



## INTRODUCTION

All laboratories have established processes for sample submission; these processes are designed based on their day-to-day, routine submission volume. However, during outbreak situations, these established processes may not be appropriate for the increased volume of samples and demands of ongoing response activities.

In particular, the processing and messaging of large volumes of results to Emergency Management Response System (EMRS), which is the USDA APHIS Veterinary Services (VS) system of record in any outbreak, is problematic for any National Animal Health Laboratory Network (NAHLN) laboratories (and other laboratories) that have not prepared and tested these processes. Without electronic messaging processes, premises and their results are not automatically matched, which leads to significant backlogs and can delay appropriate response actions. Thirteen NAHLN laboratories electronically messaged avian influenza diagnostic results during the 2014–2015 HPAI outbreak, which demonstrates important progress. While significant improvements have been made, particularly for high-volume laboratories in livestock/poultry dense States, most NAHLN laboratories do not currently message laboratory results.

Implementation of any one of these recommendations contributes to the overall efficiency of the sample submission and information management processes; however, the recommendations are synergistic. Implementation of all four recommendations would provide the best outcome. The implementation of these recommendations necessitates changes in both processes and culture; requirements for additional resources can be minimized wherever possible.

*The messaging of results and transfer and subsequent matching of large volumes of accurate results to investigations and premises in EMRS is critical for detection of new disease cases, surveillance activities, and continuity of business operations.*

## RECOMMENDATION 1: MESSAGE ALL RESULTS FOR AVIAN INFLUENZA (AI) AND OTHER MAJOR DISEASES FROM NAHLN LABS

### Benefits

Messaging allows the real-time transfer of large volumes of results without any additional data entry. Subsequently, laboratories are free to concentrate on testing rather than answering questions about specific results. By eliminating the need for extra data entry, the information is not only more accurate, it is rapidly available and enables automatic notifications on positive results for immediate action.

### Challenges

Messaging requires the lab have a Laboratory Information Management System (LIMS) that is capable of messaging. In addition, staff will require some information technology (IT) expertise, and the lab will need to bear the associated cost of both the system and appropriate personnel/expertise to set up.

## RECOMMENDATION 2: USE PRE-PRINTED LAB SUBMISSION FORMS WITH BARCODED PREMISES ID AND PRINTED, VALIDATED ADDRESS AND FARM NAMES FOR ALL COMMERCIAL SURVEILLANCE AND RETURN BACKYARD PREMISES VISITS

### Benefits

Pre-printed lab submission forms eliminate the confusion of which samples are associated with

which premises. It allows the messaging of lab results and automatically links these results with the investigation that has been entered into EMRS. Sifting through spreadsheets with hundreds or thousands of laboratory results, trying to match them to the correct premises, is not an efficient or effective way of doing business and can take hundreds of hours. Pre-printed forms can be formatted and produced in PDF for any premises in EMRS and distributed to companies to ensure they distribute to their producers. Sample types, reasons, and other information can be pre-printed on the form and further reduce data entry requirements and improve data accuracy.

## Challenges

Laboratories typically have their own forms which they prefer to use for lab submissions. In addition, companies must be willing to not only distribute the forms, but ensure their producers are trained and using the forms. If premises do not have a national premises identification number (PIN), then unfortunately it is not possible to use pre-printed forms until this PIN has been assigned.

### **RECOMMENDATION 3: USE PRE-PRINTED PAIRED BARCODE STICKERS, ONE FOR THE SAMPLE CONTAINER, AND ONE FOR THE LAB SUBMISSION FORM ON THE LINE FOR THE MATCHING SAMPLE**

## Benefits

Barcode stickers have been demonstrated to ensure and facilitate the accurate entry of the sample identification and automated matching of the sample/premises and the result in EMRS. For commercial premises, barcodes are scanned when the sample arrives at the laboratory and provide a consistent, legible method of sample identification so results are associated with the correct premises. Barcode stickers are inexpensive and a standard inventory control tool that eliminates another opportunity for human error in a fast-paced, rapidly changing outbreak situation.

## Challenges

In order to make the most impact in a large outbreak, barcoding must be implemented (barcodes provided) in advance of the outbreak so samples are immediately matched to their submission form/premises. Barcodes must be widely distributed to producers; extra stickers cannot be provided to ensure the same sticker is not used on multiple samples. Labs also apply their own internal barcodes for sample tracking and are not always enthusiastic about adding a barcode for other uses.

### **RECOMMENDATION 4: USE EMRS2 GO MOBILE APPLICATION OFFLINE FOR ALL BACKYARD SURVEILLANCE**

## Benefits

Using EMRS2 GO eliminates the need for additional data entry for backyard surveillance. It provides the ability to show progression of backyard surveillance, including premises without livestock/poultry, in nearly real-time. Tablets can be used offline and synced with EMRS during the day. Near the end of the day, applicable labs can be notified of the volume of samples to expect based on the data in the EMRS2 GO system. EMRS2 GO has been demonstrated to save hundreds of hours by preventing the need for additional data entry and avoiding transcription errors from paper records.

## Challenges

EMRS2 GO must be downloaded and installed on tablets or laptops, which requires IT support. Initial training is typically required prior to use. EMRS2 GO is not yet available for smartphones.