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COLLECTION AND SHIPPING OF SERUM SPECIMENS FOR ANTIBODY STUDIES

by

J.A.R. Miles
Professor of Microbiology
University of Otago

PREFACE

In discussing the epidemiological conditions of the South Pacific region, the Directors of Territorial Health Services, at their Fourth Conference (Noumea, January 1973), emphasised the importance of obtaining laboratory findings rapidly when epidemics of virus diseases occur in their sometimes isolated territories.

In recent years, epidemics have been reported, the diagnosis of which could not be confirmed due to the lack of facilities for making serological tests.

The necessity of obtaining laboratory data was underlined when hepatitis and dengue fever were discussed. The possibility of other virus diseases occurring of which an urgent diagnosis should be made was also mentioned.

The Directors of Health requested the South Pacific Commission to circulate information about the collection of sera specimens, and as Professor J.A.R. Miles, Professor of Microbiology of the University of Otago was also attending the meeting, he was invited to prepare a paper on this subject. This paper is presented below for your information.

Dr Guy Loison
Programme Director (Health)

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Introduction

If specimens of serum have been collected and processed with adequate sterile precautions they can be sent by air mail and will normally arrive in satisfactory condition for testing. Otherwise they must be transported at the maximum possible speed refrigerated in a vacuum flask.

To obtain sterile serum specimens similar precautions need to be taken in collecting and processing the blood specimen to those used for obtaining blood for blood culture and sub-culturing from such cultures.

Apparatus

- (1) A dry sterile 10 or 20 ml syringe with a dry sterile needle (gauges 19 or 21 are satisfactory) should be used. Wet syringes or needle will cause haemolysis and the specimen may be unsatisfactory for some tests. Vacutainers are seldom sterile, and even when sterile vacutainers are available, the blood inevitably becomes contaminated when they are opened. They should only be used if the specimen can be kept refrigerated at all times.
- (2) A dry sterile 30 ml bottle.
- (3) Sterile cotton wool swabs.
- (4) 75% alcohol.
- (5) Suitable tourniquet.

Preparation of the skin

Care must be taken to sterilise the skin in the ante-cubital fossa. The skin should be gently cleaned with 75% alcohol on a sterile cotton-wool swab and the swab then left over the vein for two minutes. Even although the operator will have freshly washed hands, he must avoid touching the area where the needle is to be inserted, but may steady a superficial vein with fingers placed above and below. 10-20 ml of blood should be withdrawn and the needle removed after the tourniquet has been released.

Care of specimen

The needle should be removed with sterile forceps, the cap of the bottle removed carefully and the blood rapidly squirted into the bottle. The cap must be replaced immediately. If the blood

is forced into the bottle through the needle some haemolysis may be caused and the chances of contamination are increased.

The blood should be allowed to clot and, if the clot retracts spontaneously, the specimen should be allowed to settle in the refrigerator without further disturbance. If it fails to retract, the bottle should be tapped or shaken without opening until the clot is freed.

When the cells have deposited, clear serum may be removed with a sterile Pasteur pipette and transferred to a sterile bottle or ampoule of suitable size, taking full precautions to avoid contamination. Only if the serum is contaminated with red blood corpuscles should the specimen be centrifuged and a further transfer undertaken. If a screw capped bottle is used, great care must be taken to ensure that the lid is tightly screwed down and it is useful also to seal around the cap with paraffin wax.

Labelling and Packing

The bottles or ampoules should be labelled with a clearly written or typed number on a label which does not easily become unstuck. Labels bearing the name of the patient may be difficult to read. Labelling with a grease pencil is unsatisfactory.

With each specimen or set of specimens from the same patient should be included the following information:

Specimen number(s) as on bottle	Clinical diagnosis
Name of patient	Date of onset
Age	Date(s) of collection of specimen
Sex	
Any relevant clinical notes on the case	
The name and address of the sender.	

The specimens should be carefully packed in cotton in a stout container and sent by airmail to the selected collaborating laboratory.

When dengue is suspected the acute phase specimen may be held in a refrigerator until the second specimen has been collected 10-14 days later and both shipped together.

In cases of hepatitis it is recommended that the initial specimen be forwarded immediately, but the series of weekly specimens collected after this can be held and all shipped together.

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