

## THE VIROLOGY LABORATORY SERVICES IN MALAYSIA

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Up until the early 1960s, the only virus diagnostic laboratory in Malaysia was in the Institute for Medical Research (IMR), Kuala Lumpur. During the early years, new tools and techniques were slowly evolving and it was not until the advent of cell cultures in the 1950s that diagnostic capabilities took a leap forward.

In 1966, the Department of Medical Microbiology, University of Malaya, Kuala Lumpur, began to develop its own virus unit and within a year, diagnosis of enterovirus and poxvirus infections were available for patients seen at the University Hospital. Over the years, new tests were introduced and the range of services increased to the extent that all major virus infections were covered.

The Department of Medical Microbiology at the Universiti Kebangsaan Malaysia, Kuala Lumpur, only started its service in August 1980. In its developmental phase, just like the other two laboratories, many problems were encountered, including insufficient funds, lack of trained personnel and attempts at winning the cooperation of the doctors to send specimens. In spite of all these difficulties, the department has come a long way and is now able to offer a fairly wide range of virus diagnoses.

As may be seen, the three laboratories are all situated in Kuala Lumpur, leaving the rest of the country with little or no means of virus diagnosis unless reference is made to one of these units. There is therefore, a need to diversify and this may come about in the not too distant future. The IMR with its network of branches in the various states is in the unique position of being able to follow this up, especially now that new techniques of virus diagnosis are available which do not require the detection of viable viruses. The new medical school on the east coast of Malaysia will eventually have its own diagnostic unit and will be able to cater to the needs of the patients in that area. In East Malaysia, the General Hospital in Kuching has expressed interest in providing diagnostic services for some virus infections, e.g. measles and rubella. A number of technical staff have received preliminary training and it is hoped that they will serve as the nucleus of a much needed service for Sabah and Sarawak.

At the moment there are three laboratories in Malaysia which are able to provide viral diagnosis in human infections and their activities are given further on this paper.

### INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR

The virus laboratory of the IMR, Kuala Lumpur, serves as the main public health laboratory providing diagnostic services to the hospitals, clinics and veterinary departments in East and West Malaysia. It is also a WHO National Centre for Influenza. Its current activities are:

#### *Enteroviruses (poliomyelitis, coxsackie and echoviruses)*

- (a) surveillance;
- (b) potency testing of poliomyelitis vaccine for the Ministry of Health.

#### *Influenza*

- (a) surveillance;
- (b) incidence of influenza in animals (pig, goat and cattle);
- (c) serological survey of HI antibodies in Malaysians.

#### *Measles*

- (a) diagnosis of measles and subacute sclerosing panencephalitis;
- (b) antibody survey.
- (c) potency testing of measles vaccine

#### *Adenoviruses*

- (a) diagnosis

#### *Arboviruses*

- (a) diagnosis of dengue, dengue haemorrhagic fever and Japanese encephalitis;
- (b) study of the use of mosquitos to detect, propagate and isolate dengue.

#### *Infectious Mononucleosis (IM)*

- (a) diagnosis;
- (b) survey for toxoplasmosis in IM-negative cases (with Filariasis Division).

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**Rubella**

- (a) diagnosis and screening;
- (b) incidence in suspected dengue cases with rash;
- (c) TORCHES programme. (TORCHES — *TO*xoplasmosis, *R*ubella, *CMV*, *H*Erpes simplex, *S*yphilis).

**Congenital Diseases Programme**

- Phase 1: In women of child-bearing age groups
- Phase 2: In defective children aged 0-5 years compared with normal children of the same age group
- Phase 3: In pregnant women during their course of pregnancy.

**Intra-uterine infections**

- (a) Prevalence of IgM and IgA immunoglobulins in cord blood of Malaysian infants.
- (b) Survey of antibodies to TORCHES diseases in cord blood of normal children.

**Chlamydial infection**

- (a) Diagnosis of cases with sexually transmitted disease and eye infections.

**Conjunctivitis (AHC)**

- (a) Surveillance for Coxsackie A 24 virus, Enterovirus 70, adenovirus and other causes of acute haemorrhagic conjunctivitis.

**Meningitis**

Investigation of viral and bacterial meningitis at the Paediatric department, General Hospital, Kuala Lumpur.

**Enteric disease**

Investigation for rotavirus and other causes of infantile diarrhoea.

**Rabies**

Surveillance of animal and human cases.

**Smallpox**

Surveillance.

**Leptospirosis**

- (a) diagnosis;
- (b) leptospiral antibodies in domestic animals (with Veterinary Department);
- (c) leptospirosis as a cause of acute renal failure (with Urology Unit, General Hospital, Kuala Lumpur);
- (d) clinical leptospirosis in the Malaysian Armed Forces (with Ministry of Defence).

**Yellow fever vaccination**

On request.

Current developments include the electron microscopy unit and a unit for the detection of specific IgM. Future developments include hybridoma technology with the aim of producing dengue monoclonal antibodies, the rapid diagnosis of respiratory viral infections and the detection of hepatitis markers.

**DEPARTMENT OF MEDICAL MICROBIOLOGY, UNIVERSITY OF MALAYA**

Tabulated below are the tests currently being offered by the above department.

Infections caused by:	Isolation	Serology	Rapid diagnosis
Adenoviruses	o	o	o
Arboviruses	o	o	
Coxsackieviruses	o		
Cytomegalovirus	o	o	
Echoviruses	o		
Hepatitis B virus		o	
Herpesvirus hominis	o	o	o
Influenza viruses	o	o	o
Measles virus	o	o	o
Mumps virus	o	o	
Parainfluenza viruses	o	o	o
Polioviruses	o	o	
Poxviruses	o	o	o
Respiratory syncytial virus	o	o	o
Rhinoviruses	o		
Rotavirus			o
Rubella virus		o	
Varicella-zoster virus	o	o	o

In recent years the emphasis of this unit has been to introduce rapid viral diagnosis in routine laboratory undertakings. This is in conformity with present trends and the recommendation of the World Health Organization. Because of active involvement in this field, the department was designated as a WHO National Centre for the rapid diagnosis of viral infections in 1979. It is also a WHO National Centre for Influenza. Under consideration is the designation of the department as a WHO Collaborating Centre for reference and research (dengue and dengue haemorrhagic fever).

Besides providing diagnostic services to patients attending the University Hospital, the unit also provides services to private hospitals and doctors in private clinics.

There is an ongoing programme of training in viral diagnosis in the unit and scientists from near and far have benefited from their attachment for varying periods of time to the unit. It is envisaged that this will be stepped up in the future.

#### **DEPARTMENT OF MEDICAL MICROBIOLOGY, UNIVERSITI KEBANGSAAN MALAYSIA**

Listed below are the tests currently being offered by the above unit:

##### *Serology*

Antibody titre to the following viruses: Respiratory syncytial virus, mumps, measles, adenoviruses, herpes simplex virus, varicella-zoster, cytomegalovirus, parainfluenza, influenza (A, B, C), Epstein-Barr, rubella and also *Mycoplasma pneumoniae*

##### *Immunofluorescence to:*

Respiratory syncytial virus, mumps, measles, adenovirus, herpes simplex virus, influenza, parainfluenza.

##### *Electron microscopy to:*

Herpesvirus, rotavirus, poxvirus.

##### *Isolation of viruses*

This is limited to the more common human viruses.

Besides routine service, the laboratory is also involved in the study of congenital infection, performing antibody assay for herpes simplex virus and cytomegalovirus. The unit plans to introduce tests for the specific IgM determination to a number of viral infections.

#### **FUTURE TRENDS IN VIRUS DIAGNOSIS**

The laboratory diagnosis of viral infections has undergone marked changes during the past ten years.<sup>1</sup> Conventional methods of virus isolation and serology were the only tools available to us then and although the techniques were specific and sensitive, they were often tedious, difficult, or in some laboratories, impossible to perform. In recent years, several new, simple and rapid methods for the diagnosis of virus infections have been devised giving acceptable results in a shorter time than classical methods and which allows successful intervention in the treatment of patients and their contacts or in the control of diseases within communities.

The World Health Organization formulated a programme to promote rapid viral diagnosis in public health laboratories of member states as a means of improving primary health care. Several WHO publications have stressed the importance of the rapid diagnosis of viral hepatitis, rotavirus gastroenteritis, viral infections of the skin, genitalia and respiratory tract, and rabies.<sup>2,3,4</sup> A manual was also published to detail the techniques of rapid viral diagnosis<sup>5</sup> and more recently, another WHO document summarized the findings of a scientific group on rapid viral diagnosis.<sup>6</sup>

Rapid viral diagnosis offers many advantages over conventional methods of virus isolation and serology. Its rapidity and simplicity makes it easier to carry out surveys of infectious diseases in an area and the information obtained may lead to the implementation of individual or public health action. The early diagnosis of viral infections will help to prevent hospital cross-infection and their spread to contacts, especially in cases presenting with atypical symptoms. The use of antiviral drugs, both prophylactically and therapeutically, is increasing, though still very limited. Their successful application will depend on specific and early viral diagnosis. The planning and monitoring of preventive programmes require seroepidemiological data, which need to be obtained rapidly and at low cost when there are large numbers of specimens to be handled. Another advantage of rapid diagnostic techniques is that viral antigens may be detected at a central laboratory using specimens collected in localities remote from a virus laboratory. These methods do not depend on virus multiplication and do not even require the presence of live virus.

Although it is recognized that the rapid techniques cannot fully replace conventional ones, they will contribute to knowledge on viral infection as a cause of morbidity and mortality, and help to improve primary health care and the control of viral diseases of public health importance.

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