

Specimens For Laboratory Diagnosis

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REQUESTS FOR laboratory aid in diagnosis of field cases are becoming more numerous and of a more varied nature. The advent of previously unrecognized disease conditions, as well as the increased knowledge of diagnostic aids in older recognized disease conditions, makes laboratory procedures a more vital part of everyday practice.

The judicious use and interpretation of laboratory findings often are extremely helpful in otherwise difficult cases. The examinations to be requested should be those of meaningful significance and those of direct importance to the case.

When collecting, preparing, and submitting specimens to the laboratory, there are basic considerations to keep in mind. The first consideration is to package the tissue in a manner insuring arrival as a fresh specimen and preventing it from contaminating the mails or postal employees enroute. Pack the specimen to prevent glass breakage or leakage. The second is to include the veterinarian's name and address and any special information. A third important consideration is to keep the intestines separate from the other organs. Place each in a separate bag or container to prevent contamination. Tie each end of the intestinal segment. Fourth, do not place specimens for totally different examinations in the same container unless they are well labeled and in separate bags or jars.

For example, a blood sample for serology should not be in a package containing a head for rabies diagnosis. Failure to observe proper collection and preparation techniques may result in a considerable loss of time, effort and expense to both the practitioner and the diagnostician.

Although it is axiomatic, it should be repeated that certain tissues or organs are much more pertinent to a diagnosis in some diseases than in others. Time spent in the judicious selection of specimens in relation to the type of disease suspected can mean the difference between an accurate diagnosis or none.

Seldom are laboratory procedures, in the absence of history and other clinical data, pathognomonic for a particular disease entity. Laboratory data should not be considered as a final irrevocable answer to be valued above skilled clinical observation. For that reason the results of any laboratory test should be considered as a link in a chain, the whole of which should enter into the making of a final diagnosis.

The collection of appropriate specimens revolves around the tentative diagnosis as to whether the etiology might be viral, bacterial, parasitic, or nutritional in origin as well as what tissues are likely to yield the most laboratory information for the particular disease in question. Knowledge of the duration of the malady in the individual animals can be important in determining an appropriate specimen. For example, it is sometimes difficult to isolate viruses from some virus diseases if the duration is

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more than three or four days. Hence, a blood sample for the detection of viral antibodies might be more worthwhile than tissue for virus isolation.

The importance of a good, accurate clinical history, so far as can be obtained, cannot be over-emphasized and should accompany all specimens to the laboratory. The history, in addition to the most prominent symptoms, should include:

1. The veterinarian and owner's name.
2. Age of the animals.
3. The number of animals in the affected group.
4. The number of animals sick in that group.
5. Death loss.
6. Time lapse since the first animal developed symptoms.
7. How long the individual animal lives after noticeable symptoms.
8. The presence or absence of disease or symptoms in animals in adjacent groups or pens.
9. Description of lesions observed at post mortem.
10. Treatment employed and response, if any.
11. Immunization history.
12. Quantity, quality, and availability of feed and water.
13. Any instructions or requests for specific tests, information, or disposal of the case.

If possible, a live animal showing characteristic symptoms should be submitted to the laboratory. If this is impractical, specimens should be collected from animals which presented characteristic symptoms and have died very recently.

Specimens for bacteriological examination should be either frozen or put into a waterproof container surrounded by ice within an outside container.

Tissues for virus isolation may be frozen or small pieces of tissue may be preserved and shipped in 50% glycerin.

Tissues selected for histopathological examination should originate at the site of a distinct lesion, trimmed to approximately a quarter of an inch thick and placed in 10% formalin in at least 10 times the volume of the tissue to be fixed. After fixation for 24 hours, the tissues

can be placed in a small volume of formalin and packed, to prevent breakage, for shipment. It is advisable to select more than one lesion and in the case of suspected neoplasms, it is imperative that several sections be submitted.

If blood is being submitted for bacterial culture it should be collected aseptically in a sterile stoppered tube or bottle. Swabs of blood or exudate should also be included in stoppered tubes. If it is desired that smears of blood be studied, the smear should be made, allowed to air dry, fixed in methyl alcohol for three minutes and then submitted unstained.

Blood collected for serological studies should be allowed to clot in the tube and then the serum should be poured off into a separate tube to prevent hemolysis. Blood serum submitted for pregnancy tests in mares should be at least 10cc. in quantity. This amount of serum can usually be obtained from approximately 25cc. of whole blood.

Urine for bacteriological examination should be collected as aseptically as possible and placed in a sterile, stoppered tube or bottle and packed in ice. Some organisms, such as leptospira in urine or motile protozoa in a saline swab, remain viable only a few hours after collection. The specimens are of little value for examination unless the urine or saline swabs can be submitted fresh and warm. This usually means a personal delivery rather than by mail.

Milk samples submitted for bacterial isolation should be collected aseptically in a sterile, stoppered tube or bottle and packed in ice for shipping.

Fecal samples or swabs should be placed in stoppered tubes or bottles and packed in ice if culturing is desired. Feces submitted for flotation should be refrigerated to prevent hatching or disintegration of ova. It may be advisable to place the fecal material in a 10% formalin solution to properly fix the ova.

Hair or skin scrapings may be placed in a tube or bottle and may be shipped without refrigeration.

Heads for rabies examination should be placed in a water tight container, then

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Dean I. A. Merchant attended a meeting of the Advisory Committee on Veterinary Medical Specilities to the Council on Education, American Veterinary Medical Association, for the purpose of discussing those groups who wish to form a specialty board under the sponsorship of the AVMA.

Dr. D. L. Baker presented two papers at the Missouri Veterinary Medical Association's meeting on February 20-21, 1961 at St. Louis, Missouri. The papers were entitled, "The Diagnosis and Treatment of Heart Diseases" and "Diseases of the Urinary System."

Dr. R. A. Packer, Head of the Department of Veterinary Hygiene, attended a national meeting on bovine mastitis and the Conference of Research Workers in Animal Diseases on November 28-December 1, 1960, in Chicago, Illinois.

On January 4-6, 1961, Dr. B. W. Kingrey, Head of the Department of Medicine

and Surgery, attended the 53rd annual New York Conference for Veterinarians at New York State Veterinary College at Cornell University. Ithaca, New York. While there, Dr. Kingrey presented a paper entitled "Cattle Surgery."

At the annual convention of the Iowa Veterinary Medical Association, January 17-19, 1961, Des Moines, Iowa, Dr. B. W. Kingrey presented a paper, "Cattle Practice" and participated in the "Disease Forum."

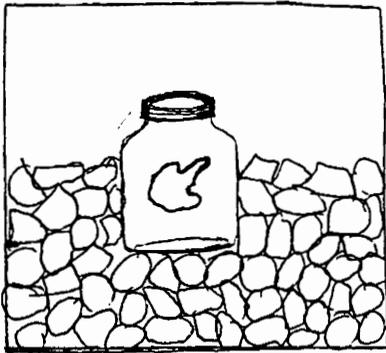
Dr. M. J. Swenson was recently appointed to the Research Committee of the Iowa Heart Association.

Dr. Harry W. Yoder of the Veterinary Medical Research Institute presented a report of the research on "Control of Infectious Sinusitis of Turkeys" at the convention of the National Turkey Federation in Chicago, Illinois, January 3-7, 1961.

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placed within a larger ice packed container. The package should be labeled as a rabies suspect on the outside as a safety precaution for laboratory personnel.

The diagram is a suggested mode of packaging for all specimens requiring refrigeration.



Sample jar packed in container of ice

The Becton-Dickinson Company, suppliers of laboratory equipment, states: "A laboratory diagnosis is no better than the specimen submitted and the specimen is no better than the manner in which it was collected."

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7. Porter, J. R. Bacterial Chemistry and Physiology. p. 103. New York, N. Y., John Wiley and Sons, Inc. 1946.
8. Porter, *op. cit.*, p. 232.
9. Shumway, N. E., Johnson, J. A., and Stish, R. J. Quantitative analysis of a direct writing method for dye dilution curves. *J. Applied Physiol.* 10:297-300. 1957.
10. Stacy, R. W., Williams, D. T., Worden, R. E., and McMorris, R. B. Essentials of biological and medical physics. p. 90. New York, N. Y., McGraw-Hill Book Co., Inc. 1955.

Dates for State Board Examination Are Announced

The state board examination will be given at the State Capitol Building Des Moines, Iowa. They will be held June 1 and 2. The tests will be given commencing at 8:00 a.m. in the House Chamber.

Each applicant should be advised that he must present a diploma showing that he is a graduate of a recognized school of Veterinary Medicine.