Laboratory Approach to the Diagnosis of Smallpox: Module 1 – Introduction

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Welcome to the Laboratory Approach to the Diagnosis of Smallpox. Though smallpox has been eradicated, concerns remain that variola could be used as an agent of bioterrorism. As well, orthopoxvirus infections of humans are being increasingly recognized. An entire generation of health professionals and laboratorians have never clinically seen or diagnosed smallpox infections; as well, newly recognized monkeypox, vaccinia and cowpox infections often present as diagnostic dilemmas. Other poxvirus infections of humans, from Molluscum contagiosum and parapoxvirus infections continue to cause protracted human disease. Therefore, this program was developed by professionals for professionals, in order to provide education and insight into the world of poxviruses, their disease characteristics, and the methods utilized to provide accurate diagnoses.

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This program is divided into 6 modules, which are further subdivided into educational units: Module 2 provides a comprehensive overview of the Poxvirus family of viruses, with emphasis on smallpox infections in humans, as well as smallpox epidemiology and transmission and clinical diagnosis to differentiate smallpox from other vesicular rashes and rash illnesses. Additionally, Module 2 includes discussion of the 2003 Monkeypox outbreak in the United States as well as prevention of poxvirus infections in humans through vaccination.

Module 3 provides an overview for identification and detection of orthopoxviruses. Algorithms for the appropriate laboratory tests and biosafety will also be discussed.

Module 4 proper collection of poxvirus specimens as well as guidelines for packaging, shipping and chain of custody will be discussed.
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In modules 5 and 6 Laboratory Methods utilized in the detection and diagnosis of poxvirus infections will be described. Module 5 specifically covers regulatory issues pertaining to poxvirus specimens as well as virus isolation, nucleic acid detection and serological detection methods; while Module 6 covers the usefulness of pathology and electron microscopy in the laboratory detection of smallpox and other poxviruses.

It’s my hope that you will come away from this program with an increased awareness of these viral infections, and approaches to their laboratory-based confirmation.