Tamarind - 1 Kg; Water - 1 Litre; Moringa extract from 1 Kg leaves.</p> <p>Preparation: (i) Blend Betel leaves, Black pepper and salt to form a paste (ii) Mix with jaggery.</p> <p>Other ingredients preparation (i) Soak tamarind pulp for 15 minutes. (ii) Extract the juice from the pulp (iii) Add water, moringa leaf extract and jaggery (iv) Mix thoroughly.</p> <p>Application: (i) Give the first dose of three kings (ii) Feed 200 ml of the tamarind-moringa-jaggery as a thick stinky mixture every 2 hours (iii) Feed doses of three kings mixture in between.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Blood in Milk</h3>  <p>Ingredients: For one day Curry leaves - 2 handfuls; Moringa leaves - 2 handfuls; Jaggery - 100 g; Lemon - 6 nos.</p> <p>Preparation: (i) Blend curry and moringa leaves to a paste along with jaggery. Cut the lemon in two halves.</p> <p>Application: (i) Feed the paste twice daily till the condition resolves. (ii) Feed two lemons at a time orally (cut in two halves) thrice a day for 3 days.</p> <p>Note: Carry out EVM treatment for mastitis also.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Anoestrus</h3>  <p>Application: Feed orally in fresh form in the following order along with jaggery and salt: (i) One white radish twice a day for 5 days (ii) One Aloe vera whole leaf twice a day for 4 days. (iii) Four handfuls of moringa leaves twice a day for 4 days. (iv) Four handfuls of cissus stem twice a day for 4 days. (v) Four handfuls of curry leaves with 5 gram turmeric Powder twice a day for 4 days.</p> <p>Note: Carry out deworming 15 days prior to start of treatment.</p>  <p>Scan this QR code to view the video on YouTube</p>	<h3>Lumpy Skin Disease</h3>  <p>For oral administrations (to be fed alternatively at a gap of at least one hour)</p> <p>First Preparation Ingredients: (For one dose) Betel leaves - 10 nos; Black pepper - 10 g; Salt - 10 g; Jaggery - as required.</p> <p>Preparation: (i) Blend to form a paste and mix with jaggery. (ii) Feed the dose in small portions only. (iii) Feed one dose every three hours for the first day (Day 1). (iv) Feed three doses daily from the second day onwards for 2 weeks (Day 2 onwards). (v) Each dose to be prepared freshly.</p> <p>Second Preparation Ingredients: (For 2 doses) Garlic - 2 pearls; Coriander - 10g; Cumin - 10 g; Tulsi - 1 handful; Bay leaves - 10 g; Black pepper - 10 g; Betel leaves - 1 nos; Shalots - 2 bulbs; Turmeric powder - 10 g; Chitrula leaf powder - 20g; Sweet basil - 1 handful; Neem leaves - 1 handful; Angkor moringa (Betel leaves) - 1 handful; Jaggery - 100 g.</p> <p>Preparation: (i) Blend to form a paste and mix with jaggery. (ii) Feed the dose in small portions only. (iii) Feed one dose every three hours for the first day (Day 1). (iv) Feed two doses daily (one in the morning and other in the evening) from the second day till condition resolves (Day 2 onwards). (v) Repeat doses thrice daily.</p> <p>Application: (i) Blend all the ingredients thoroughly. (ii) Mix with 200 ml coconut or sesame oil and beat and bring to cook.</p> <p>For external application (if maggots are present) Ingredients: Acalypha indica leaves - 1 handful; Garlic - 10 pearls; Neem leaves - 1 handful; Coconut or sesame oil - 500 ml; Turmeric powder - 20 g; Marol leaves - 1 handful; Tulsi leaves - 1 handful.</p> <p>Preparation: (i) Blend all the ingredients thoroughly. (ii) Mix with 200 ml coconut or sesame oil and beat and bring to cook.</p> <p>Application: (i) Apply Anona leaf paste or camphorated coconut oil for the first day only if maggots are present.</p>  <p>Scan this QR code to view the video on YouTube</p>		



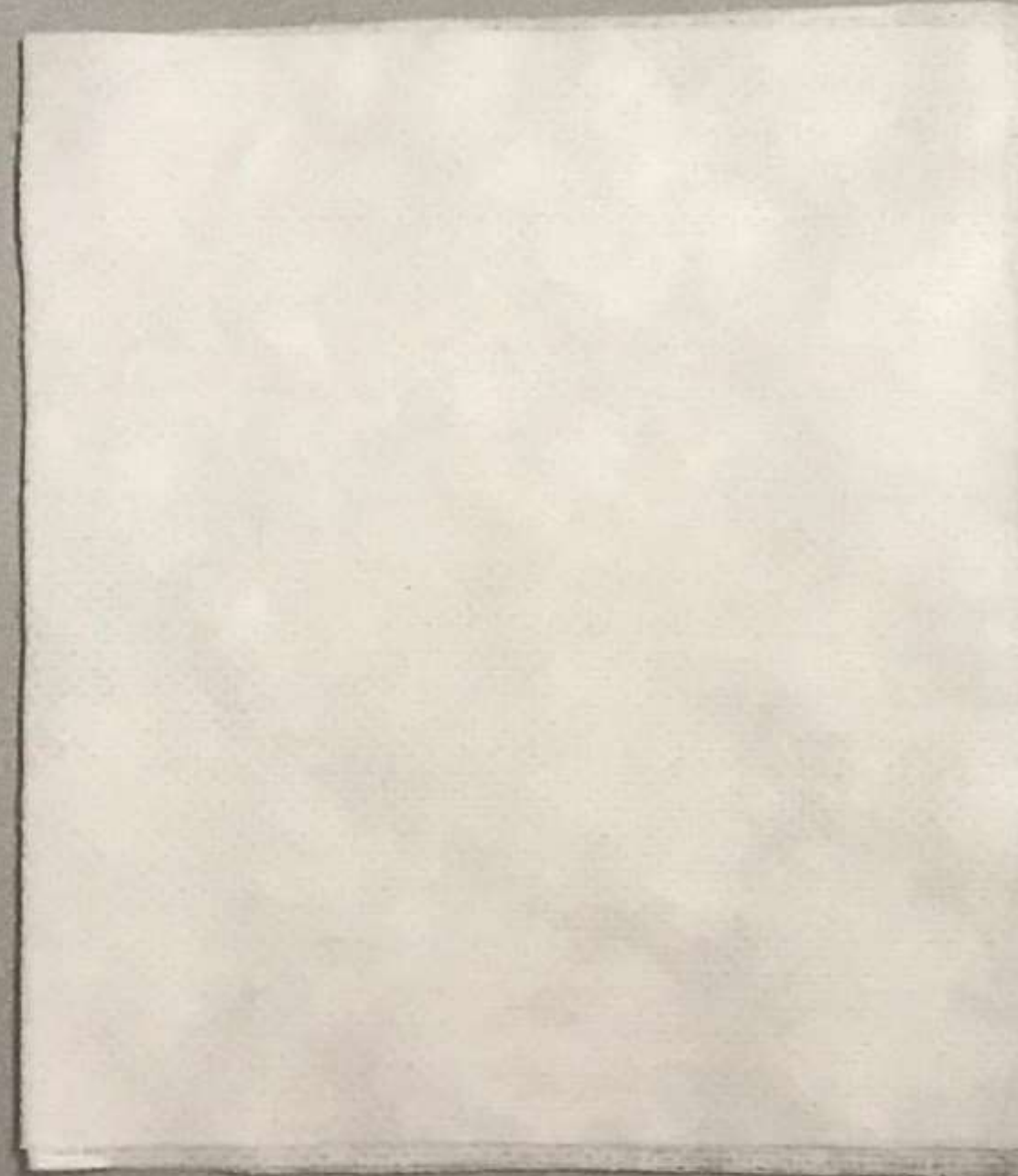
Popularisation measures- eGopala





AMR surveillance – An AMR sampling kit contents

Paper napkin



Marker pen



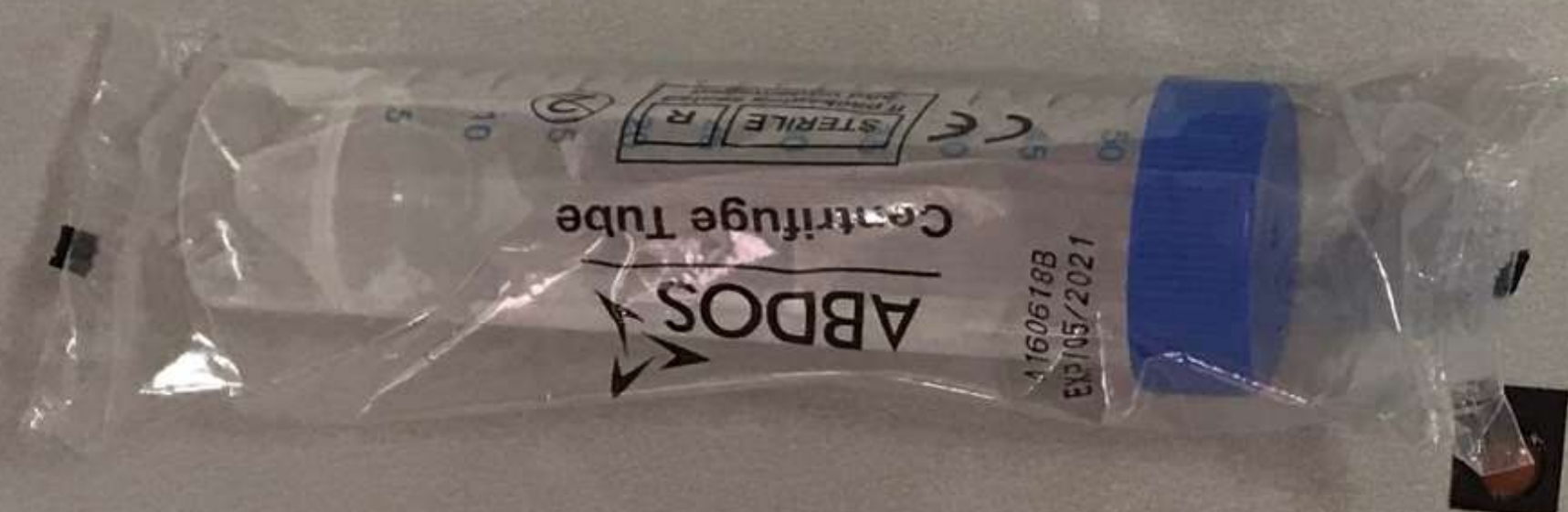
Sterile gloves



Alcohol swipe



Sterile tube












Bronopol tablet





AMR surveillance - Instruction manual

Instruction for milk sample collection from mastitis cases	
Step 1: Wipe udder with napkin	Step 2 : Disinfect with swipe
	
Step 3: Open vial (wear gloves)	Step 4 : Secure the lid of vial
	
Step 5 : Add tablet into vial	Step 6: Collect milk (40 ml)
 Bronopol tablet 	
Step 7: Close lid tightly & mix	Step 8 : Label sample (dry area)
	
Please read the MCPP SOP document for further details	

Transport & Storage and, description of label content along with example given over leaf

Transport and storage

- Transport sample in **cold chain** (2-8°C).
- **Freeze** the sample once it reaches the centralized location.
- **Intimate** the courier agency on the same day on the mobile number provided by NDDB.

Label Description
Date of Collection (DD/MM/YY)
Unique DCS code (As provided in MCPP reporting system)
Species: C- Cattle B- Buffalo
Farmer member code at society (from whose animal sample is collected)
Quarter from which collected (as applicable): LF (Left Fore); LH (Left Hind); RF (Right Fore); Right Hind (RH) and Composite (C) if from more than one quarter.
Precaution: Use only a marker pen for labelling

Label Example
04/07/18
SAB01
C
3256
LF



Milk samples

Sub clinical mastitis

Clinical mastitis

Isolation & Identification
of Organism

← Culture & PCR
Repository

Antibacterial Sensitivity

Phenotypic

Disc Diffusion
BD/Vitek System

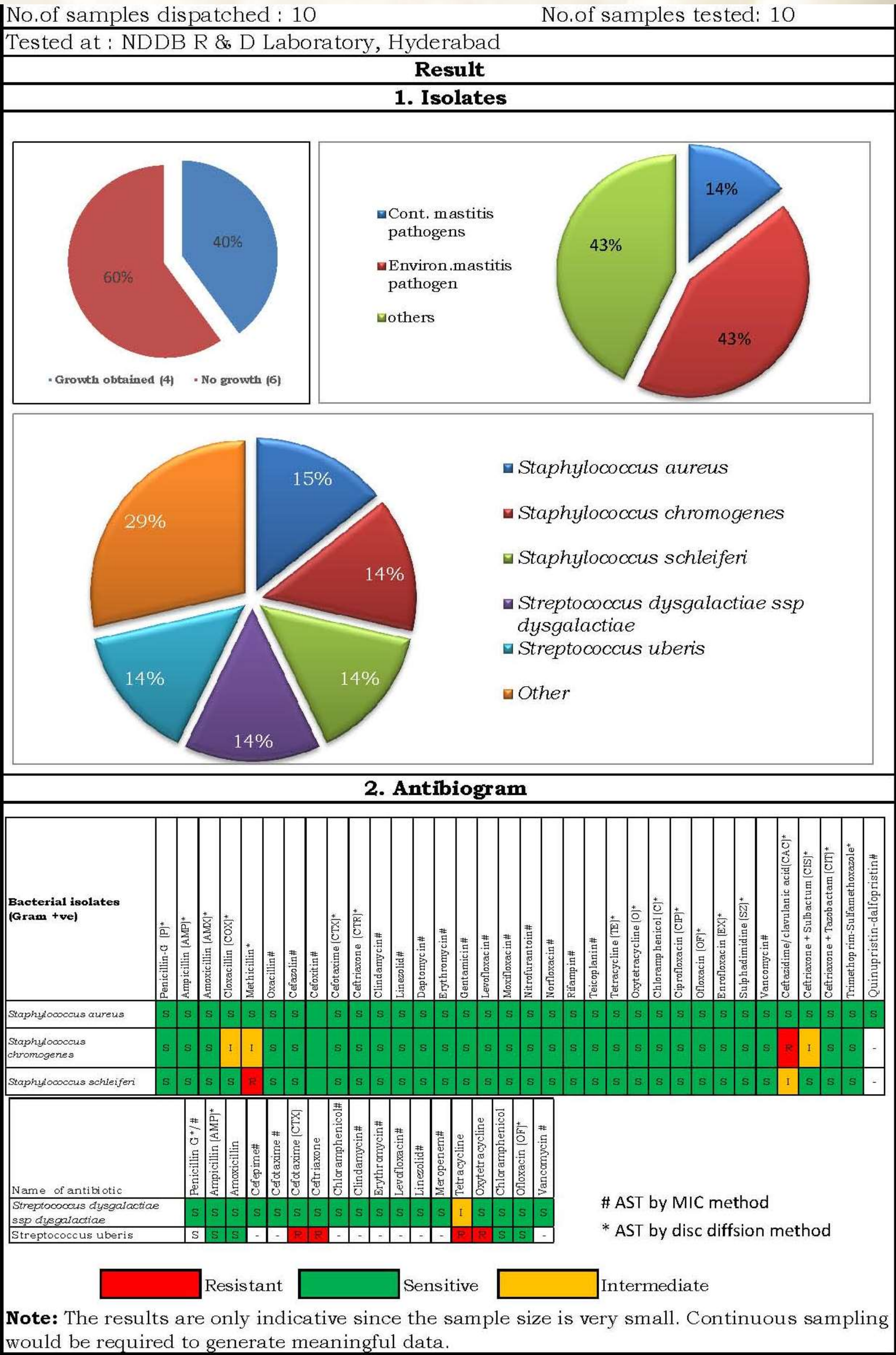
**Advisory to MU/States
Surveillance of AMR**

Genotypic

Identification of Resistance
Gene by WGS and PCR



AMR Studies- Reports





One Health Training of veterinarians

