

## **Options for laboratory testing strategies in response to the emergence of influenza A(H1N1) virus**

Laboratory testing is performed either for confirmation of infection in an individual or as part of a public health investigation. During an outbreak, there can be significant demands on laboratory services to provide timely and accurate testing to determine the causative agent. The current strain of influenza A(H1N1) has already spread to many countries and will probably persist at least until after the northern hemisphere influenza season of 2009–2010. As such, there will be considerable demands on laboratory services for an extended period of time, particularly if testing can only be performed at a limited number of laboratories. A strategy to preserve testing capacity and to maximize the benefits from testing is needed.

The strategy for optimal use of laboratory testing in each country will vary depending on whether the country has reported cases, is in transition between seeing sporadic cases and community transmission, or has widespread community transmission.

### **Countries with widespread community transmission**

- Laboratory testing of all suspected cases is neither possible nor necessary. The majority of cases will be diagnosed clinically.
- Community transmission of the virus could continue for many months so laboratory testing regimes should be sustainable in terms of human resources and availability of reagents and other laboratory supplies.
- Laboratory testing should focus on monitoring the progress of the outbreak through the country. Continuing influenza-like illness (ILI) surveillance at sentinel sites will help monitor the spread of the virus through the country.
- Surveillance and testing of cases with severe acute respiratory illness (SARI) should continue as this will be helpful to determine if there is a change in the virulence of the virus over time. More intensive investigation of cases with apparent failure of antimicrobial therapy may be useful to detect the appearance and spread of resistance to antiviral agents.
- Laboratory investigation of clusters of cases, particularly among vulnerable populations, should also continue.

### **Countries with no reported cases**

- This will be a time of intensive laboratory testing as countries seek, as far as possible, to confirm every suspected case. Testing will help inform decisions on containment measures. Testing strategies should be aligned with national case definitions, taking into account such factors as travel history, clinical signs and possible exposures.

- Closed communities such as schools are potential sites for rapid and intense transmission of infection. As such, they are particularly sensitive surveillance sites and testing of suspected cases from these sites should receive high priority.
- Routine ILI surveillance programmes should continue and be expanded wherever possible.

### **Countries in transition between sporadic cases and community transmission**

- How each country handles this transition will depend on many factors, including the capacity of the laboratory service, the speed of spread of the infection around the country, and the parts of the population that are most severely affected.
- Where capacity exists, intensive efforts to identify all cases and investigate contacts should continue while there is the possibility of containment or the reasonable chance of slowing the spread of infection. This is the time when large amounts of information on the nature of the virus in a country will be collected and every opportunity should be taken to ensure this information is appropriately analysed and distributed.
- As the infection becomes more widespread, the ability to confirm an epidemiological link between cases will decrease and so the benefit from intensive tracing and testing of contacts will decrease.
- As infection spreads further, the value of laboratory confirmation of individual cases will also decrease. Testing should move towards focusing on investigating clusters of cases and monitoring geographic spread.

### **Countries without the capacity to detect novel strains of influenza A(H1N1) virus**

For those countries without the capacity to confirm the presence of this virus, procedures for the movement of specimens in the most efficient way should be in place. As the receiving laboratories are likely to be under considerable pressure to conduct domestic testing, agreements should be made as to how many specimens the receiving laboratories are willing to test and what priority they would receive.