



United States
Department of
Agriculture

Veterinary Services

September 2021



National Animal Health Monitoring System (NAHMS)

NAHMS Swine 2021 Large Enterprise Study

VS VISIT QUESTIONNAIRE MANUAL

Contents

Chapter 1 – General Information	3
INTRODUCTION.....	3
HOW NAHMS SWINE STUDY INFORMATION IS USED.....	3
PURPOSE OF THE NAHMS Swine 2021 Large Enterprise Study	3
OBJECTIVES OF THE NAHMS Swine 2021 Large Enterprise Study	4
BENEFITS OF PARTICIPATION IN THE NAHMS Swine 2021 Large Enterprise Study.....	4
OVERVIEW OF NASS DATA COLLECTION.....	5
OVERVIEW OF VS DATA COLLECTION.....	5
Chapter 2 – Terms and Definitions.....	8
Chapter 3 – VMO Procedures.....	19
THINGS TO DO PRIOR TO THE FIRST SITE CONTACT.....	19
VMOQ INTERVIEW(S) STEPS with paper and MiCO	20
SPECIAL SITUATIONS.....	30
MORE INFORMATION ABOUT PHASE 2	30
Chapter 4 – Getting Consent at the Operation and Site Level	31
Chapter 5 – General VMOQ Instruction, Question and Response Formats.....	33
VMOQ INSTRUCTION FORMATS.....	33
VMOQ QUESTION FORMATS	34
Chapter 6 –VMOQ Overview and Questions of Note	39
VMOQ SECTIONS OVERVIEW.....	39
SECTION 1—TODAY'S INVENTORY	39
SECTION 2—SOWS AND BREEDING-AGE GILTS.....	39
SECTION 3 – NURSERY AGED PIGS	40
SECTION 4 – GROWER/FINISHER AGED PIGS.....	40
SECTION 5—SITE DEMOGRAPHICS.....	40
QUESTIONS OF NOTE.....	41

Chapter 1 – General Information

INTRODUCTION

In 1990, the National Animal Health Monitoring System (NAHMS) conducted its first national swine study. The NAHMS Swine 2021 Large Enterprise Study will be the sixth study of the more commercial side of the swine industry. This manual focuses upon the Veterinary Services (VS) phase of the study. We are trying to keep the manual shorter so unlike previous studies we aren't going into detail on every single question or including every single question in this manual. When you get to Chapters 4 and 5 please have the questionnaire with you for referral. This chapter is to give the Veterinary Medical Officers (VMOs) and Animal Health Technicians (AHTs) some background on NAHMS swine studies in preparation for contacting and later interviewing respondents.

HOW NAHMS SWINE STUDY INFORMATION IS USED

Information gathered in NAHMS surveys is used to:

- Provide industry groups with information regarding their industry on a national level.
- Facilitate trade negotiations and exports by providing other countries with a summary of the structure and health status of the US industry.
- Identify information needs to promote funding for animal health research.
- Define health care areas that need more emphasis in veterinary education programs.
- Help scientists identify the most costly health problems.
- Help drug companies decide which new products to develop.
- Assist government policy-makers in making more informed decisions affecting the swine industry.
- Benefit consumers by providing factual information on how swine are raised.

<p>Some of these points may be useful in persuading a reluctant owner/manager to participate in the survey.</p>
--

PURPOSE OF THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY

The purpose of the National Agricultural Statistics Service (NASS) component of the Study (Phase 1) is to compile essential industry information involving the areas of swine housing, swine management, production metrics and site biosecurity. To identify vital information, a needs assessment was completed involving industry representatives, producers, veterinarians and animal health officials. The needs assessment was used to develop the study objectives.

The follow up VS portion (Phase 2) of the study that VMOs/AHTs are involved with is to get the information NASS enumerators don't have the expertise to get. The VS questionnaire asks questions on disease history, vaccinations, medication use, feed components and movement of weaned pigs. Phase 2 also involves biologic collections.

OBJECTIVES OF THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY

- Describe current U.S. swine production practices for gestation, farrowing, nursery, grower/finisher and wean-to-finish phases, specifically as they relate to housing, productivity, biosecurity and morbidity and mortality prevention.
- Determine the producer reported prevalence of select respiratory, neurologic, gastrointestinal, systemic and foodborne pathogens found in weaned market pigs.
- Describe antimicrobial use patterns in pigs from postweaning to market age
- Evaluate the presence of select pathogens and characterize isolated organisms from biological specimens (feces, oral fluids).

BENEFITS OF PARTICIPATION IN THE NAHMS SWINE 2021 LARGE ENTERPRISE STUDY

The information collected will be useful to individual producers, the Swine industry, animal health officials and veterinary groups.

Benefits to Individual Producers

- Participating producers will receive links to reports and information sheets that will enable them to compare their operation - including management decisions and practices - with others in the swine industry. These publications will present study summary data on a national, regional and operation size basis for general management and production topics as well as specific health related issues.
- If funding for biological sampling becomes available, producers who choose to participate in the second phase of the study will receive oral fluid and fecal test results. These tests would provide the following information:
 - Whether the site has been infected with Senecavirus A (Seneca Valley Virus).
 - The serotypes and species of *Salmonella*, *Campylobacter* and *Enterococcus*, respectively, as well as the antimicrobial susceptibility patterns present on their site(s) from isolates of these three pathogens and generic *Escherichia coli*.

Benefits to the Swine Industry

Baseline characterization of the commercial swine industry, including the following:

- National estimates of disease prevalence based on clinical signs as well as vaccination use, management biosecurity tools and medications used to combat disease by production phase. These estimates are valuable in trade negotiations and in combatting misinformation.
- National estimates of movement practices and feed management in growing pigs for disease planning.

Benefits to Veterinarians, Universities and Researchers

For practitioners, universities, industries and media involved with the swine industry, descriptive reports summarizing all data will be available for comparative analysis and interpretation.

- Information collected will provide basic parameters for animal disease models, including those used to plan for outbreaks of foreign animal diseases.
- Veterinary Services (VS) personnel will have a better understanding of the spectrum and demographics of the swine industry in the event of an emergency response.
- The information collected will help to determine areas needing further research and education.

- Researchers will use the background information provided by this study on the swine industry to support grant applications while national estimates provide the basis for study design and sample selection.

OVERVIEW OF NASS DATA COLLECTION

NASS randomly selected operations from 13 swine producing States. Operations in these states accounted for 95.7 percent of operations with 1,000 or more hogs and 93.0 percent of the hogs on operations with 1,000 or more hogs in the U.S. Operations with 1,000 or more hogs accounted for approximately 15.6 percent of swine operations and sites in the U.S. but 97.2 percent of the swine inventory resides on these operations and sites. Selected operations were sent information about the study (a launch sheet), a pre-survey letter, industry support letters and a biologics fact sheet.

The entire 2021 NAHMS Swine Large Enterprise Study consists of two phases. In Phase 1, NASS will contact approximately 2,500 swine operations with herds of 1,000 or more pigs to complete the 2021 NAHMS Swine Large Enterprise Survey-Site Selection Form (LESSF). The LESSF is a short questionnaire designed to select representative sites (approximately 4,085 total) within operations for further data collection using the 2021 NAHMS Swine Large Enterprise Survey (LES). Both the LESSF and LES will be administered via paper-assisted telephone interviews (PATI) if in-person interviews are not permissible at the time of the study.

The LES focuses on housing, management and productivity topics. Enumerators will also find out if the **operation contact** (representative for the operation) is willing to turn their names and contact information over to APHIS/VS personnel (Phase 2). If yes, consent will be captured on the LESSF (for the operation) and the LES (for each site sub-selected within the operation). Data collection for Phase 1 will occur from June 28, 2021, through August 2, 2021.

OVERVIEW OF VS DATA COLLECTION

Phase 2 of the NAHMS Swine 2021 Large Enterprise Study will take place from mid to late September 2021 through January 2022 and involves a second site interview by a VS Veterinary VMO, AHT or State representative with optional participation in the biological sample collections mentioned previously.

Information provided in this manual will focus on Phase 2 of the study, the VS Swine 2021 Large Enterprise-Informed Consent Form (LPIC), the Swine 2021 Large Enterprise-VS Visit Questionnaire (referred to after this usually as the “VMOQ”) and your role in the data collection process.

NASS representatives will turn over contact information for **operation contacts** that are willing to turn over that information to State VS Coordinators, designated by NAHMS, starting in September 2021. This VS State Coordinator will receive the contact information securely through a SharePoint site that NAHMS will share with them. Information turned over includes the following items.

A spreadsheet of the NAHMS ID, names, titles, addresses, phone numbers, and email addresses of the **operation** and **site contacts** who consented to release their names to VS during Phase 1 of the study. This list will also include any relevant notes and site characteristics such as whether the sites are a breeding or growing site.

The information will be parsed out to the field VMOs/AHTs by the VS State Coordinators as they are assigned the contacts. Assignments will be shared with NAHMS (Coordinator dashboard). Coordinators will also provide their field VMOs/AHTs with the following:

1. The LPIC. This is the contract between APHIS and the operation and its sites (the former via the **operation contact** and the latter with the **site contacts**) to conduct the VMOQ site interviews and possibly biological sampling.
2. The necessary number of VMOQs: An operation contact will require one copy and each site visit may require at least two copies of the VMOQs. One is for the VMO/AHTs or State representative and one for the producer to follow along with during the interview.
 - a. Alternatively, for the site visits, the second copy can be substituted for the Respondent Guide. It contains the choices involved in questions with multiple answers to choose from.
3. The PRRS Status Decision Chart: This chart will be used only on sites with breeding females. It will identify the correct response to Question 7 of Section 2 of the VMOQ.
4. Vaccine Reference Sheet: This reference sheet will be used for the vaccine use question found in Sections 2, 3 and 4 of the VMOQ.
5. Antibiotics Reference Sheet: This reference sheet lists antibiotics by route of administration that will be used for multiple questions in Sections 3 and 4 of the VMOQ.
6. Biologic sampling kits: Kits to collect oral fluid and fecal samples will be shipped to the NAHMS Coordinators for distribution to the field based on the State's turnover number. Additional kits can be requested and sent directly to field staff. The kits include collection forms, specimen collection materials and shipping information. (See the Biologics Manual for more information regarding sampling kits).
7. The information from NASS which gives contact information, inventory and site type.

As stated previously, NASS State offices have already mailed a pre-survey letter, industry support letter, study launch sheet and biological benefits/timelines sheet to sampled operations. Your coordinator may also provide you with copies of these materials so that you may refer to them during the first contact with the operation and later with the individual sites.

The first contact by field VMOs/AHTs will be with the **operation contact** who helped complete the LESSF to arrange an interview and ask if their operation is still willing to participate in Phase 2. If the **operation contact** agrees to Phase 2, the second contact by field VMOs/AHTs will be with the **site contacts** who helped complete the LES to arrange a time to complete the VMOQ and discuss the possibility of doing biologic collections.

It will help promote the study when you make these contacts if you have a working knowledge of the materials sent ahead (e.g., the launch sheet) so you may give an accurate picture of what will be involved in completing the study. "Sales" points for the study include the following four areas:

1. The Swine 2021 study has been designed to collect information specifically requested by swine industry representatives, State, and Federal officials.
2. The output reports from this study are useful in trade negotiations.
3. A more current snapshot of this swine industry segment in terms of health, management and movement is useful for State and Federal officials in disease response planning (e.g., African Swine Fever).
4. National estimates of modern commercial swine raising combat misinformation.

Participation in any stage of Phase 2 is voluntary. A *site contact* may choose to answer every VMOQ question, skip certain questions or sections or end the interview at any time. They or the *operation contact* may also accept or decline biological sampling. State Coordinators should be able to answer most terminology questions that arise from the VMOQ or provide assistance in determining things like the “spirit” of a particular question. That is, what is the question really after?

In any case, also feel free to call or email one of the authors of the VMOQ: Dr. Charles Haley, 970 494-7216 (office), 970 225-1377 (home), charles.a.haley@usda.gov.

Chapter 2 – Terms and Definitions

Field VMOs/AHTs working on the NAHMS 2021 Large Enterprise Study are likely already familiar with as many of the terms and definitions listed below. This is to provide the VMO with ready definitions that they can show the producer if they wish. **Note:** These terms are mainly tailored to this VMOQ contents, but in some cases are put in because they are terms you may hear in the interview.

Acclimatization

The gradual adjustment of an animal to changes in its environment. Before new pigs are introduced into a herd, they are often exposed to biological matter from that herd to develop resistance to herd disease organisms. (See also ‘Feedback.’).

APP (*Actinobacillus pleuropneumoniae*)

APP is a Gram-negative, capsulated rod that specifically affects swine. Strains vary in virulence and pathogenicity. The bacteria does not persist for long in the environment. APP can cause severe respiratory disease in grower/finisher aged pigs that can lead to death. In nursery pigs (the stage after weaning), sudden death may be the only sign.

Actinobacillus suis

Actinobacillus suis, is a Gram-negative coccobacillus. There may be no signs or sudden death of piglets with symptoms of a bacterial septicemia. Piglets have fever, breathe rapidly and may have blue (cyanotic) extremities. Arthritis, central nervous system (CNS) signs and gastrointestinal problems have been reported and are similar to other causes (e.g., *Salmonella*) of bacterial septicemia. Mortality within affected litters can be up to 50%.

Age Group

This term usually refers to a group of pigs defined either by a set number of head to fill a facility space (e.g., 200 head to fill a room, 500 head to fill a barn, etc.) or by a set length of time to create the group (1 weeks’ worth of weaning or all pigs born in a two week period, etc.) In both cases, the groups of pigs are usually raised to market weight as a single population using management practices common to all (vaccines, vaccination dates, post nursery diet changes, etc). Typically, it will take 1-3 weeks to form a unique age group; therefore, an example age group is “20 to 22 weeks.”

All In/All Out

This describes a management approach in which the animals are moved as a group, allowing a facility unit (pen, room or barn) to be completely empty for a time. All-In, All-Out management usually includes completely cleaning and disinfecting the facility unit before refilling it with animals. All-In, All-Out management can be done at almost any level: room, building or entire site.

Antibiotic

A substance that inhibits or kills microorganisms (e.g., bacteria).

Artificial Insemination

The process by which a gilt or sow is inseminated via an instrument filled with boar semen.

Atrophic rhinitis (*Bordetella/Pasteurella*)

Two bacteria, *Bordetella bronchiseptica* and *Pasteurella multocida*, are thought to cause atrophic rhinitis. *B. bronchiseptica* is a Gram-negative rod and colonizes the nasal passages of swine. *P. multocida* is a Gram-negative coccobacillus and produces a toxin that causes changes in nasal and facial bones. The changes can persist for the life of the pig.

Autogenous Vaccine

These are vaccines made from microorganisms (virus or bacteria) obtained from an individual pig or group of pigs which are then used to immunize others in the same herd.

Biosecurity

The specific practices and procedures used by an operation to prevent entry of, or limit the spread of, diseases/pathogens. Examples of biosecurity would be requiring visitors to shower or use a footbath before entering the hog production areas.

Boar/Young Male for Breeding

Intact male pig used for breeding.

Bred/Breeding

All actions from mating to farrowing that culminate in a gilt or sow becoming pregnant and delivering a litter of piglets.

Bred Gilt

A gilt that is either slated to enter the breeding herd or has done so and has been inseminated either naturally (with a boar) or artificially.

Breeding Females

All gilts and sows used for breeding.

Breeding Males

All boars used for breeding, including teaser boars, who function primarily to detect sows returning to estrus.

Breeding Herd

All gilts, sows and boars actively used for breeding in a time frame on a site. Entry to the breeding herd is usually after a period of holding or quarantine. In the case of females this holding period may occur in a Gilt Development Unit.

Business and Non Business Visitors

A Business Visitor to the site is someone that is there to perform a service to the site. This would include veterinarians (sometimes overlooked as a business visitor), nutritionists, electricians, engineers, plumbers, mechanics, salesmen, etc. A Non Business Visitor could be anyone else like a tour group, wife or children of an employee or family friends on a social call.

CNS (Central Nervous System) Signs

The CNS is the brain and spinal cord. Signs of diseases affecting the CNS can include walking in circles, walking in an uncoordinated manner and/or with a head tilt, pressing the head against the wall or seizures.

Clostridium difficile

This species of *Clostridium* was considered an emerging disease pathogen approximately 10 years ago. Piglets 1 to 7 days of age are usually affected. Diarrhea is the main sign and some piglets die suddenly while others exhibit weight loss and unthriftiness. Usually the whole litter is not affected. Respiratory signs are attributed to fluid in the chest cavity and toxemia (presence of toxic substances in the blood).

***Clostridium perfringens* (strain types A, C and D)**

This species has been recognized for some time as a contributor to death in young pigs. Strain types are classified by the toxin types they produce. All three strain types are associated with diarrhea and death. There is little information on the clinical signs of type D in pigs. What varies among the A and C strains are the findings on necropsy and the morbidity and mortality levels. *C. perfringens* type C infection shows as variable morbidity, high mortality and sudden deaths with bloody diarrhea. Some piglets may be infected chronically. Neonatal diarrhea is also associated with *C. perfringens* type A infection which involves moderate morbidity and lower mortality.

Coccidiosis

This disease manifests as diarrhea in suckling and recently weaned pigs. The disease is usually caused by *Isospora suis*, a parasite. This disease is severe in confinement raised, one to three week old piglets and is less frequent and severe in older, recently weaned piglets.

Continuous Flow

A management approach where animals are moved in and out as needed, in contrast to All in/All out movement. At least one pen, room or building always contains some animals.

Contractee

A person who is responsible for producing a contractor's hogs for a fee or other financial consideration. This person may own the operation where the hogs are raised but not the hogs themselves.

Contractor

Person or firm offering a contract agreement to a producer (contractee) to raise the person's or firm's hogs. The contractor typically owns the hogs and might supply the feed, medicine or other such items, but does not take care of the animals.

Cull (sows, gilts and boars) or “Culled Breeding Stock”

The action of removing animals from the herd or slating them for removal for a reason usually related to poor performance (e.g., sows no longer suitable for breeding). Usually, these animals are sent to slaughter (or rendering) similar to market hogs or euthanized on or off the site.

Danish Entry or “Bench” system

A biosecurity method to prevent entry of disease into a swine housing area. A single room Danish entry set up includes a bench that divides the room in half. Clothing worn into the room from outside is hung on hooks in the “dirty” side. The employee/visitor sits on the bench divider and removes his or her footwear without letting socking feet touch the floor. After removing the footwear, the visitor spins around and puts on farm footwear to cross over to the “clean” area. The Danish entry method also has been used in combination with a shower which is the next step on the “clean” side <http://porkgateway.org/resource/biosecurity-of-pigs-and-farm-security/>.

Distiller's Dried Grain and Solubles (DDGS)

DDGS is a byproduct of the process of ethanol production. They can be used in a pig diet to supplement protein, fat, minerals and vitamins.

***E. coli* (*Escherichia coli*)**

E. coli is a Gram-negative, flagellated bacilli. *E. coli* is the more general name for a group of bacteria of which some perform necessary intestinal function and some cause disease, usually of an intestinal nature (diarrhea). The age of onset may range from within a few days of birth to after weaning.

Edema disease (*E.coli* enterotoxemia)

Toxins from certain types of *E. coli* in the intestines of nursery pigs (after weaning) can result in edema (swelling) throughout the piglet; this often can be seen as swollen eyelids. Some neurological signs, like walking in circles or not being able to get up and diarrhea can be seen.

***E. coli* (K88, K99, 987P, F41)**

E. coli (*Escherichia coli*) has an appendage called fimbriae which are used to adhere to one another and to animal cells, such as cells in the intestines of pigs. There are five common fimbriae types of *E. coli* found in pigs: K88, K99, F41, 987P and F18. Vaccines can be made to these fimbriae types.

Electronic Sow/Gilt Feeding

Group housed sows and gilts eat by entering a machine individually that portions out their feed and they eat it within the machine.

Enteric disease

The name for any disease caused by an intestinal infection.

Erysipelas

This is a disease caused by *Erysipelothrix rhusiopathiae*, a Gram-positive rod bacteria. Five different kinds of the disease are recognized. In the most common type, a finisher (market) pig will wander off from the rest of the group and may appear chilled and cold (typical of a high fever). The pig is generally found lying down and when encouraged to rise will rapidly lie down again. The pig appears to have a sore abdomen and will walk stiffly and “tucked up” (e.g., back arched). Sows may abort with the high temperature and boars may become infertile, which may be permanent or last about 6 weeks. The most classic sign, which appears 2 to 3 days after the pig is infected, is diamond shaped skin marks, which can be pink to dark purple. Pigs untreated might die or start to recover in 4 to 7 days.

Facility

A structure and/or area where the animals are located or to which they have access.

Farrow

When a sow or gilt gives birth to a litter of piglets.

Farrowing Phase

Production phase in which sows and gilts give birth to piglets.

Feedback

The process of feeding essences of feces or other biologic material from swine that are already on site to new herd entries to expose them to pathogens endemic to the site without making them sick. Other materials could include placentas and stillborns.

Feeder Pigs

Weaned pigs weighing approximately 40-60 pounds that are to be fed out for the slaughter market or sold as is.

Feral Swine or Hogs

Wild, free roaming swine. They can carry and transmit diseases to domestic swine and other animals, including humans.

Gastric ulcers

These are ulcers usually found around the esophageal opening of the stomach. These ulcers may cause death from blood loss in grower/finisher aged and older pigs or make them unthrifty. Any situation that results in an empty stomach is a risk factor (e.g., off feed from another illness).

Gestation

Time period from conception to birth, typically about 114 days in pigs.

Gestation Phase

A time period in a sow's or gilt's life when they are presumed pregnant but have not yet farrowed.

Gilt

A sexually mature female pig that has not yet produced a litter of piglets.

Gilt Development Unit (GDU)

A facility dedicated to replacement gilts destined for the breeding herd. The GDU prepares the gilt for entry into the breeding herd proper often by exposing her to pathogens endemic to the breeding herd (which may be on another site) via vaccination or other acclimations such as feedback. The GDU also often provides boar exposure and time to gain weight. Gilts may be kept there through weaning of first litter and rebreeding.

(<https://www.ipic.iastate.edu/SowBridge/SB0112GDU.pdf>)

Glasser's Disease (*Hemophilus parasuis*)

H. parasuis normally inhabits the tonsils but can sometimes travel to the Central Nervous System (CNS), causing inflammation and CNS signs such as tremors, lack of coordination and an inability to rise in nursery aged pigs. Occasionally, swelling and cyanosis (bluish/purplish color) can be noticed in the legs and feet. As the condition progresses, the pig will fall over and thrash all four legs. Death can occur quickly, especially if the pig is stressed.

Greasy Pig Disease (*Staphylococcus hyicus*)

The technical name for this is Exudative (the greasy part) Epidermitis. It is only occasionally seen on most swine farms, usually in pigs less than two months old. *Staph. hyicus* is a Gram-positive coccus and is the etiologic agent of record, but the complete cause of Exudative Epidermitis is unclear.

Group

For this questionnaire, a group of animals is essentially animals united under a common factor such as age, similar feed, similar management, similar production phase timing, similar farrowing time, etc. For example, a delivery of pigs might be a group. It's whatever the respondent calls it.

Group Housing or Pens (sows or gilts in gestation)

Gestating sows and gilts that are housed together in pens, as opposed to housing in individual crates during gestation.

Grower/Finisher Aged Pigs

The time between when a weaned pig weighs about 40–60 pounds (1-2 months of age) and when the pig is at market or slaughter weight (approximately 300 pounds or 5-6 months of age). Instead of going to market some of these pigs may be groomed to become replacements in the breeding herd.

Grower/Finisher Facility

A structure and/or area where grower/finisher aged pigs are located or to which they have access. This term (generally) refers to the physical location where grower/finisher aged pigs are kept in the grower/finisher phase.

Grower/Finisher Phase

Production phase (lasting 2-3 months) in which hogs are fed out from 40 to 60 pounds to final market weight for slaughter.

Growth Promotion (Antimicrobials)

Antimicrobials are administered, usually in feed, solely to increase growth rates and improve feed efficiency of the animals. <https://www.avma.org/KB/Resources/FAQs/Pages/Antimicrobial-Use-and-Antimicrobial-Resistance-FAQs.aspx>

Ileitis/Proliferative enteritis (*Lawsonia intracellularis*)

A disease of grower/finisher pigs caused by the bacterium *Lawsonia intracellularis*. Ileitis is inflammation of the ileum, which is part of the small intestine. Ileitis can manifest as acute illness (death or anemia accompanied by watery, dark or bright red diarrhea) or chronic illness (ranging from irregular bouts of diarrhea and lack of appetite to severe emaciation and persistent diarrhea).

Individual Stall/Crate

Usually an enclosure built for one gilt or sow which houses her during the gestation phase.

Influenza

In swine, a disease caused by the Swine Influenza Virus. Humans can transmit the disease to pigs and vice versa. The disease is more common in the spring and autumn in finisher (market) pigs. Sick pigs look depressed and huddle or pile on top of each other for warmth, as is typical in an animal with a fever. The animals often are open mouth breathing and breathing is labored. When the pigs are moved, many cough, some uncontrollably (paroxysm coughing). They often have a nasal discharge and puffy eyes. Mortality is generally low and they recover in about a week.

Isolation or Quarantine

A biosecurity procedure where a pig or group of pigs is held separately from other pigs for a period of time (such as 30 days) to permit evaluation of health and look for signs of disease.

Leptospirosis

A condition caused by a large family of bacteria (*Leptospira* spp.) present in all parts of the world. Some are potentially fatal in humans when transmitted by pig urine. In swine, the most common forms of the disease are in adult sows and boars and are acute (no appetite, fever, listlessness and possibly yellow skin or jaundice) or chronic (abortions, stillbirths and the birth of weak pigs).

Lice

Lice or Louse infections in swine is due to an external parasite, usually *Haematopinus suis*. All production types of swine are susceptible to infestation. Cases are generally more severe in winter although Lice persist throughout the year. Spread of lice is by direct body contact.

Litter

The product of a farrowing. A collection of newborn pigs born at one time to a sow.

Mange

Mange in swine is most often Sarcoptic Mange caused by the sarcoptic mange mite (*Sarcoptes scabiei* var *suis*). The most common clinical sign is itchiness and small red bumps on the skin. Sarcoptic mange is a common ectoparasitic disease of swine. Spread of mites is by direct body contact. Mites from the sow may invade piglets within a few hours of birth.

Market Pig (Hog)

A weaned pig intended for slaughter as opposed to breeding. Market hogs usually weigh 300 pounds or more when sent to slaughter. We indicate 60 pounds in the VMOQ as an entry weight to this designation, but it's whatever the weight the respondent feels is the right entry weight for their production system.

Mate/Mating

Natural or artificial insemination of a breeding female. Each time there is an insemination it is considered a separate mating. All the matings within one heat period are called a **service**. A form of natural mating is pen mating.

Meningitis

This is inflammation or irritation of the tissues surrounding the brain and spinal cord (the CNS or Central Nervous System). It invariably leads to CNS signs, such as lack of coordination or even death. (See also "CNS signs.")

Modified Live Vaccine (MLV)

Viral or bacterial vaccines may be killed or live. Modified Live Vaccines contain bacteria or a virus that has been treated during vaccine production so that disease causing ability has been eliminated. MLVs have advantages over killed vaccines such as conferring a longer lasting immune response with fewer doses of the vaccine, but usually do not remain as stable (effective) as long as killed vaccines in storage.

Mucosal Products (such as dried porcine soluble or PEP products)

These are alternative protein sources in swine diets. Small chain peptides are processed from the mucosa linings of pig intestines (taken from slaughter plants). Mucosal products (e.g., PEP2) vary based on what carriers they are dried with. For example, PEP2 is dried with vegetable protein alone.

Mummy (ies)

A dry, shriveled, stillborn pig, often black in color. Mummies are sometimes caused by an infection of the sow during gestation.

Mycoplasma Pneumonia (*Mycoplasma hyopneumoniae*)

This is a very small bacteria. *M. hyopneumoniae* infects the lungs of all ages of pigs, but especially market pigs, causing pneumonia, which manifests in signs such as coughing (particularly when a pig gets up), labored breathing, poor growth rates, reduced appetite and increased post-weaning mortality. Fever might be present. Another variety of *Mycoplasma* can infect the joints, causing arthritis and lameness in pigs.

Nursery Aged Pigs

The time between weaning and about 40–60 pounds or 1-2 months of age.

Nursery Facility

A structure and/or area where nursery aged pigs are located or to which they have access. This term (generally) refers to the physical location where nursery aged pigs are kept in the nursery phase.

Nursery Phase

A production phase in which newly weaned pigs are managed, fed and housed until they go into a grower/finisher management phase. This phase usually lasts until the pig is about 50-60 pounds so for five to eight weeks after weaning.

Nursing pigs

Piglets nursing on their mother.

“Off-site breeding project”

Usually when one breeding site is depopulated and a new site is filled with new breeding animals.

Operation

The overall business and top level management unit for a swine rearing facility, which might contain one or more sites. For example, “EB and Son Hogs” might be the name of an operation encompassing all production phases of swine rearing (e.g., gestation, farrowing, nursery and grower/finisher) on one or more **sites** (geographic locations), each devoted to a different production phase or combination of phases. (See also “Site.”)

Out of Business

A farm or ranch operator who no longer raises crops, livestock or poultry. He may own farmland which is being operated by someone else.

Parity

The number of times a sow has farrowed in her lifetime. The parity for a gilt is 0.

Parvovirus

A very small virus resistant to disinfectants and the environment. Parvovirus infection in pigs often has no clinical signs in adult pigs. Infected sows might show increased fetal death, including mummified and stillborn piglets.

Porcine epidemic diarrhea (PED)/Porcine deltacoronavirus (PDCoV)

Both are Coronaviruses discovered in the United States approximately six years ago and they have similar clinical signs. Sows go off feed and sometimes vomit and piglets often become emaciated and die within a short time.

Polyserositis

Inflammation of several serous membranes such as the lung pleura, pericardium and peritoneum at the same time. In pigs there are a few pathogens that can cause this, notably, Glasser's Disease, *Streptococcus suis*, *E. coli* and *Mycoplasma hyorhinis*.

Porcine Circovirus 2 (PCV2)

A small, circular DNA virus known for environmental hardiness. It is a necessary but not sufficient etiologic agent involved in Porcine Circovirus Associated Disease(s) (PCVAD).

Porcine Circovirus Associated Disease (PCVAD, formerly known as Post-weaning Multisystemic Wasting Syndrome or PMWS)

A set of signs seen in young pigs (usually 8–16 weeks old). Signs usually start around three weeks after weaning. Pigs show weight loss, pale skin and enlarged lymph nodes. They can develop yellow skin (jaundice) and experience a decreased growth rate. It tends to be a slow and progressive disease with a high fatality rate in affected pigs. This disease was initially described about 25 years ago. Vaccination has greatly decreased the incidence of PCVAD.

Porcine dermatitis and nephropathy syndrome (PDNS)

A syndrome also associated with the presence of PCV2 and infrequently seen. Like PCVAD, PDNS is a collection of signs in pigs from 8-18 weeks of age. Signs can include jaundice and blotches on the skin that are often most evident on the hind legs and perineum. Like PCVAD, most pigs with PDNS eventually die.

PRRS (Porcine Reproductive and Respiratory Syndrome)

A disease caused by the PRRS virus. In herds in which the virus is established, the signs are not readily evident. In the adult pig, clinical signs are generally reproductive (may not farrow as often or produce as many piglets), mild fever and poor appetite. In piglets to finishers, clinical signs are generally those of secondary infections with other agents, particularly bacterial lung invaders. In a herd that has never had the virus before or receives a new strain, the results are initially devastating, with early farrowings (at 105 to 112 days gestation instead of 114). There is an increase in stillborn, mummified and weak live born piglets, as well as increased preweaning mortality.

Premises

A site, including the land and swine buildings on it.

Pseudorabies (PRV, Pseudorabies Virus)

A disease caused by the Pseudorabies Virus (PRV). It is rare, but during an outbreak there are often severe CNS signs in piglets. Piglets may present as sitting like a dog because of posterior paralysis and mortality is high. Weaned pigs might show fewer CNS signs but more respiratory signs, such as open mouth breathing. In adults, reproductive signs predominate. Sows may abort and animals infected close to term give birth to stillborn or weak piglets.

Replacement (animals)

Usually a breeding animal brought in young (e.g., a gilt) to replace breeding animals lost to culling. This will maintain breeding herd size and production. However, a replacement can be any stage or type of pig. For example, if a producer does not have enough weaned pigs to fill their nursery facility they may bring weaned pigs in from somewhere else and call them "replacements."

Reproductive Failure (such as failure to rebreed or farrow)

A general term used to describe a gilt or sow that is inferior in her ability to produce piglets. The term includes a variety of more specific problems such as a failure to rebreed or failure to farrow or small litter sizes. Reproductive failure is one reason to cull sows and gilts.

Rotavirus

A virus that causes a loose, watery diarrhea in piglets either in the late suckling or early nursery stage.

Roundworm infection (Ascariasis)

A roundworm infection that is often caused by *Ascaris suum*. Ascariasis is more severe in young pigs. *A. suum* eggs can survive for as long as 15 years in the environment. Eggs can be transported by pigs, insects, fomites, dust and pig manure. Ascariasis causes inflammation in the gastrointestinal tract and migrating larvae cause lesions in the liver and lungs. Signs include failure to gain weight, rough hair coats, chronic coughing and sometimes abdominal expiratory breathing problems (“thumping”).

Salmonella

A bacterium with two impacts on the swine industry. The first is disease that affects the pig. Often, pigs infected with *Salmonella* show no clinical signs, but in suckling pigs, the disease can present as reluctance to move, anorexia and fever. The piglet might have a shallow cough and will huddle with other piglets. Sometimes piglets are found dead, with blue/purple (cyanotic) extremities. The piglet might develop soft, yellow feces or diarrhea. *Salmonella* infection may also present as watery, yellow diarrhea which reoccurs over the period of a couple weeks.

The second way *Salmonella* affects the swine industry is through its presence in the gastrointestinal tract of most market pigs, which can cause the meat to become contaminated during the butchering process. *Salmonella* ingested by humans can result in a range of signs, from simple diarrhea to death.

Scours

An industry term for diarrhea in pigs. Many diseases or conditions can cause scours.

Seneca Valley Virus (SVV or SVA)

A virus that causes vesicles upon the snout and hooves of swine and is clinically indistinguishable from other, more dangerous foreign animal diseases, such as foot and mouth disease.

Service

One or more matings within a single estrous cycle.

Site (separate)

One geographic location or address that functions to produce one or more production phases (e.g., breeding, nursery, grower/finish). A site can be a part of an operation or it can be the whole operation, if the operation has only one site. (See also “Operation”).

Sow

A female pig that has produced one or more litters of piglets.

Spray Dried Plasma

A special protein source in pig diets. Spray Dried Plasma (SDP) is made from either bovine or porcine blood and can be sold as a mixture of species plasma or as single species plasma (such as porcine alone). SDP has frequently been used in pig starter diets for its positive effects on feed intake, growth and feed efficiency during the stressful post-weaning phase of production.

Streptococcus suis

The most common cause of meningitis in nursery pigs. The pig becomes uncoordinated, often with uncontrolled eye movements, is feverish and, as the condition progresses, falls over and thrashes with all four legs on the floor, similar to signs associated with *Hemophilus parasuis*. Death can occur quickly, especially if the pig is stressed. *Strep. suis* is Gram-positive and lives on the tonsils and upper respiratory tract of the normal healthy pig.

Swine Dysentery

An infectious disease usually caused by one of two bacteria (*Brachyspira hyodysenteriae* and *Brachyspira pilosicoli*) that typically affect grow/finish aged pigs. However, in acute outbreaks in naive herds, it can affect all age groups from suckling piglets to adult sows. Clinical signs include diarrhea (with or without blood) and severity depends on the individual pig, pig age and whether the herd has experienced the disease and developed some immunity to it. One or two pigs might die before other pigs show any signs. Some pigs appear weak and uncoordinated. The disease appears to be cyclic and reappears at 3-4 week intervals.

Teaser Boar (heat check boar)

A boar used to detect estrus/heat in a female but not mate with her. They may be vasectomized. The presence of the teaser boar will allow sight, sound, smell and touch to increase the number of females showing a standing response. It is important that these teaser boars be allowed to mount and breed occasionally.

TGE (Transmissible gastroenteritis)

An infectious disease caused by a coronavirus. Piglets less than 21 days of age are all affected and generally die. Clinical signs initially include watery diarrhea (in the piglet, foul smelling, yellowish green diarrhea that often contains undigested milk), vomiting and loss of appetite in pigs of all ages. Nursery pigs affected with this disease generally don't grow well, but growers/finishers are usually mildly affected and will survive if their water supplies are adequate.

Unmated

A breeding female that has not yet been inseminated either naturally (with a boar) or artificially. This term pertains to a female while in a current estrous cycle.

Unmated Replacement Gilt

A gilt that is slated to enter the breeding herd that has not yet been inseminated either naturally (with a boar) or artificially.

Veterinarian Client Patient Relationship (VCPR)

A VCPR exists when your veterinarian knows your pigs well enough to be able to diagnose and treat any medical conditions they develop. The VCPR allows your veterinarian to take responsibility for making clinical judgments about pigs, accepting the responsibility for providing them with medical care, keeping a written record of your pigs' medical care, advising you about the benefits and risks of different treatment options and providing oversight of treatment, compliance (your follow through on their recommendations) and outcome. A VCPR is established when your veterinarian examines your animals in person and is maintained by regular veterinary visits as needed to monitor your animals' health.

<https://www.avma.org/public/PetCare/Pages/VCPR-FAQs.aspx>.

Weaned Pigs (Hogs)

Piglets no longer nursing on their mother. This includes nursery and grower/finisher age pigs.

Weaning

The process of transitioning baby pigs from mother's milk to solid food, which also implies removal from the mother.

Weaning Age

The age at weaning which is approximately two to four weeks of age.

Wean-to-Finish Facility

A structure and/or area where both nursery aged pigs and grower/finish aged pigs are located or to which they have access. The distinguishing factor here is that swine are kept in this facility throughout both the nursery phase and the grower/finisher phase, rather than there being separate nursery and grower/finisher facilities.

Wean-to-finish Phase

Production phase in which newly weaned pigs are managed, fed and housed until they go to slaughter or are sold. It combines a nursery and a grower/finisher phase. The pigs are managed (e.g., fed) like nursery aged pigs from the time they come in until about two to four months of age, when they are subsequently treated like grower/finisher pigs. The pen or enclosure to which they are initially moved often was designed to hold older, larger pigs, so many of these newly weaned piglets can fit in the pen. As the pigs grow, some have to be moved out to a new pen or enclosure to prevent overcrowding. This second move is sometimes referred to as the “split.”

Chapter 3 – VMO Procedures

THINGS TO DO PRIOR TO THE FIRST CONTACT

Familiarize yourself with the swine operation and sites to be visited as much as you can by reviewing the information your Coordinator gave to you concerning the interviews conducted by NASS. This manual is designed to familiarize you with the procedures around contacting producers and administering the VMOQ, as well as the content within the VMOQ itself.

Initially, obtain as many blank VMOQs as LES site visits were done. We need one VMOQ for each of the sites that were turned over. For each VMOQ, break up the NAHMS ID number (6 digits total) into its two digit State (first two digits of the NAHMS ID) and four digit ID number (last four digits of the NAHMS ID). There will also be a two digit Site Number. Write them on the first page and last page of the VMOQ in the State FIPS, Operation # and Site # boxes, respectively.

Things to bring with you on your initial contacts with the *operation contact* and subsequently at each site visit:

- Two copies of the VMOQ (One for the *operation contact* or *site contact*)
- This manual
- The PRRS Status Decision Chart.
- The Vaccine Reference Sheet.
- The Antibiotics Reference Sheet.
- The LPIC
- **Optional:** The study launch sheet, biological benefits/timelines sheet and Respondent Guide
- Calculator and pens/pencils.
- Your business card to leave with the *operation contact* and subsequent *site contacts*.

Your first call will be to the *operation contact*. The purpose of the call will be to introduce yourself and to set up a time to meet on the phone or in person to go over the LPIC. This form allows for the VMOQ information and biologics to be collected from sites within the operation that were enumerated by the LES. Bringing along the other things in a paper or e format (in case this is not a face to face visit) in the list above on this first visit is in case the *operation contact* desires some background.

If the initial operation contact is successful the second call will be to the site contacts. The purpose of the call will also be to introduce yourself, to set up a time to meet on the phone or in person to go over the LPIC and go through the VMOQ after that.

Things to bring with you on your site Biologic collection visits (may occur at the same VMOQ site interviews):

- Oral fluid and Fecal Collection Kit (directions inside)
- Clean coveralls, disposable boot covers and disposable gloves
- A bucket with brush and disinfectant (such as One-Stroke)
- Hand sanitizer

NOTE: Farm biosecurity is much tighter since the Coronavirus outbreak in 2013 and 2014. Compounding that is the current fear of African Swine Fever entering the United States. Don't be surprised if the *operation* or *site contacts* insist on meeting you at a place of their choice *that is not the farm itself*.

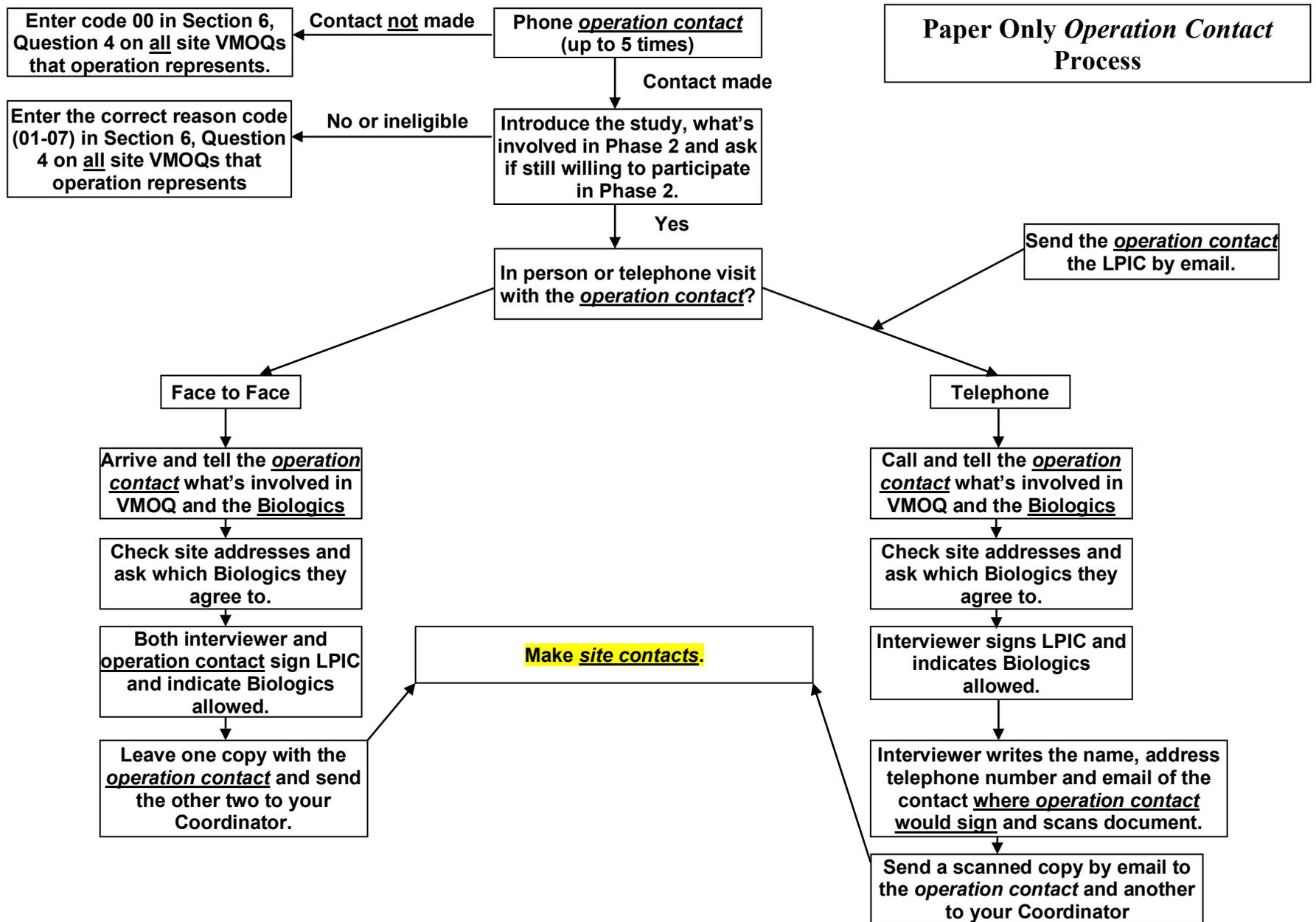
VMOQ INTERVIEW(S) STEPS WITH PAPER AND MICO

Prior to making their contacts, the person assigned to the contacts will have to decide whether they will submit their work using the VMOQ paper **or** MiCo form. The procedures differ between the two. *If an interviewer chooses MiCo, then its fine to gather the information using the paper VMOQ and then later submit it through MiCo.*

In either case, first practice an introduction that briefly explains what you would like to do as part of this study using a style that gains an *operation/site contacts'* cooperation.

Operation Contact and interview. **PAPER**

1. If you are unable to make contact with the *operation contact* after 5 contact attempts, **enter code 00 in Section 6, Question 4 on all site VMOQs that operation represents.** For example, if there were 4 LES site questionnaires done, fill out the State FIPS, Operation #, Site #, Interviewer name and Date at the very beginning and the top of Section 6 for the 4 blank VMOQs and enter reason code "00" in Section 6, Question 4 in each. If the phone number or other contact information seems invalid, let your State VS Coordinator know. They will contact NAHMS staff, who can assist in finding correct contact information, if needed.
2. When you get ahold of the *operation contact* for the first time explain how you obtained their name and permission to talk to them. Use your introduction to explain what you are calling about. Ask if they are willing to meet to briefly discuss what's involved in Phase 2 of the study. If the contact would rather not participate try to change their mind (see "Benefits to the Swine Industry" in Chapter 1 or the sales points mentioned earlier). If they still don't want to participate, fill out the relevant number of blank VMOQs as described above and **enter the correct reason code (01-07) in Section 6, Question 4 on all site VMOQs that operation represents and thank them for their time.**
3. When the *operation contact* agrees to meet/talk further, ask if they prefer face to face or telephone and if the former get directions to the meeting place. If telephone contact only is preferred you can continue now or offer to call back. Also, **if telephone, ask if they received and still have the LPIC they should have received in the mail. If not, send them the LPIC by email prior to the interview.**
4. If you have a face to face meeting, introduce the VMOQ contents briefly and discuss the potential biologic collections on their sites. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol not one they might have already for sites with Grower/Finisher pigs.* Check the site addresses and ask the *operation contact* to go through and sign the LPIC. Further details will be provided in Chapter 4. Leave copies of the LPIC, your card and any other materials that you have that the *operation contact* wants. Keep two copies of the LPIC and get them to your Coordinator.
5. If you have a telephone meeting, introduce the VMOQ contents briefly and discuss the potential biologic collections on their sites. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol not one they might have already for sites with Grower/Finisher pigs.* Check the site addresses and go through the LPIC verbally with the *operation contact*. Further details will be provided in Chapter 4. Send them your contact information and other materials that you have that the *operation contact* wants. Sign the LPIC, indicate the biologics agreed to and where the contact would sign write their contact information. Scan the LPIC and send it to the *operation contact* and your Coordinator.

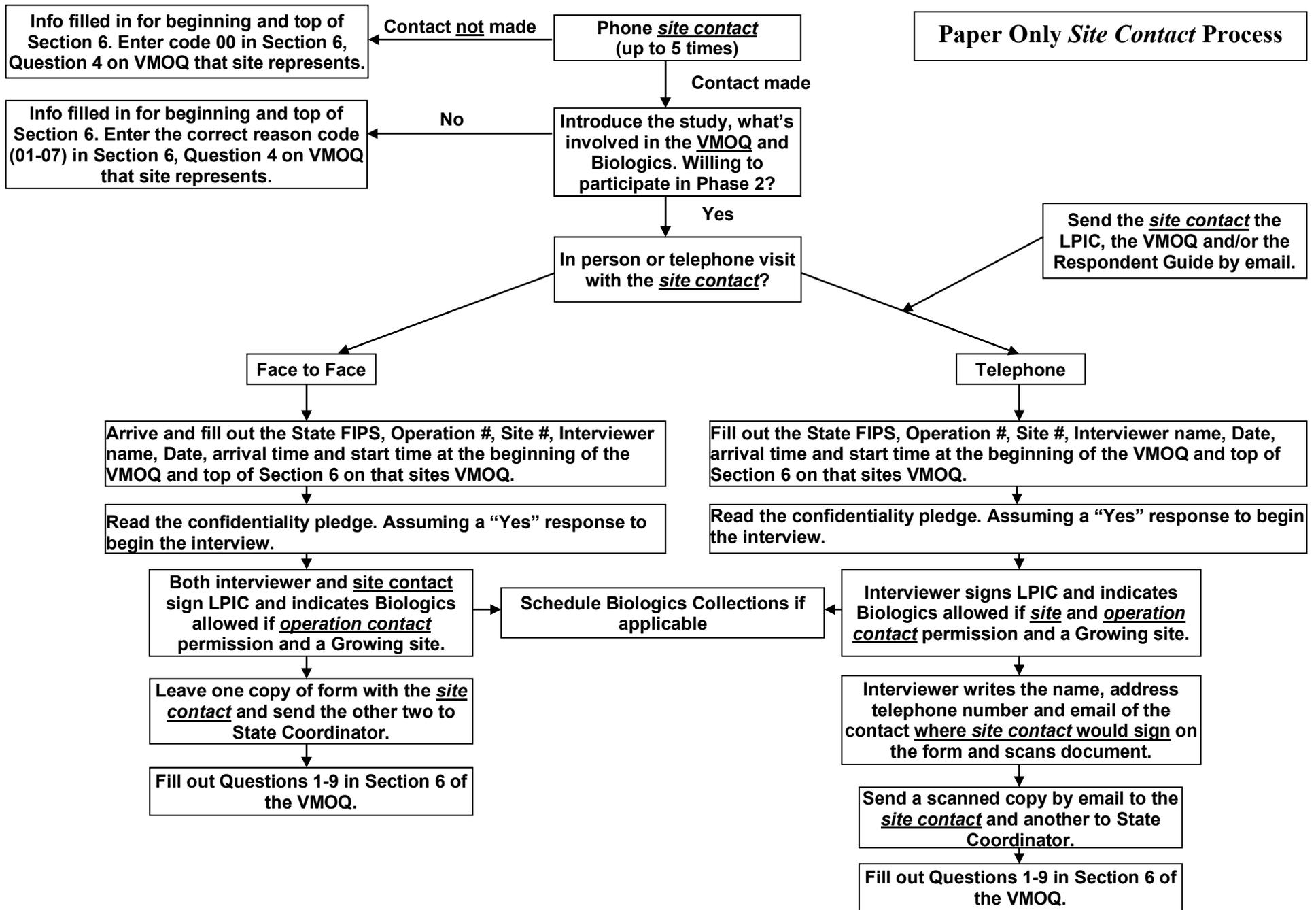


Site Contact and interview. **PAPER**

1. If you are unable to make contact with the *site contact*, check with the *operation contact* to make sure you have the right contact information. If the contact information is good, after 5 contact attempts, fill out the State FIPS, Operation #, Site #, Interviewer name and Date at the beginning and top of Section 6 on that site's blank VMOQ and **enter reason code "00" in Section 6, Question 4.**
2. When you get ahold of the *site contact* for the first time explain how you obtained their name and permission to talk to them. Use your introduction to explain what would be covered and the time involved (about 1.5 hours to review the program and complete the VMOQ). That time will be shorter if the site raises only breeding pigs or only growing pigs (skip out of sections). If the *site contact* refuses the interview, fill out the State FIPS, Operation #, Site #, Interviewer name and Date at the beginning and top of Section 6 and **enter the correct reason code (01-07) in Section 6, Question 4 on that site's VMOQ and thank them for their time.** You might want to let the *operation contact* know this happened in case they can change the *site contact's* mind.
3. When the *site contact* agrees to meet/talk further, ask if they prefer face to face or telephone and if the former get directions to the meeting place if you can. Review with the site contact the type of site they have (e.g., breeding site or grower site or both) based on the information from NASS. Tell the *site contact* that specific records for feed formulations and medications to growing pigs given will expedite the interview. You can tell them that the time frame in the VMOQ is predominantly between December 1, 2020 and May 31, 2021 (inclusive of the beginning and end dates) in case they want to have records in that time frame available at the time of the interview. Schedule the interview. If this will be a telephone interview, send the *site contact* the LPIC, the VMOQ and/or the Respondent Guide by email. ***Even if it will be a face to face interview it doesn't hurt to send them these things prior to the interview.***
4. At the beginning of the phone or in person interview, fill out the State FIPS, Operation #, Site #, Interviewer name, Date, arrival time and start time at the beginning and top of Section 6 on that site's blank VMOQ. Read the confidentiality pledge. Further details on what they are agreeing to will be provided in Chapter 4. Look for a "Yes" response to begin the interview.
5. If you had a face to face interview, ask the *site contact* to go through and sign the LPIC after the interview and discuss the potential biologic collections if you received consent from the *operation contact* and if they have Grower/Finishers. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol.* Check the correct boxes on page 2 of the LPIC. Then leave copies of the LPIC, your card and any other materials that you have that the *site contact* wants. **Thank them at the end and fill out Questions 1-9 in Section 6.**
6. If you had a telephone interview, go through the LPIC verbally with the *site contact* after the interview. Discuss the potential biologic collections if you received consent from the *operation contact* and if they have Grower/Finishers. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol.* Check the correct boxes on page 2 of the LPIC. Send them your contact information and other materials that you have that the *site contact* wants. **Thank them at the end and fill out Questions 1-9 in Section 6.** Sign the LPIC, indicate the biologics agreed to and where the contact would sign, write their contact information. Scan the LPIC and send it to the *site contact* and your Coordinator.

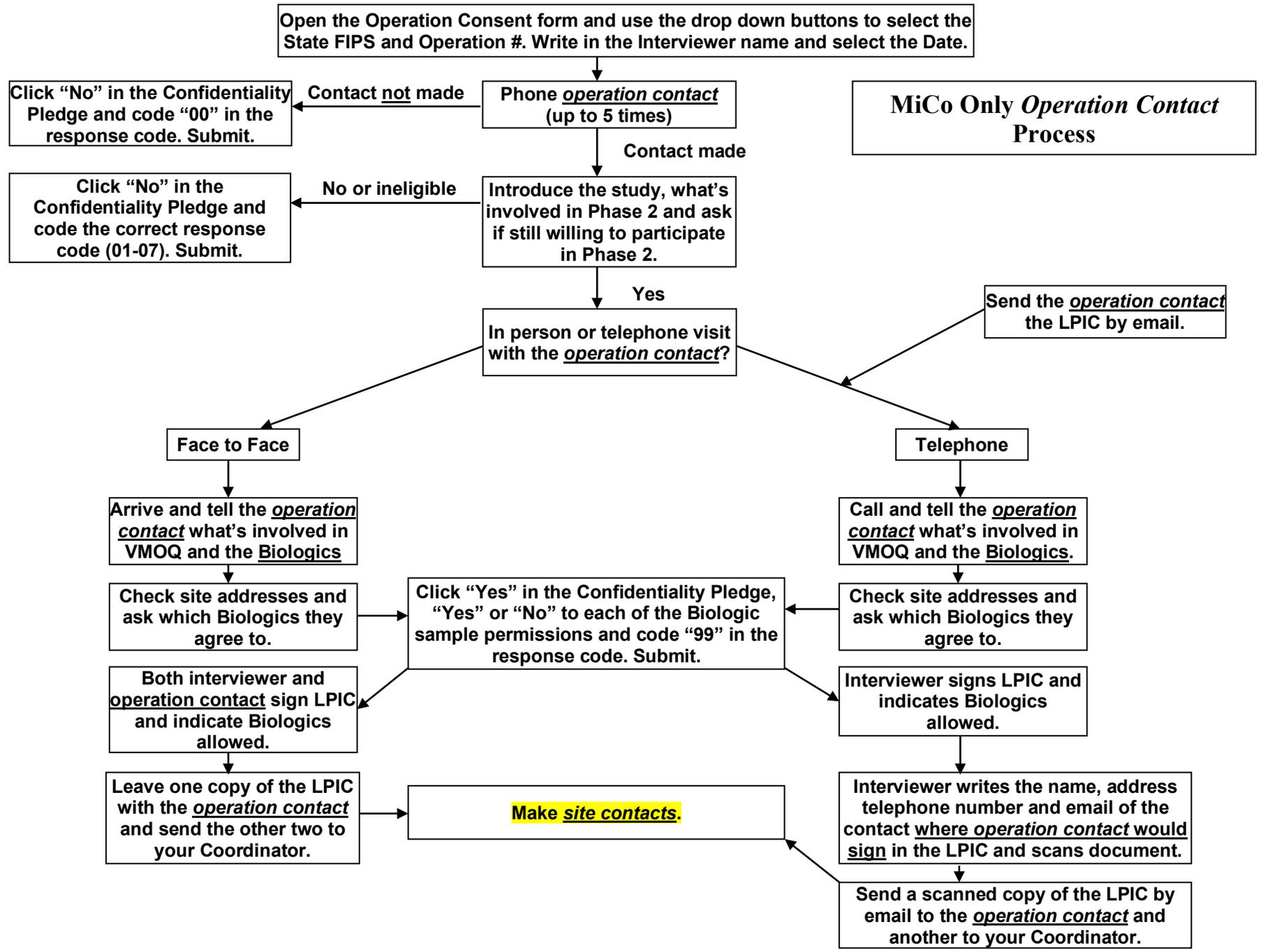
7. Schedule the biologics collections if applicable. **See the Biologics manual.**
8. Check to see if the VMOQ and any biologics collections sheets later have legible responses. If not, please recopy them. Sometimes scribbling stuff fast and short-handing things becomes necessary to keep up with the contact's answers or keep the interview moving along, but it can be difficult for NAHMS staff and labs to decipher some of the writing.
9. Send or take the completed VMOQs with the LPICs to the State office or your VS State Coordinator.
10. **COORDINATORS:** Please send the VMOQ and a copy of the LPICs for each site visited to NAHMS together. The VMOQs and the LPICs should be shipped monthly to:

Abby Zehr; USDA-APHIS-VS;
2150 Centre Ave, Bldg B MS2E7;
Fort Collins, CO 80526,
(970) 494-7252.



Operation Contact and interview. **MiCo** Log in with eauth and go to “2021 NAHMS Swine Large Enterprise-Informed Consent” form. *See also MiCo manual section.*

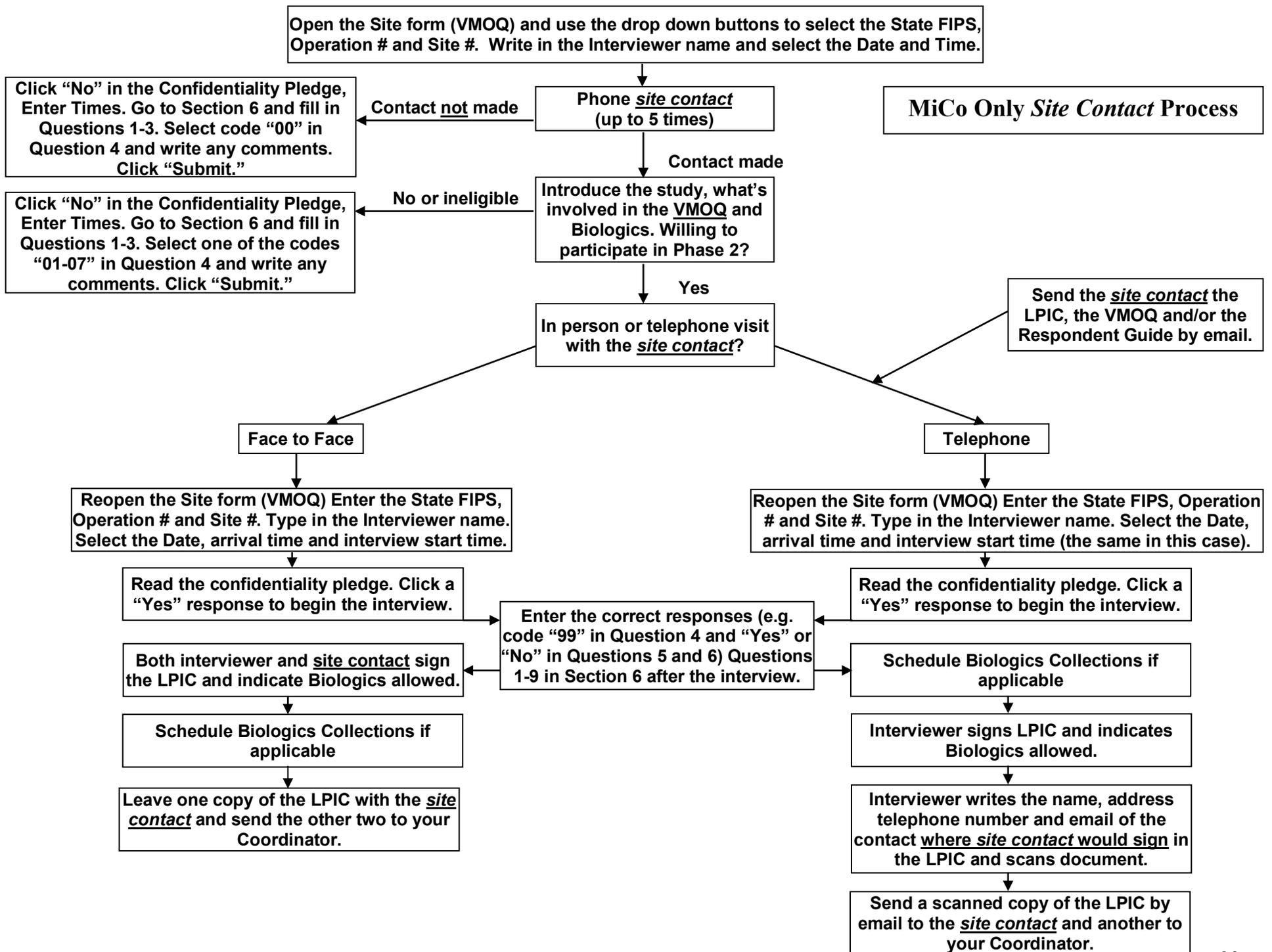
1. Open the form and use the drop down buttons to select the State FIPS and Operation #. Write in the Interviewer name and select the Date.
2. If you are unable to make contact with the *operation contact* after 5 contact attempts, **click “No” in the Confidentiality Pledge and code “00” in the response code. Click “Submit.”** If the phone number or other contact information seems invalid, let your State VS Coordinator know. They will contact NAHMS staff, who can assist in finding good contact information, if needed.
3. When you get ahold of the *operation contact* for the first time explain how you obtained their name and permission to talk to them. Use your introduction to explain what you are calling about. Ask if they are willing to meet to briefly. Discuss what’s involved in Phase 2 of the study. If the contact would rather not participate try to change their mind (see “Benefits to the Swine Industry” in Chapter 1 or the sales points mentioned earlier). If they still don’t want to participate **or** are no longer in business, **click “No” in the Confidentiality Pledge and enter the correct reason (01-07) in the response code. Click “Submit.” Thank them for their time.**
4. When the *operation contact* agrees to meet/talk further, ask if they prefer face to face or telephone and if the former get directions to the meeting place. If telephone contact only is preferred you can continue now or offer to call back. Also, **if telephone, ask if they received and still have the LPIC they should have received in the mail. If not, send them the LPIC by email prior to the interview.**
5. If you have a face to face meeting, introduce the VMOQ (site form) contents briefly and discuss the potential biologic collections on their sites. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol not one they might have already for sites with Grower/Finisher pigs.* Check the site addresses and ask the *operation contact* to go through and sign the LPIC. Further details will be provided in Chapter 4. Leave copies of the LPIC, your card and any other materials that you have that the *operation contact* wants. Keep two copies of the LPIC and get them to your Coordinator. **On the form, click “Yes” in the Confidentiality Pledge, “Yes” or “No” to each of the Biologic sample permissions and verify code “99” is recorded as the response code. Click “Submit.” Thank them for their time.**
6. If you have a telephone meeting, introduce the VMOQ contents briefly and discuss the potential biologic collections on their sites. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol not one they might have already for sites with Grower/Finisher pigs.* Check the site addresses and go through the LPIC verbally with the *operation contact*. Further details will be provided in Chapter 4. Send them your contact information and other materials that you have that the *operation contact* wants. Sign the LPIC, indicate the biologics agreed to and where the contact would sign write their contact information. Scan the LPIC and send one copy to the *operation contact* and one to your Coordinator. **On the form, click “Yes” in the Confidentiality Pledge, “Yes” or “No” to each of the Biologic sample permissions and verify code “99” is recorded as the response code. Click “Submit.” Thank them for their time.**



Site Contact and interview. **MiCo**-Mi-Apps (usda.gov). Log in with eauth and go to “Swine Study 2021” site form. *See also MiCo manual section.*

1. Open the form and use the drop down buttons to select the State FIPS, Operation # and Site # (per NASS LES records). Write in the Interviewer name and select the Date.
2. If you are unable to make contact with the *site contact*, check with the *operation contact* to make sure you have the right contact information. If the contact information is good, after 5 contact attempts, **click “No” in the Confidentiality Pledge, add any Comments, select the “Arrival” and “Start” time as the time you gave up calling. Hit the lower right arrow to get to Section 6 and fill in Questions 1-3. Select code “00” in Question 4 and write any comments. Click “Submit.”**
3. When you get ahold of the *site contact* for the first time explain how you obtained their name and permission to talk to them. Use your introduction to explain what would be covered and the time involved (about 1.5 hours to review the program and complete the site form or VMOQ). That time will be shorter if the site raises only breeding pigs or only growing pigs (skip out of sections). If the *site contact* refuses the interview, **thank them for their time. Then click “No” in the Confidentiality Pledge, add any Comments, select the “Arrival” and “Start” time as the time you started the call. Hit the lower right arrow to get to Section 6 and fill in Questions 1-3. Select one of the codes “01-07” in Question 4 based on the reason for refusal and write any comments. Click “Submit.”** You might want to let the *operation contact* know this happened in case they can change the *site contact’s* mind.
4. When the *site contact* agrees to meet/talk further, ask if they prefer face to face or telephone and if the former get directions to the meeting place if you can. Review with the *site contact* the *type of site they have* (e.g., breeding site or grower site or both) based on the information from NASS. Tell the *site contact* that specific records for feed formulations and medications to growing pigs given will expedite the interview. You can tell them that the time frame in the VMOQ is predominantly between December 1, 2020 and May 31, 2021 (inclusive of the beginning and end dates) in case they want to have records in that time frame available at the time of the interview. Schedule the interview. If this will be a telephone interview, send the *site contact* the LPIC, the VMOQ and/or the Respondent Guide by email. ***Even if it will be a face to face interview it doesn’t hurt to send them these things prior to the interview.***
5. At the beginning of the phone or in person interview, use the drop downs to enter the State FIPS, Operation # and Site #. Type in the Interviewer name. Select the Date, arrival time and start time (both will be the same if this is telephone only). Read the confidentiality pledge. Further details on what they are agreeing to will be provided in Chapter 4. Look for a “Yes” response to begin the interview.
6. If you had a face to face interview, ask the *site contact* to go through and sign the LPIC after the interview and discuss the potential biologic collections if you received consent from the *operation contact* and if they have Grower/Finishers. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol.* Check the correct boxes on page 2 of the LPIC. Then leave copies of the LPIC, your card and any other materials that you have that the *site contact* wants. Keep two copies of the LPIC and get them to your Coordinator. Schedule the biologics collections if applicable. **See the Biologics manual. Thank them at the end and enter the correct responses (e.g. code “99” in Question 4 and “Yes” or “No” in Questions 5 and 6) Questions 1-9 in Section 6.**

7. If you had a telephone interview, go through the LPIC verbally with the *site contact* after the interview. Discuss the potential biologic collections if you received consent from the *operation contact* and if they have Grower/Finishers. *If they are reluctant about you having contact with pigs on their sites mention that you could teach anyone the protocol to get the samples and you could arrange to pick them up and ship them. The only catch is they have to use our protocol.* Check the correct boxes on page 2 of the LPIC. Send them your contact information and other materials that you have that the *site contact* wants. Schedule the biologics collections if applicable. **See the Biologics manual.** **Thank them at the end and fill out Questions 1-9 in Section 6.** Sign the LPIC, indicate the biologics agreed to and where the contact would sign, write their contact information. Scan the LPIC and send one copy to the *site contact* and one to your Coordinator.
8. **COORDINATORS:** Please send a copy of the scanned LPICs for each site to:
abigail.c.zehr@usda.gov.



SPECIAL SITUATIONS

An operation or site may be a **show pig business**. Show pigs are raised primarily for exhibition and are managed a bit differently than their commercial counterparts. For the purposes of this study there is absolutely **no difference** in the way that the VMOQs are filled out. Show pig operations or sites can have breeding swine, piglets, nursery age pigs, grower/finisher age pigs and their own biosecurity, housing and medication practices.

The same is also true for **niche market businesses**. These are entities that market their pigs as organic, pasture raised or some other designation that sets them apart from a more commercial marketing chain.

MORE INFORMATION ABOUT PHASE 2

There are **two** additional concerns that the *operation* or *site contact* may have about participation in Phase 2.

1. Private Veterinary Practitioners

Some respondents may feel that having a VMO visiting their site will conflict with the services provided by their own veterinarian. Explain that you will be glad to explain the program to the operation's veterinarian and that producer and veterinary organizations, such as the American Association of Swine Veterinarians (AASV), have participated in the design and review of the questionnaires. Additionally, the VMO's job is only to provide professional expertise in collecting accurate animal health and production data on the Phase 2 questionnaires and assisting with biologics collections.

2. Serious Diseases

Some operators may be apprehensive about the VMO's enforcement and quarantine power regarding certain animal diseases. Explain that the on farm tests are **not** for epidemic or regulatory type diseases. The VMO would enter the production areas **only** for those optional tests that the *operation contact* and *site contacts* agree to. Alternatively, a site designate can collect the samples. Phase 2 interviews can be done in the respondent's home, office or at a local coffee shop. The VMO interview and the biologics collections are also **not** intended to detect the presence of any regulatory type diseases. Remind them that NAHMS is not a regulatory agency.

Chapter 4 – Getting Consent at the Operation and Site Level

The **Large Enterprise-Informed Consent Form (LPIC)** needs to be given in some fashion both the *operation contact* and the subsequent *site contacts* as outlined in the previous chapter. The main purpose of the form is so *all parties have the same record of consent*. Consent is given by the *operation contact* to contact the *site contacts*, collect site information and do biological collections all their sites. Consent is given separately by the *site contacts* to collect site information and do biological collections for the site.

If a VMO is going to do a paper or MiCo face to face interview with the *operation contact and site contact*, this agreement should be done using the 2-part LPIC and physically signed by the interviewer and both types of contacts. A copy is physically given to the *operation contact* and each of the *site contacts*. For each contact, one copy is left with the contact and one is given to the Coordinator (who sends a copy to NAHMS) after the interviews.

If a VMO is going to do a paper or MiCo telephone interview with the *operation contact and site contact* this agreement should also be done using the 2-part LPIC but is only physically signed by the interviewer who then writes in the contact information for the contacts where they would sign if the interviews were face to face, scans the document and sends it to the *operation contact* and each of the *site contacts* after the interview (and the Coordinator who sends a copy to NAHMS) electronically.

This agreement is also redundantly built into each VMOQ version (MiCo and Paper). The agreement (Yes/No) to collect the data is on the first page and if the *operation contact or site contact* agrees to collect the data, the agreement to collect biologic samples is in Section 6, Questions 5 and 6 (Yes/No for each). The first page of the LPIC is mirrored on the last page of the paper and MiCo forms as the Appendix-Confidentiality Pledge. The trouble with only having the Appendix information is that the contacts may not get a copy of it hence the LPIC.

Regardless of whether you have a paper face to face/telephone or MiCo face to face/telephone data capture, the interviewer needs to be able to boil down the identical legal terminology on the first page of the LPIC and the last page of the paper and MiCo forms. This is so they know what they are agreeing to. They can read either the first page of the LPIC or the Appendix-Confidentiality Pledge and ask for explanation of any of its components. Subsequent to reading the text or in place of it, the interviewer can provide them the context below. Especially pay attention to the biologics part.

A. Background-This says that the contact will do the VMOQ interview to contribute to national estimates in a summary fashion and the respondent can refuse to answer any or all questions.

B. Confidentiality-We now collect our survey data (but **not** biological information) like NASS does under the Confidential Information Protection provisions of Title V, Subtitle A, Public Law 107-347 (CIPSEA). Also:

1. The people that end up with the data (NAHMS) will only see a number that delineates this operation and its sites from other operations and sites. The only persons that will know who the number refers to and how that connects to survey responses will be the VMO/AHT/State representative who makes contact with the operation/site and the State VMO coordinator. This connection will **never** be made public and will be destroyed when the study ends. We have made good on this promise in 30 years of national commodity studies.
2. APHIS/VS/NAHMS plans to publish the national summary estimates acquired from the VMOQ and the summary estimates (not national) from the biologic tests (if allowed to collect them) to stakeholders affiliated with the swine industry, but again will ensure that the identity (names, addresses, etc.) of the participants are withheld. Further, no raw (unsummarized) operation or site level data will be released by NAHMS to anyone.

3. If the VMO collecting biologics were to see a pig with a blister on its nose, he or she would be required to report a suspect foreign animal disease to State authorities. Contact information would likely be shared at that point with the regulatory side of State and Federal offices (NAHMS is non regulatory). This probably won't happen, but *it's a good argument for allowing the operation to have its own site designates collect biologic samples.*

C. Study Biologics-In essence this part says the following things:

1. We are collecting survey data under CIPSEA. This means you have additional protections from FOIA. Even if there was a successful FOIA (remote chance even under CIPSEA) all the FOIA request would get that identifies you is row data with an identifying number and survey responses which **can't be traced back to the respondent's location or name.**
2. We **cannot** collect biologics data under CIPSEA. We collect it as Confidential Business Information. It's another form of additional protections from FOIA.

Chapter 5 – General VMOQ Instruction, Question and Response Formats

This chapter provides information about conventions used throughout the questionnaire regarding instructions, how to enter responses and examples of different types of questions used in the questionnaire. *It's our intention here to show the general formats you will encounter and only concentrate on more difficult specific questions as needed later in Chapter 6.* Please consult the VMOQ for reference as you read through this material.

Sometimes you will need to probe the respondent to get an adequate answer to a question. You should probe when the respondent can't answer the question, when the answer is in the wrong units, when you think the answer may be incorrect because it doesn't fit with other information already obtained and when you think the respondent didn't understand the question.

NOTE: Unknown Response/Decline to Answer

Always enter a response for every question unless you are instructed to do otherwise. **If the respondent declines to answer a question or does not know the answer, leave the response box blank and indicate “DK” (if the question provides no option for DK response) or “Declined” in the margin.** When the data are analyzed later on, it is very important to know if the respondent declined to answer a question, did not know the answer or if the answer should have been zero, “no” or “none.” **By providing a response for every part of every question, you will improve the quality of the data and the information published as the result of this study.**

Also: If the respondent doesn't know the answer to a question **give them time to let them ask someone who does.** You can call them back later if need be.

VMOQ INSTRUCTION FORMATS

Throughout the questionnaire there are instructions to the VMO/AHT giving the interview or the respondent or both. These instructions are of **two** types.

- The **first** type is separate from questions. These instructions often indicate a skip (in brackets) or provide context for a series of questions coming up. Skip instructions in brackets should **not** be read aloud to the respondent. The contextual ones **may** be read aloud to the respondent.
- The **second** type is within questions inside parentheses. These instructions provide directions to the VMO/AHT interviewer in preparation for asking the question, guiding the response or again providing context. These should **not** be read aloud to the respondent.

INSTRUCTION EXAMPLE A: This example of the **first** type of instructions after the first two questions in Section 2 and indicates a major skip. These instructions should **not** be read aloud to the respondent.

[If Questions 1a and 1b BOTH = NO, SKIP to Section 3.]

INSTRUCTION EXAMPLE B: This is another example of the **first** type of instructions and provides context for questions coming up. This one **might** be read aloud to the respondent to guide their thinking.

Note: Nursery Aged pigs are the age between weaning and approximately 60 pounds, or until switched to a Grower/Finisher type diet or switched to being managed as Grower/Finishers or moved to a specific Grower/Finisher facility to raise to market weight.

INSTRUCTION EXAMPLE C: The question below is from Section 3 at the beginning of the antimicrobial questions. There are two examples of the **second** type of instruction. The first asks the VMO/AHT to show the respondent a guide to the answer(s) to the question and the second provides response direction. If sharing the questionnaire (reading it together) you can let the respondent know the first instruction is mostly for the interviewer. The second instruction in brackets guides the VMO/AHT as to the response.

10. (Show medication list to respondent.) For any medications given by **injection** in the last 6 months to **nursery aged** pigs, enter the **primary** reason given (*enter one code only from list above*) and the **approximate number of nursery aged** pigs that received injected medication in the 6 month period.

INSTRUCTION EXAMPLE D: The questions below are from the beginning of Section 3. There are two examples of the **first** type of instruction between the first and the second question and between the second and the third question which give the VMO/AHT skip instructions. There are again two examples of the **second** type of instruction. The first is at the end of Question 2 and provides an example of a nursery aged pig weight range. This range is intended as guidance to the respondent, but not a definitive definition since the respondent may consider another weight, say 45 pounds, the end weight of a nursery aged pig on their site. The second provides response direction at the end of Question 3.

1. Between **December 1, 2020** and **May 31, 2021**, did this site raise weaned pigs? v300 ₁ Yes ₃ No
[If Item 1 = No, SKIP to Section 5.]

2. Between **December 1, 2020** and **May 31, 2021**, did this site raise **nursery aged** pigs (weaning to approximately 60 pounds)? 0301 ₁ Yes ₃ No
[If Item 2 = No, SKIP to Section 4.]

3. Between December 1, 2020 and May 31, 2021, in which of the following facilities did this site raise most of its **nursery aged** pigs? (**Check one box below only (3a or 3b)**)

a. A Nursery facilityv302 ₁

b. A Wean-to-Finish facilityv303 ₁

VMOQ QUESTION FORMATS

NOTE: “Item” (in the questionnaire) is synonymous with “**question**” in this manual.

NOTE: All questions unless otherwise specified are for the time period between **December 1, 2020** and **May 31, 2021**

NOTE: Q6 in Section 2 is the ONLY ONE IN THE WHOLE VMO Q that you don’t put a response in every choice!

1. Yes/No Questions. Many questions ask for a “Yes” or “No” response. **"Yes" is always indicated by code "1" and "No" by code "3."** Sometimes in this questionnaire a “Not Applicable” (N/A) option will be indicated by code “2” and a “Don’t Know” (DK) by a “4.”

If a “N/A” or “DK” option is not offered and if the respondent answers with "Don't Know", “This question doesn’t apply to me” or declines to answer a specific question, write "DK", “N/A” or "declined" beside the answer cell in the margin, respectively.

NOTE: **Yes/No Questions** often occur **in groups** of responses after the main question or "stem" of the question. It’s important to check “Yes” or “No” for **all** responses in the group. An example will be provided below.

QUESTION EXAMPLE A: This serves as an initial screening question to determine if you should continue with Section 2. If the answer to Question 1a **or** 1b is “Yes,” then continue to Question 2. If the site did not have **either** breeding activity in the time period, then go to Section 3.

1. Between December 1, 2020 and May 31, 2021 :	
a. Did any sows or gilts farrow?..... v201	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 3 No
b. Were any sows or gilts bred? v202	<input type="checkbox"/> 1 Yes <input type="checkbox"/> 3 No
[If Items 1a and 1b BOTH = NO, SKIP to Section 3.]	

QUESTION EXAMPLE B: This Yes/No/DK question from Section 2 has more than one answer choice. The main question or "stem" of the question is attached to a question number (4) and the eight different choices are identified with a lower case letter (a, b, c, d, e, f, g, h). *Some VMOs bring along a separate questionnaire for the responder to follow along with to help with questions like this example.*

Read the question stem followed by the choices (e.g., “Were breeding females usually vaccinated against PRRS during the following different time periods in the 6 month time span (December 1, 2020 and May 31, 2021)? The first time period is, prior to entering the breeding herd.”), at least in the first reading for the first choice. The next set of choices can be paraphrased to some extent (e.g., “How about as gilts at time of entering the breeding herd?”).

Note: All the question choices need to be answered with either “Yes,” “No,” or “DK.” **Don’t check only the “Yes” responses.**

4. Were breeding females usually vaccinated against PRRS during the following time periods?			
a. Prior to entering the breeding herd (i.e., as young pigs)..... v245	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
b. As gilts at time of entering the breeding herd v246	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
c. During gestation up to 4 weeks before farrowing v247	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
d. During the last 4 weeks of gestation v248	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
e. From farrowing to weaning v249	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
f. After weaning through breeding/mating v250	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
g. At regular intervals, regardless of reproductive stage..... v251	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
h. In response to a PRRS outbreak (i.e., whole herd exposure via vaccination) v252	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK

QUESTION EXAMPLE C: This Yes/No/DK question from Section 3 is in two parts. The main question or "stem" of the question is attached to a question number (15) and the 18 different choices are identified with a lower case letter (a-r) with an additional follow up question for choice r.

One way to read this question to the respondent is to read the **first** part of the question stem followed by the choices (e.g., “Were the following ingredients in any of the nursery aged pig diets in the 6 month time span? The first ingredient is Tallow.”), followed by the response options of “Yes,” “No,” and “DK.” After that you can go down the list of ingredients, reading them without reading the first part of the stem and checking the correct box for each ingredient for the “**Used?**” column. Then, for ingredients that had a “Yes” response, go back and ask if the ingredients were **Imported** from another country.

Don’t forget to ask average percentage of DDGS in the diet if DDGS is used in any nursery aged pig diet. **Note:** Again, **all** the ingredients must be answered with “Yes,” “No,” or “DK” in the “**Used?**” column. **However, only ingredients with the “Yes” responses in the “Used?” column need a corresponding response in the “Imported?” column.**

15. Were the following ingredients in any of the **nursery aged** pig diets and if **YES** were they imported into this country?

Ingredient		Used?			Imported?		
a. Tallow (animal fat from cattle or sheep).....	v3026/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
b. Lard or choice white grease (pork fat).....	v3027/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
c. Other animal fat (Specify: _____)	v3028/a/oth	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
d. Soybean oil.....	v3029/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
e. Corn oil.....	v3030/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
f. Other vegetable fat (Specify: _____)	v3031/a/oth	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
g. Molasses.....	v3032/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
h. Spray dried plasma.....	v3033/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
i. Blood meal, serum albumin, or other blood products.....	v3034/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
j. Mucosal products such as dried porcine soluble or PEP products.....	v3035/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
k. Fish meal.....	v3036/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
l. Feather meal.....	v3037/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
m. Meat meal or meat-and-bone meal.....	v3038/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
n. Soybean meal or other vegetable protein source.....	v3039/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
o. Other protein sources (Specify: _____)	v3040/a/oth	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
p. Bakery/food manufacture byproducts (not table waste)	v3041/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
q. Vitamin Mineral Mix.....	v3042/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
r. Distiller's dried grain and solubles (DDGS).....	v3043/a	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK	<input type="checkbox"/> 1 Yes	<input type="checkbox"/> 3 No	<input type="checkbox"/> 4 DK
i. If Yes , what is the average percentage of DDGS in the diet?.....		v3044 _____ %					

2. Quantity Questions. These are questions whose response is a number (a whole number most of the time **like in the very first question in Section 1**, but not always. Percent responses are called for in the medication questions in Sections 3 and 4). *It's important in Quantity questions to **always** answer each part (**unless it is part of a skip**) in some fashion. For example, in Example E below, if there were no liquid rations fed routinely, enter "0" in the response cell for 17c. This is stated in the instruction after the "stem."* Also, approximate values are acceptable for all quantity questions.

QUESTION EXAMPLE D: Here the quantity under consideration is **number of weaned pigs**. This question provides a denominator to measure medication use for the questions after them. The medication questions will be dealt with in more depth in Chapter 6 in Questions of Note. **Note:** If the respondent is unsure of any of these terms in the context of this questionnaire (like what the difference is between **weaned pigs** and a **nursery aged pigs**), consult the definitions in Chapter 2.

8. During the last **6** months, approximately how many **weaned pigs** were fed and managed as **nursery aged pigs**?v350 _____ head

QUESTION EXAMPLE E: These two questions are quantity questions, but the second one has four choice responses as to specific ration forms and a total of the number of rations of any form. The first question asks for the total number of different rations that were routinely fed to nursery aged pigs in the 6 month time span on this site. Usually there are at least two or three rations that are fed to **nursery aged** pigs as they transition out of the freshly weaned body stage and begin to look more like early grower/finisher aged pigs. The second question breaks out the total rations given in Question 16 by **form** of feed. In Question choice 17e, please make sure that the answer totals to the same number of rations given for Question 16.

16. How many different rations were routinely fed to nursery aged pigs?.....	v3045	_____	rations
17. How many of the different rations fed routinely to nursery aged pigs were: (Enter Zero if None in a category)			
a. Meal/mash?	v3046	_____	rations
b. Pellet?	v3047	_____	rations
c. Liquid?	v3048	_____	rations
d. Other? (Specify: _____)	v3049oth.....v3049	_____	rations
e. Total rations (<i>should equal answer to Question 16</i>)	v3050	_____	rations

3. Code Category Questions. These questions allow one choice from multiple codes representing categories as the answer. Besides the PRRS breeding herd status question (Section 2, Question 7) and the codes required in primary use columns in the medication questions in Sections 3 and 4 there are only two questions in the VMOQ that require code responses: one in Section 3 and one in Section 4. In **all** code questions in the VMOQ you enter the number that goes with the respondent's answer in a response space (a box) from an accompanying list.

QUESTION EXAMPLE F: This example requires that you enter one code in the response box from Item 7-Action Codes list. There is a possibility that a respondent will say that no answers in the list fit or that two fit as a summary of the actions taken for the most recent occurrence of a respiratory disease outbreak in nursery aged pigs. The key to stress to the respondent is which action “best describes” the response to the outbreak. **In other words, what was the action done most often to the most pigs involved or first** in the case of the most recent outbreak?

Item 7-Action Codes	
1 – Have not had clinical respiratory disease in nursery aged pigs during last 12 months	4 – Treated all pigs in same pen with clinically ill pigs with antibiotics
2 – Did not treat any pigs with antibiotics	5 – Treated all pigs in same pen and pens adjacent to clinically ill pigs with antibiotics
3 – Treated only clinically ill pigs with antibiotics	6 – Treated all pigs in entire room with clinically ill pigs with antibiotics (all pigs with shared airspace)

7. For the **most recent** occurrence of a respiratory disease outbreak in **nursery aged** pigs, which option from the code list above best describes the action taken? (*Enter **one** code only from list above. Antibiotics can be given in water/feed or by injection.*).....

v349 _____ code

4. Matrix Questions. These types of questions record the largest amount of related information in the shortest space. We tried to use them sparingly in this questionnaire. One definition of a matrix question is one question with multiple responses, where each response is guided by two or more criteria or dimensions (columns). These criteria can be mixed in Yes/No, quantity or code format responses. The example below is a relatively simple matrix question example. We will deal with the more complex antimicrobial usage matrices in Chapter 6.

QUESTION EXAMPLE G: *For, this question it helps if the respondent has a copy of the questionnaire for clarity.* This question has different ways of approaching how you read it to a respondent. You could start off by reading the stem but substituting the words “the following destinations” to “Grower/finisher site(s)” in the first reading. Then, if this site did have a number of shipments of nursery aged pigs to Grower/Finisher sites ask, “How far was the closest Grower/finisher site you shipped nursery aged pigs to and how far was the farthest Grower/finisher site you shipped nursery aged pigs to?” and “How many of the shipments of nursery aged pigs to Grower/finisher sites in the last 6 months crossed state lines and which states did they go to?” The state in the two letter abbreviated format (e.g., IA for Iowa). *Approximations for the distance questions are expected.*

18. During the last 6 months, how many shipments of nursery aged pigs left this site to go to the following destinations? For <u>each</u> shipment indicate the distance and state characteristics.							
	Destination		Number of shipments	Distance to closest destination (miles)	Distance to farthest destination (miles)	Number of shipments that crossed State lines	If shipped out of State, destination State(s) (2 letter code)
a.	Grower/finisher site	v3052/a/b/c/d					
b.	Slaughter plant	v3053/a/b/c/d					
c.	Auction/livestock market	v3054/a/b/c/d					
d.	Other (Specify: _____)	v3055oth					

QUESTION EXAMPLE H: *For this question, it also helps if the respondent has a copy of the questionnaire for clarity.* This question in the last section is to get a better picture of the site.

For this question ask how many buildings that house pigs are present on the site. Then for each building, ask what production types of pigs are housed in each building and then ask for the number of pens and number of pigs in each building. If there are more buildings than there is space for answers, you can write in an extra “row” at the bottom of the matrix for each building. Approximate numbers are fine for **both** of the last two columns.

1. In all the hog rearing <u>facilities</u> on this site today, what type of pigs live in each facility, how many pens are in that building and what is the approximate number of pigs in the building? (Check all that apply for each facility before filling in numbers.)
Note: Each facility or singular structure may have different age groups within it. For example, if a site has 3 buildings, there may be sows, gilts and preweaned pigs in one facility, developing gilts in another, and nursery/growers in the last. In this case only fill in the first three rows - Facility 1, 2 and 3.

Facility Number		Types of Pigs					Number of Pens in Facility	Approximate Number of Pigs in Facility
		Sows and gilts	Developing gilts	Unweaned pigs	Nursery aged pigs	Grower/finisher aged pigs		
1	v501/a/b/c/d/e/f/g	<input type="checkbox"/> 1						
2	v502/a/b/c/d/e/f/g	<input type="checkbox"/> 1						
3	v503/a/b/c/d/e/f/g	<input type="checkbox"/> 1						
4	v504/a/b/c/d/e/f/g	<input type="checkbox"/> 1						
5	v505/a/b/c/d/e/f/g	<input type="checkbox"/> 1						
6	v506/a/b/c/d/e/f/g	<input type="checkbox"/> 1						
.....Additional rows eliminated for clarity.....								

Chapter 6 –VMOQ Overview and Questions of Note

This chapter provides an overview of the VMOQ that you can use as a snapshot of the whole questionnaire for yourself and any respondents. The overview will hopefully give you an overview of what's involved in this important data collection. After the overview are questions or groups of questions in the questionnaire that deserve some explanation.

Note: Sections 3 and 4 ask about **Nursery** and **Grower/Finisher Aged pigs**, respectively. These are the same types of pigs asked about in the NASS LES so hopefully the respondent will already be remembering along these lines. The definition of these two types of pigs depends on what the operation or site considers them to be. For example, if the site considers 10 to 30 pound pigs to be nursery pigs, then that is the definition of nursery aged pigs for this site.

We wrote the questionnaire like this to avoid trying to adopt a one size fit all criteria on all sites with growing pigs of (for example) having a “nursery phase” or “nursery housing.” Sites have varied growing pig infrastructure and we had difficulty in the 2012 study trying to write questions that would account for all the set-up possibilities. This also avoids lengthening the questionnaire for “wean-to-finish sites” which also confused respondents and VMO and AHTs alike as evidenced by responses that conflicted with one another in 2012.

VMOQ SECTIONS OVERVIEW

This is a **site** level questionnaire. The time frame in questions is predominantly between **December 1, 2020** and **May 31, 2021** (inclusive of the beginning and end dates), unless otherwise specified. For example, the medication use questions and the destination questions in Sections 3 and 4 ask about the last 6 months rather than the prescribed time frame. We shifted to a more recent time range to aid in recall.

SECTION 1—TODAY'S INVENTORY

This section collects site inventory by production type. The time frame is the inventory present on the day of the interview.

SECTION 2—SOWS AND BREEDING-AGE GILTS

If this site is a breeding site (where gilt and sow breeding and farrowing takes place) there is a chance that this will be the only section filled out in the VMOQ. That is because many operations segregate production phases into separate sites so that if disease breaks out on one site, there is less of a chance it will spread to other production phases. We are interested in relatively active breeding sites and to complete this section there must have been breeding or farrowing in gilts or sows in the **December 1, 2020** to **May 31, 2021** (inclusive) time period. Section 2 is roughly divided into four subsections.

The first subsection concentrates on disease problems experienced between **December 1, 2020** and **May 31, 2021** (inclusive) in breeding females and efforts to mitigate disease with vaccination. Diseases and some vaccination types are defined in Chapter 2. The vaccine list in Question 3 is itemized by the disease the vaccine is supposed to protect against (as it is in Sections 3 and 4). VMOs/AHTs will have been given a vaccine guide compiled from the Compendium of Veterinary Products (CVP) which lists vaccines by trade name in alphabetical order. *All of the vaccines listed in the question could be autogenous in nature as well.*

In some cases, we listed the vaccine with pathogen antigens. For example, Question 3h says “E. coli (K88, K99, 987P, F41).” The letters and numbers in parentheses refer to the fimbrial adhesin (pili) type. *It's not necessary for the respondent to know if the vaccine is specifically designed to inhibit action of any of these fimbriae. They are listed to jog the respondent's memory in case the site veterinarian mentioned them specifically or they were on the vaccine bottle.*

The second subsection asks about measures taken to control, eliminate or keep out PRRS in the breeding females and asks what the current PRRS status of the breeding herd is per a criteria system set up at the University of Iowa. A separate guide is provided to help identify the current PRRS status of the breeding herd. The third section asks questions about measures taken to control or eliminate influenza in the breeding females. Finally, we ask about disease problems present in preweaned (suckling) pigs between **December 1, 2020** and **May 31, 2021 (inclusive)**.

SECTION 3 – NURSERY AGED PIGS

This section starts by determining whether there are weaned pigs grown out on this site and whether they are housed in a separate nursery facility or wean-to-finish facility. As with the previous section, if this site raises weaned pigs, there is a good chance that Section 2 was not filled out due to site segregation for biosecurity purposes. As the name indicates, this section gets into the details about how an operation manages the **nursery aged** pigs. Section 3 is roughly divided into five subsections.

We again ask about disease problems experienced on this site in nursery aged pigs and efforts to combat disease with vaccination between **December 1, 2020** and **May 31, 2021 (inclusive)** similar to Section 2. The second subsection asks vaccines used to combat Influenza and respiratory disease outbreaks between **December 1, 2020** and **May 31, 2021 (inclusive)**. The third subsection looks at antimicrobial use by injection, water or feed in the **last six months**. As for vaccines, there is a guide for the VMO/AHT compiled from the CVP that lists antimicrobials by active ingredient in alphabetical order, by route of administration (injectable, water or feed). The fourth and fifth subsections deal with feed rations given to nursery aged pigs (**December 1, 2020** and **May 31, 2021**) and movement destinations of these pigs, respectively.

SECTION 4 – GROWER/FINISHER AGED PIGS

This section is almost identical to Section 3 except that it is for **grower/finisher aged** pigs.

SECTION 5—SITE DEMOGRAPHICS

This section describes a bit of the setup of the site by describing what type of pigs are in each facility on the site. Modern swine raising infrastructure estimates are the goal here.

QUESTIONS OF NOTE

Section 2, Question 7: In the questions just before this, we have been talking about measures this site uses to keep PRRS out, decrease its effects on production or eliminate it. Here, we attempt to get the PRRS status of the breeding herd according to a PRRS Status Decision Chart developed at the University of Iowa. Answering this question will provide a national estimate of PRRS status.

7. What is the PRRS status of the breeding herd? (Use the **PRRS Status Decision Chart sheet** to identify the PRRS status of the breeding herd and then enter corresponding status code from list above.) v269 _____ **code**

Given the following scenario, we will attempt to show how this question might be answered. Please have a copy of the **PRRS Status Decision Chart** available. The **site contact** gives us the following information when we ask about their PRRS status:

“We rope test sows and gilts every quarter and we got a few positives last quarter. We don’t test piglets. Some of them seemed off feed 2 weeks ago and because we get a new PRRS strain come through every year or so, we did a PCR on rope about then, but it was negative. We haven’t bothered to try to eliminate PRRS entirely since we have a stable strain most of the time.”

Starting at the top of the **PRRS Status Decision Chart**, “A” has been answered (“Yes, a positive antibody test was found in breeding females.”). We go to “B,” and it too has been answered (“No positive (antigen) tests results for PRRS were found in the last 90 days”). They have not participated in a PRRS elimination program, but we know the site has a strain of PRRS they live with and there were maybe some signs a couple of weeks ago. Overall, you are safe coding this breeding site a **3 – Positive stable** for question 7.

You can also just read each question on the **PRRS Status Decision Chart** to the respondent without asking for any PRRS status story.

Section 3, Questions 8 through 14: This series of questions is mirrored in Section 4 as well and may require a respondent to do a quick search of their records. Question 8 asks for total number of **weaned pigs** that were fed and managed as **nursery aged pigs** over the last 6 months. So, we are asking about the **nursery aged** pigs which you already have been talking about with the respondent and have a good handle on how they define them on this site. That is, weaned pigs that (per Chapter 2) are managed and fed *like nursery aged pigs* until the time they transition into being managed and fed *like grower/finisher aged pigs* regardless of the type of facility they are raised in (e.g., a Nursery facility or Wean-to-finish facility).

Note: By this time, you will also have a pretty good idea of the disease problems this site has in their nursery aged pigs so you have an idea what needs treatment with antimicrobials.

Let's say the response to Questions 8 is as below.

8. During the last 6 months, approximately how many **weaned pigs** were fed and managed as **nursery aged** pigs? ... V350 **1,000** head

Moving on to Question 9, the respondent says that they **did** give medications by injection to nursery aged pigs in the last 6 months. A few nursery aged pigs (respondent estimates about **45**) got *Streptococcus suis* (meningitis) and there was some coughing typical of *M. hyopneumoniae*. The respondent estimates about **250** pigs were treated for this. *S. suis* was treated with Pro-Pen-G injections while *M. hyopneumoniae* was treated with LincoBac injections and only sick pigs were treated. You already suspected what the active ingredients in both injections were, but you looked them up on your **antimicrobial guide** to confirm. Therefore, the responses in Question 10 look like the example below (Primary Reason Codes guide also below).

Item 10-Primary Reason Codes	
1 – Disease prevention or control	4 – Polyserositis/meningitis treatment
2 – Respiratory disease treatment	5 – Parasite treatment/deworming
3 – Enteric (intestinal or GI) disease treatment	6 – Other treatment (Specify: _____) v351aoth (Specify: _____) v351both

10. (Show medication list to respondent.) For any medications given by **injection** in the last 6 months to **nursery aged** pigs, enter the **primary** reason given (*enter one code only from list above*) and the **approximate number of nursery aged** pigs that received injected medication in the 6 month period.

	Active ingredient	Trade name (example)		Primary reason code	Number of nursery aged pigs treated
a.	Ampicillin	Polyflex	v352/a		
b.	Amoxicillin	Amoxi-Inject	v353/a		
c.	Ceftiofur	Excenel; Naxcel; Exced	v354/a		
d.	Enrofloxacin	Baytril 100	v355/a		
e.	Erythromycin	Erythro	v356/a		
f.	Florfenicol	Nuflor	v357/a		
g.	Gentamicin	Garacin	v358/a		
h.	Lincomycin	Lincocin	v359/a	2	250
i.	Oxytetracycline	LA200; Oxytet; Biomycin	v360/a		
j.	Penicillin benzathine	BP48, long-acting Pen	v361/a		
k.	Procaine Penicillin G	Pen-G	v362/a	4	45
l.	Tulathromycin	Draxxin	v363/a		
m.	Tylosin	Tylan	v364/a		
n.	Dexamethasone	Glucortin-20	v365/a		
o.	Doramectin	Dectomax	v366/a		
p.	Flunixin meglumine	Banamine S	v367/a		
q.	Isoflupredone	Predef 2x	v368/a		
r.	Ivermectin	Ivomec	v369/a		
s.	Levamisole	Tramisol; Levasole	v370/a		
t.	Vitamin A, D, E		v371/a		
u.	Other medications (Specify: _____)		v372oth	v372/a	

Note: The **Approximate number of pigs treated** with each medication in Question 10 cannot exceed the response in Question 8.

Next, the respondent says in Question 11 that they also gave medications in water to nursery aged pigs in the last 6 months. The site wanted to get ahead (prevent problems in healthy pigs) of the *Streptococcus suis* (meningitis) and *M. hyopneumoniae*, so they treated the water. For *S. suis* they put Duramycin 324 in the water for 5 days and **all** nursery aged pigs in the last 6 months were treated this way. For *M. hyopneumoniae*, the site used Lincomix Soluble Powder because barn workers also thought they saw some loose grey feces that might have been dysentery (the site has a history of it) and treated about **400** of the pigs in the last 6 months for 10 days apiece this way. Loose stools were still seen occasionally so the site had samples cultured and found *Salmonella derby* that was susceptible to Chlortetracycline, so about **200** pigs received Pennchlor 64 for 5 days.

Lincomix Soluble Powder was used to control *M. hyopneumoniae* in healthy pigs but it was hoped that it would also help the mild scours. The **primary** reason in this case was to prevent disease. After you consult your antimicrobial sheet, Question 12 looks like the example below.

We switch from **number** of pigs treated in Question 10 to **Percent of Item 8 pigs** treated in Questions 12 and 14. The percent values were calculated as follows: 400/1,000 and 200/1,000, with the denominator being the response in Question 8.

Item 12-Primary Reason Codes

1 – Disease prevention or control	4 – Polyserositis/meningitis treatment
2 – Respiratory disease treatment	
3 – Enteric (intestinal or GI) disease treatment	5 – Other treatment (Specify: _____) v373aoth (Specify: _____) v373both

12. (Show medication list to respondent.) For any medications given by **water** in the last 6 months to **nursery aged** pigs, enter the **primary** reason given (enter one code only from list above), **total** number of **days** medication was given in the water and the **approximate percent of Item 8 pigs** medicated by water in the 6 month period.

	Active ingredient	Trade name (example)		Primary reason code	Total days in water per treated group	Percent of Item 8 pigs
a.	Amoxicillin		v374/a/b			
b.	Bacitracin Methylene Disalicylate	BMD [®] soluble, Solutracin	v375/a/b			
c.	Bacitracin zinc	Baciferm [®] soluble	v376/a/b			
d.	Chlortetracycline	Aureomycin soluble powder	v377/a/b	3	5	20.0
e.	Chlortetracycline/sulphamethazine	Chloronex [®] Sulmet [®] soluble powder	v378/a/b			
f.	Florfenicol	Florvio [™] 2.3% concentration solution	v379/a/b			
g.	Gentamicin	Garacin [®] oral solution	v380/a/b			
h.	Lincomycin	LinxMed [®] soluble powder	v381/a/b	1	10	40.0
i.	Lincomycin/Spectinomycin	L-S 50 Water soluble [®] powder	v382/a/b			
j.	Neomycin	Neosol, Neomix [®] soluble powder	v383/a/b			
k.	Oxytetracycline	Terramycin [®] soluble, Tetroxy [®]	v384/a/b			
l.	Penicillin G Potassium	PenAqua Sol G [®] , Solu-Pen	v385/a/b			
m.	Spectinomycin	Spectam [®] , Spectogard Scour-Chek [™]	v386/a/b			
n.	Sulfachlorpyridazine	Vetisulid [®] , Prinzone oral suspension	v387/a/b			
o.	Sulfadimethoxine	Albon [®] oral suspension, Agribon soluble powder,	v388/a/b			
p.	Sulfamethazine	Sulmet [®] , Purina [®] sulfa	v389/a/b			
q.	Sulfaquinoxaline	S.Q. 20% Solution, Sul-Q-Nox	v390/a/b			
r.	Tetracycline	Tet-Sol [®] 324, Duramycin-10	v391/a/b	1	5	100.0
s.	Tiamulin	Denagard [®] liquid concentrate	v392/a/b			
t.	Tilmicosin	Pulmotil [®] AC	v393/a/b			
u.	Trimethoprim/Sulfadiazine	TMP/Sulfa, Tribriessen	v394/a/b			
v.	Tylosin	Tylan [®] soluble, Tylovet [®] soluble	v395/a/b			
w.	Tylvalosin	Avlosin [®]	v396/a/b			
x.	Salicylic Acid	Aspirin	v397/a/b			
y.	Other medications (Specify: _____) v398both		v398/a/b			

14. (Show medication list to respondent.) For any medications given by **feed** during the last 6 months to **nursery aged** pigs, enter the **primary** reason given (enter one code only from list above), **average starting age** (in weeks since birth) of pigs when medications began, **total number of days** medication was given in the feed and **dose** in grams per ton.

	Active ingredient	Trade name (example)		Primary reason code	Average starting age (weeks)	Total days in feed per treated group	Percent of Item 8 pigs
a.	Avilamycin	Kavault®	v3001/a/b/c				
b.	Bacitracin Methylene Disalicylate	BMD®	v3002/a/b/c				
c.	BMD/Chlortetracycline	BMD®/Aureomycin®	v3003/a/b/c				
d.	Bacitracin Zinc	Albac®, Baciferm®	v3004/a/b/c				
e.	Bambermycin	Flavomycin®	v3005/a/b/c				
f.	Carbadox	Mecadox®	v3006/a/b/c				
g.	Carbadox/Oxytetracycline	Terramycin®	v3007/a/b/c				
h.	Chlortetracycline	Aureomycin®	v3008/a/b/c	4	7	14	100
i.	Chlortetracycline/Sulfamethazine	Aureomix® S, Pennchlor S	v3009/a/b/c				
j.	Chlortetracycline/Tiamulin	Denagard® Plus CTC®	v3010/a/b/c				
k.	Florfenicol	Nuflor®	v3011/a/b/c				
l.	Lincomycin	Lincomix®	v3012/a/b/c				
m.	Narasin	Skycis®	v3013/a/b/c				
n.	Neomycin/Terramycin	Neo-Oxy 100/100®	v3014/a/b/c				
o.	Oxytetracycline	Terramycin®, OXTC®	v3015/a/b/c				
p.	Tiamulin	Denagard®	v3016/a/b/c	3	6	7	20.0
q.	Tilmicosin	Pulmotil® 90	v3017/a/b/c				
r.	Tylosin	Tylan®, Tylovet®	v3018/a/b/c	4	4	21	10.0
s.	Tylosin/Sulfamethazine	Tylan® Sulfa-G	v3019/a/b/c				
t.	Tylvalosin	Avlosin® 17%	v3020/a/b/c				
u.	Virginiamycin	Stafac®	v3021/a/b/c				
v.	Fenbendazole	Safeguard	v3022/a/b/c				
w.	Ivermectin	Ivomec	v3023a/b/c	5	6	7	30.0
x.	Pyrantel tartrate	Banmith	v3024/a/b/c				
y.	Zinc oxide		v3025/a/b/c				
z.	Other medications (Specify: _____)		v3026oth v3026/a/b/c				

The percent values were calculated as follows: 400/1,000, 100/1,000, 200/1,000 and 300/1,000 with the denominator being the response in Question 8.