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| Goal | Test Strategy Suggestions | Considerations for Lower vs. Higher Prevalence Situations |
| **Initial assessment for presence of infection in the herd** **i.e., looking for infection** | * Assess risk and estimate prevalence (low, mod, high) from the history of disease, introductions and management risk factors.
* Environmental cultures to identify presence of *M. ptb*. If positive, then consider moving to a different test. If not detected, perform follow-up environmental cultures.
* Serology (ELISA) options:

30 animals > 3 yrs old randomly selected – true prev. approximately 10% or > if 1/30 is positive. Higher risk animals (target groups) i.e., low BCS, low production, high risk source or exposure, JD signs, etc.Assess status in low-risk animals or group(s) i.e. may consider separating low risk herd or genetic group from rest of herd* Fecal PCR a % with elevated serology to confirm *M. ptb*
 | Lower prevalencePursue definitive PCR dx for all animals with elevated serologyThe chance is high that a positive ELISA result in an individual in a herd without a positive history is a false positive (2% false positives expected in non-infected animals).Pooled Fecal culturesHigher prevalencePursue definitive PCR dx (tissue histopath and culture if post-mortem) for:All or a portion of suspect or high-risk animals- at one point or over timeA% of healthy animals with positive ELISA values |
| **Estimate the prevalence of infection in the herd from test results** | * First - estimate prevalence or status from disease and risk history
* Testing strategies – most to least information:

 - Whole herd at one time - Subsets of the herd over time until all are tested i.e., test cows confirmed pregnant or dried off, each month  - Statistical sample in large herds (# depends on expected prevalence)- 30 animals > 4 yrs old randomly selected (10% or > if 1 positive)* Tests – most to least information and cost

- PCR>ELISA w/ PCR if elevated>ELISA only  | Lower PrevalenceStatistical sample if > 400 animals (See Nat’l Herd Status Prog Levels 2-4)- if negative, estimates 2% or lower. Sample proportional to age groupsConfirm all elevated serology by fecal PCRRepeated negative herd tests over time increase likelihood herd is low riskHigher PrevalenceConfirm % of elevated serology by fecal PCR |
| **Part of a Control Plan:****Identify and control spread of infection in highest risk animals**  | * Preventive management is most important
* Serology combined with fecal culture can be cost efficiently used to prioritize management / control decisions on known higher risk animals
* Test options – most to least information:

1. Herd or majority 2-3 X / yr2. Groups (subsets of herd) of animals over time, all/ most of herd in 1 yr. * time test to have “current” results at critical mgmt./ decision points
* same production or mgmt stage, at intervals i.e., at preg ck or dry off

3. Herd 1X / yr - herd level decisions; individual results stale > 6 mos. | Lower PrevalencePCR most accurate. Has highest sensitivity in early infection. Highest specificity w/ no false positives; or pooled fecal cultures; Or PCR all healthy animals with positive serology Higher PrevalencePCR % with positive serology – get more info on shedding status on candidates for culling or control decisions. Most efficient and effective to time group testing over the year provides for current results at decision points i.e., dry-off, calving, breeding, turnout, etc. Aggressive “removal” of highest risk animals is warranted |
| **Achieve and or establish low risk infection or****Test Negative Herd Status**  | Protect low risk status: 1. prevent introduction 2. preventive mgmt. Assurance in low-risk status increases w/ repeat Neg. tests over timeMost to least aggressive strategies: - PCR all animals– together, or alternate 3-6 mos. intervals  - Pooled fecal cultures in low prevalence herds - ELISA w/ PCR of animals with elevated values and or who are candidates for decisions - Serology alone – risky in low prevalence situations | Lower Prevalence - See NYSCHAP & USDA Herd Status Program GuidelinesSe of Johne’s tests declines in herd after repeated test and cull: prevalence drops and remaining animals likely in relatively earlier stages infectionPCR provides more aggressive detection: higher Se, detects earlier infection (Stage II) than serology; higher Sp, no false positivesELISA alone is risky - most positive results are likely false (low PPV)Repeated testing is necessary over time to eliminate infection |
| **“Monitor” infection in herd or groups**  | Test (many) suspect animals at culling and record ID/age of all: -Low BCS, low production, unthrifty, diarrhea, etcTest animals at risk - i.e., known exposure, unknown status additions, etc. Additions to low-risk herd – ELISA and FC 1-3 X @ 3- 6 mos. intervalsSerology on herd or statistical subset w/ FC of elevated values | Low PrevalenceTest 30 > 2nd Lact., annually (USDA Herd Status Program)Test herd, or by groups over time, 1X/ year, 1X/ 2 years, as appropriateStatistical sample in herds > 400 (See Nat’l Herd Status Program)Serology and FC additions 2-3XHigher PrevalenceAdditions: ELISA and PCR1X, then integrate into routine herd control plan |