Paratuberculosis in Germany and Bavaria

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Paratuberculosis in Germany

♦ **What is paratuberculosis (Johne's Disease) :**

- Bacterial disease (Mycobacterium avium subspecies paratuberculosis (MAP)

- Infection of calves

- Adults are infectious (long time before clinical signs)

- Diarrhea, weight loss, no loss of appetite

- Diagnostic tests are more or less reliable

Paratuberculosis in Germany

Mini Review

Facts, myths and hypotheses on the zoonotic nature of *Mycobacterium avium* subspecies *paratuberculosis*

Raja Atreya [a], Michael Bülte [b], Gerald-F. Gerlach [c], Ralph Goethe [d,*], Mathias W. Hornef [e], Heike Köhler [f], Jochen Meens [d], Petra Möbius [f], Elke Roeb [g], Siegfried Weiss [h], on behalf of the ZooMAP Consortium

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Paratuberculosis
in Germany

Check for updates

The Consensus from the *Mycobacterium avium ssp. paratuberculosis* (MAP) Conference 2017

J. Todd Kuenstner*, Saleh Naser, William Chamberlin, Thomas Borody, David Y. Graham,
Adrienne McNees, John Hermon-Taylor, Amy Hermon-Taylor, C. Thomas Dow,
Walter Thayer, James Biesecker, Michael T. Collins, Leonardo A. Sechi, Shoor Vir Singh,
Peilin Zhang, Ira Shafran, Stuart Weg, Grzegorz Telega, Robert Rothstein, Harry Oken,
Stephen Schimpff, Horacio Bach, Tim Bull, Irene Grant, Jay Ellingson,
Heinrich Dahmen, Judith Lipton, Saurabh Gupta, Kundan Chaubey, Manju Singh,
Prabhat Agarwal, Ashok Kumar, Jyoti Misri, Jagdip Sohal, Kuldeep Dhama, Zahra Hemati,
William Davis, Michael Hier, John Aitken, Ellen Pierce, Nicole Parrish, Neil Goldberg,
Maher Kali, Sachin Bendre, Gaurav Agrawal, Robert Baldassano, Preston Linn,
Raymond W. Sweeney, Marie Fecteau, Casey Hofstaedter, Raghava Potula,
Olga Timofeeva, Steven Geier, Kuruvilla John, Najah Zayanni, Hoda M. Malaty,
Christopher Kahlenborn, Amanda Kravitz, Adriano Bulfon, George Daskalopoulos,
Hazel Mitchell, Brett Neilan, Verlaine Timms, Davide Cossu, Giuseppe Mameli,
Paul Angermeier, Tomislav Jelic, Ralph Goethe, Ramon A. Juste and Lauren Kuenstner

Temple University Health System, Philadelphia, PA, United States

Federal recommendations: levels of control stage

level 1 Identification of MAP-positive herds	a) Biannual bacteriological testing (FC or PCR) of **environmental samples** and b) Fecal culture in cases with clinical symptoms
level 2 Identification of high risk animals	a) annual **serological testing of all cows** and b) Fecal culture in cases with clinical symptoms
level 3 Identification of MAP-shedders in subclinical stage	a) annual bacteriological testing (FC or PCR) **of all cows** and b) Fecal culture in cases with clinical symptoms

Federal recommendations: levels of control stage

| **level 1** Identification of MAP-positive herds	a) Biannual bacteriological testing (FC or PCR) of **environmental samples** and b) Fecal culture in cases with clinical symptoms
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level 3 Identification of MAP-shedders in subclinical stage	a) annual bacteriological testing (FC or PCR) **of all cows** and b) Fecal culture in cases with clinical symptoms

Hygienic measures
Removal of test positives

Paratuberculosis – Federal Recommmentations
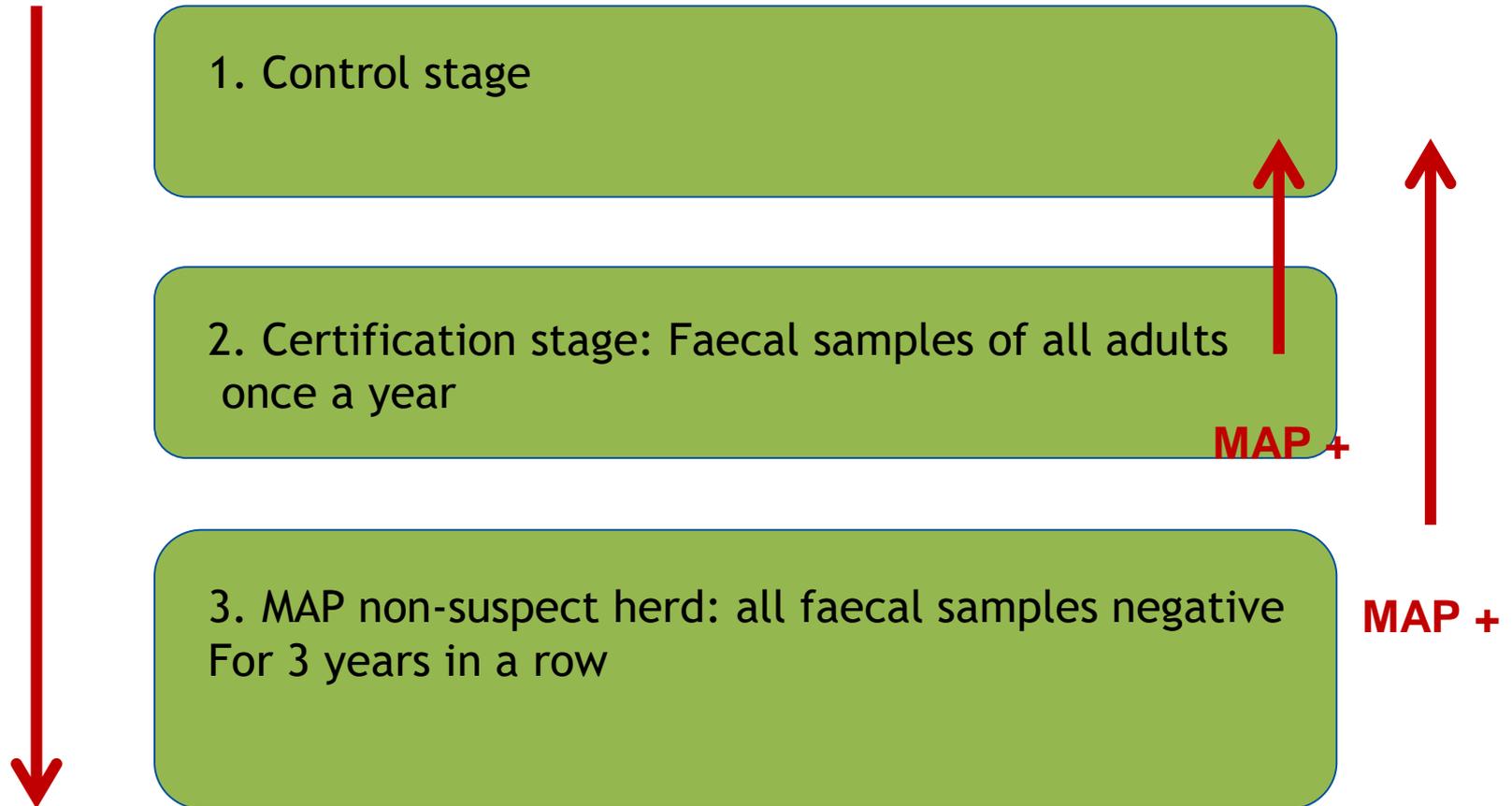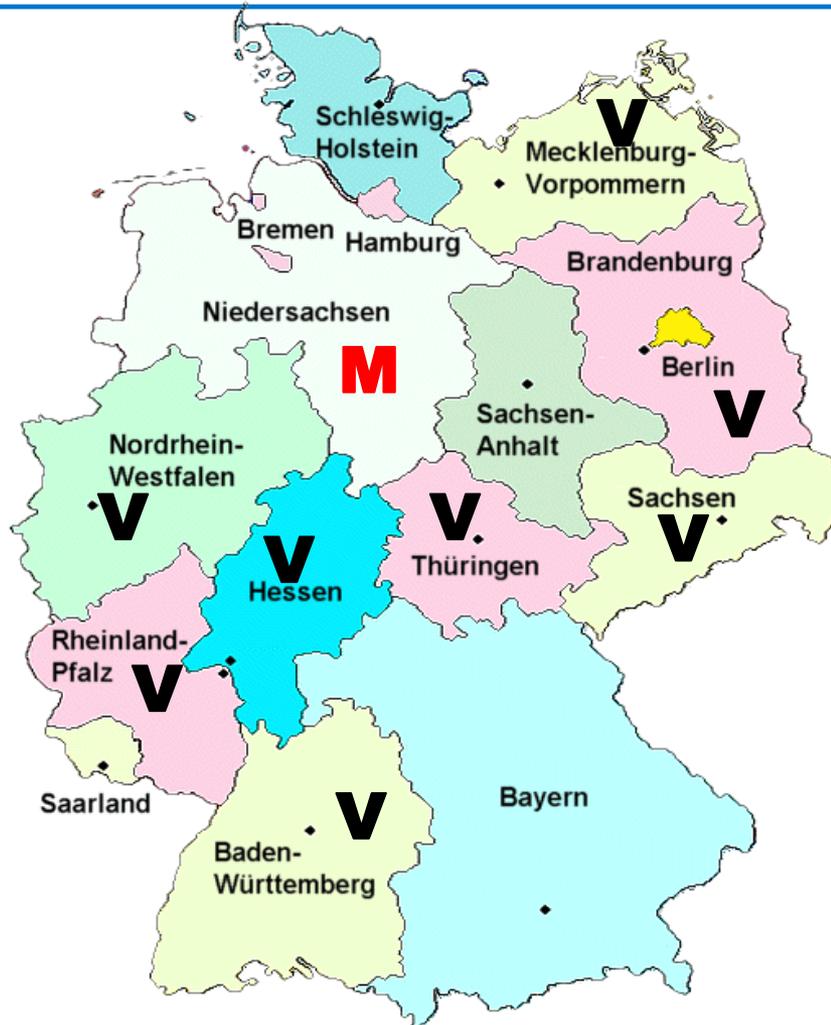
1. Control stage

2. Certification stage: Faecal samples of all adults once a year

MAP +

3. MAP non-suspect herd: all faecal samples negative For 3 years in a row

MAP +

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Paratuberculosis in Germany

- Mandatory program (regulation) in 1 federal state

- Voluntary programs in force in 7 federal states

  - formal obligation of the participating farmer
  - different diagnostic approaches

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Paratuberculosis in Germany
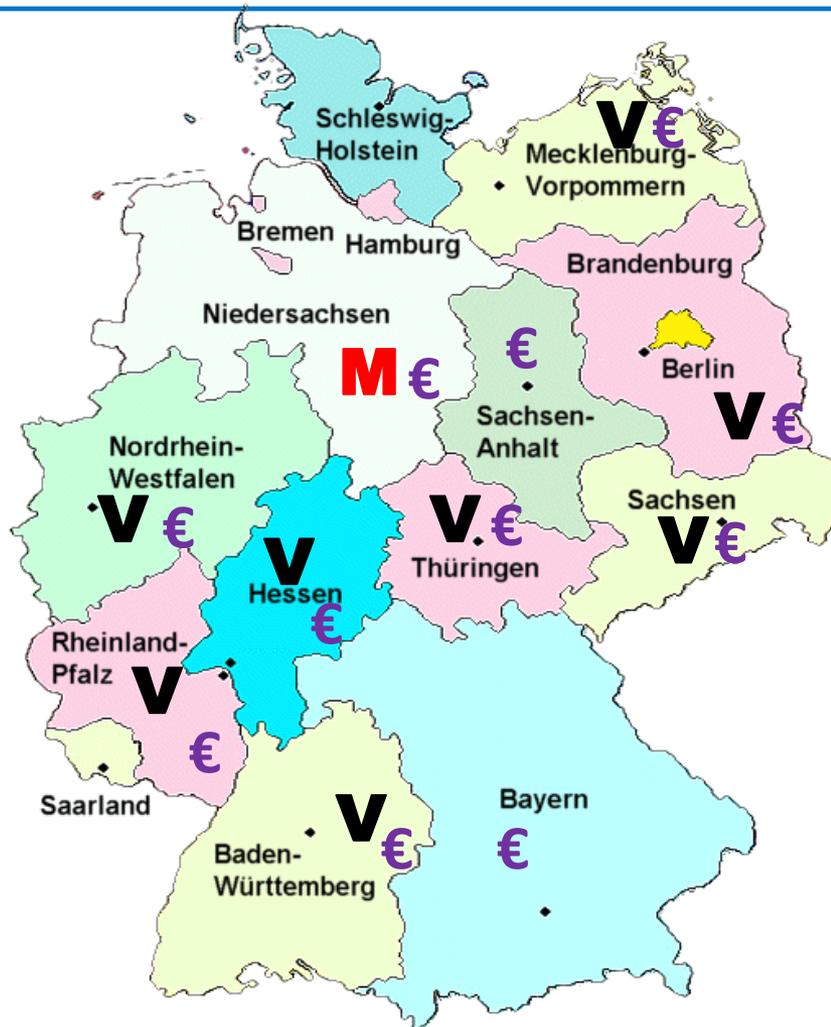
- Mandatory program (regulation) in 1 federal state

- Voluntary programs in force in 7 federal states

    - formal obligation of the participating farmer
    - different diagnostic approaches
    - Financial aid (regional differences!)
        - Diagnostic tests
        - Compensation for removal of test+ cattle
   - Veterinary advice

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Herd level investigation

http://www.kuhgesundheit.de/2013/09/24/der-grosse-leberegel-erhoehtes-infektionsrisiko-an-feuchten-standorten/

Paratuberculosis in Germany and Bavaria
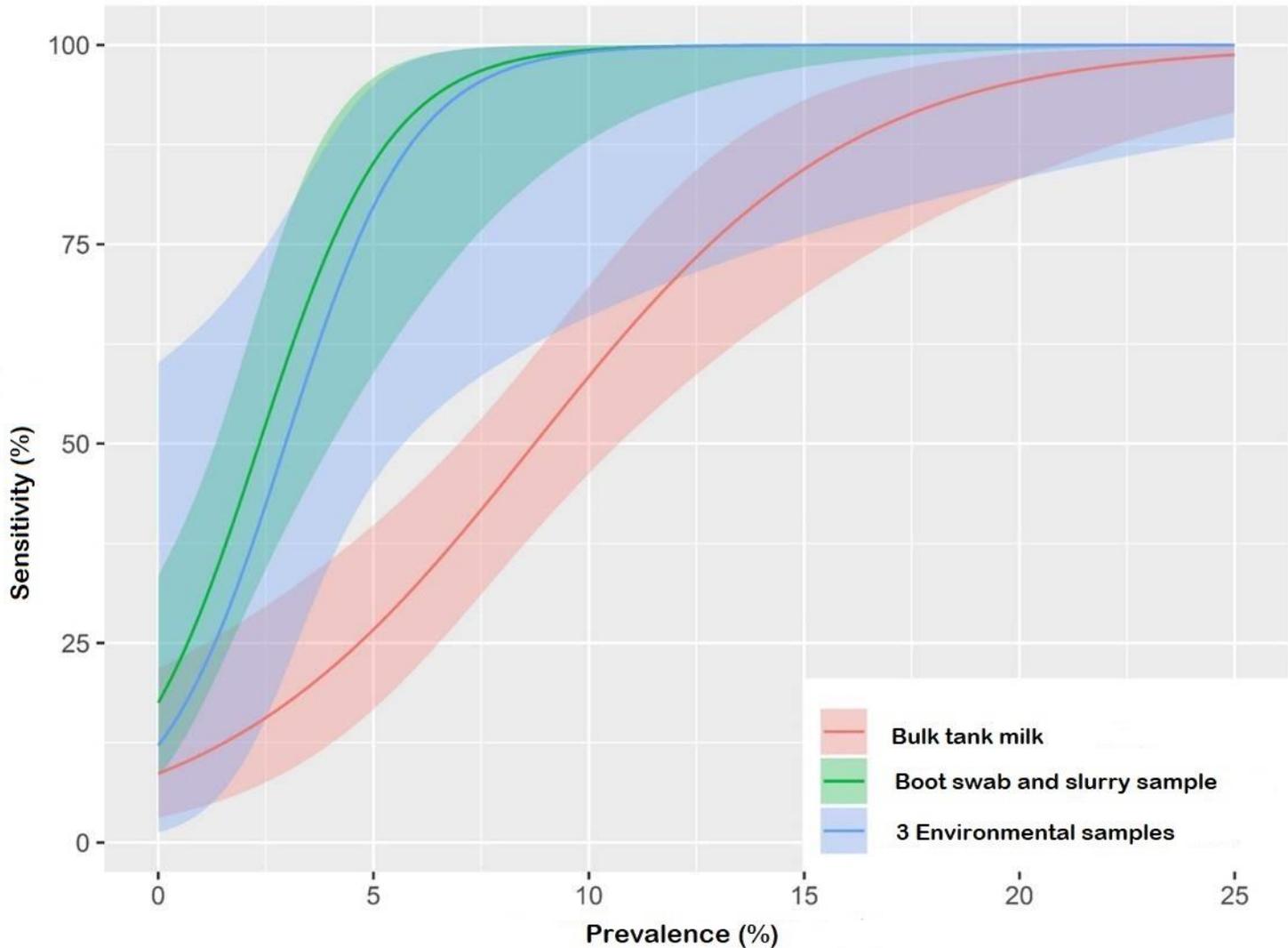
Paratuberculosis in Bavaria

Material and methods:

- **Farms:**
  - **Regular customers (convenience sample)(Start: February 2017)**
  - **PraeMAP (randomly selected farms; RS) (Start: August 2017)**

- **Samples:**
  - **Boot swabs**
  - **Slurry sample**
  - **Up to 5 environmental samples**

- **Analysis:**
  - **Culture**
  - **Real-time PCR**

Paratuberculosis in Bavaria

Preliminary results

- **So far complete results from 294 dairy farm**

- **Farm size: Median 60 dairy cows (Mean: 64/ Bavaria: 39)**
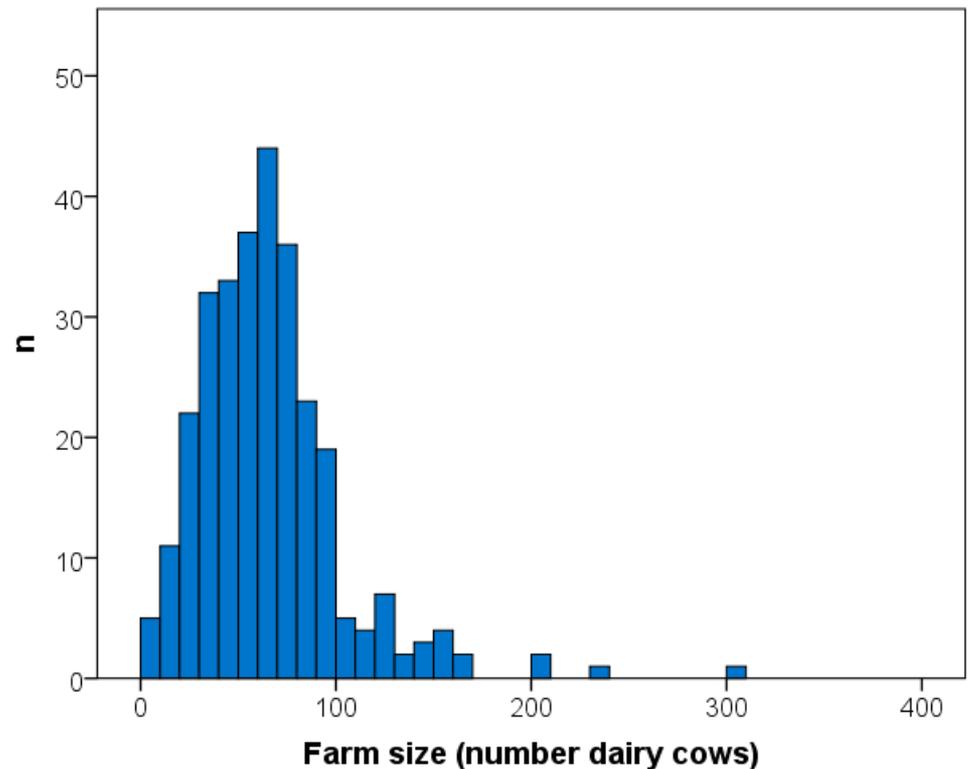
Paratuberculosis in Bavaria

Preliminary results

- **So far complete results from 294 dairy farm:**

  – **Convenience sample: 225 (Median farm size: 65 cows)**

  – **PraeMAP (RS): 69 (Median farm size: 47 cows)**

Paratuberculosis in Bavaria

Preliminary results

- **MAP detection (RT PCR and/or culture) in at least one sample:**

    13 farms (4,4%)

    - **RT PCR and culture: 4**

    - **Only culture: 2**

    - **Only RT PCR: 7**

- **Prevalence in relation to farm subset:**

    - **Convenience sample: 4,9 %**

   - **PraeMAP (RS): 2,9 %**

Paratuberculosis in Bavaria

Preliminary results

- **Farm size positive/negative:**

    – **Median farm size positive: 90 cows**

    – **Median farm size negative: 60 cows**

- **Percentage of farms with German Fleckvieh or German Braunvieh only:**

    – **Positive: 42 %**

    – **Negative: 81 %**

Paratuberculosis in Bavaria
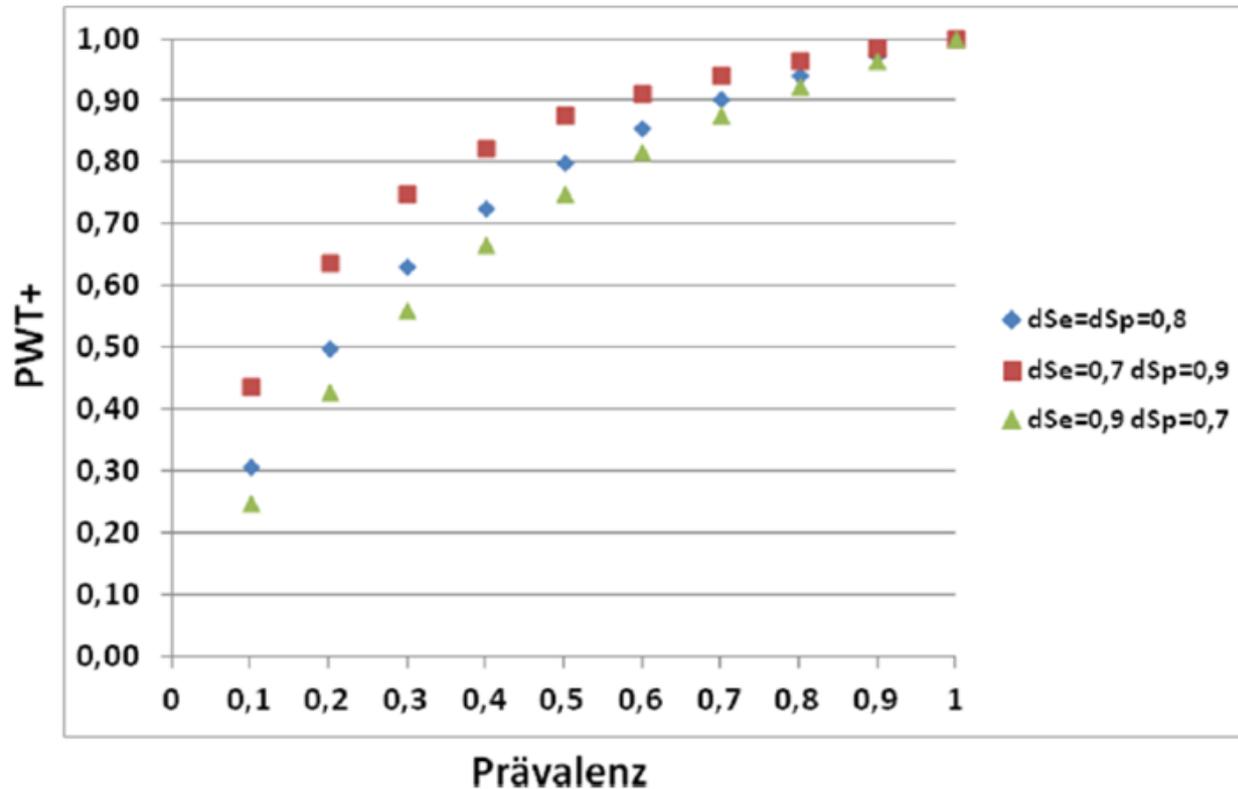
Relationship between prevalence of a disease and positive predictive value of the test

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Klee/Sauter-Louis, Epidemiologie-Skript

Paratuberculosis in Bavaria

Next step:

- **Can bulk tank milk samples be used for a minimising programme in Bavaria?**

- **If yes, at which cut-off?**

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Thank you for your attention!