



Categorization of possible DOPS in Virology by Stage of Training

DOPS assess practical skills in laboratory operations but can also be seen to assess basic laboratory understanding in terms of laboratory organization, processes and safety.

Stage A

- Demonstrating basic skills, the ability to carry out straightforward operations and setting up simple tests requiring a single reagent step, under guidance and following written or verbal instructions
- Familiarity and understanding of the Specimen Reception area, the Waste Disposal organization, the Data Entry and communication processes, and the Category 2 laboratory facilities

Stage B

- Demonstrating more advanced and complex skills, setting up tests requiring multiple reagent steps, but still demonstrating these abilities under guidance and following written or verbal instructions
- Familiarity with and understanding of Category 3 laboratory requirements and working, and the organization of Molecular Diagnostics to ensure a working environment which is safe and minimizes the risk of nucleic acid contamination

Stage C

- Demonstrating advanced and complex skills, setting up complex tests and demonstrating the ability to accurately interpret the results and fully understand the limitations of the tests
- Understanding of Category 4 laboratory requirements and working

Stage D

- Demonstrating independent working including initiating appropriate testing strategies, employing advanced and complex laboratory skills, setting up complex tests, arranging and setting up appropriate confirmatory assays or additional informative tests, and demonstrating the ability to accurately interpret the results and report those results to all relevant individuals and organizations.



Examples of DOPs

Stage A

- Preparation of EM grid including negative staining
- Preparation of faecal suspension preliminary to testing by nucleic acid or immunoassay methods
- Preparation of nasopharyngeal aspirate preliminary to testing
- Preparation of slide for immunofluorescent antigen detection including addition of reagents and preparation for microscopy
- Performance of simple rapid commercial immunoassay antigen and antibody tests eg Abbott Determine HIV, Binax Legionella antigen
- Performance of card agglutination assays eg RPR, rotavirus latex agglutination, viral IgG antibody assays
- Removal of material from liquid nitrogen with appropriate safe working practices
- Insertion of material into liquid nitrogen with appropriate safe working practices
- Ability to read an oxygen monitor
- Splitting cells into flasks without contamination
- Preparation of slide chamber (haemocytometer) and counting of cells eg CSF sample, split cells for monolayer preparation
- Inoculation of cell cultures
- Monitoring of equipment temperatures
- Separation of serum, labelling, and aliquotting
- Manual nucleic acid extraction
- Preparation for automated nucleic acid extraction for machines such as Nuclisens easyMag, QIAGEN BioRobot MDx, Abbott m2000, Roche MagNA Pure, Corbett X-tractor Gene
- Assessment of class 1 cabinet airflows using vane anemometer
- Handling blood spillage appropriately
- Data entry into laboratory computer system of patient demographics and clinical data
- Data entry into laboratory computer system of test results for single assays eg VZ IgG
- Manipulation of pipettes showing accurate use and accurate setting, including ability to make a doubling-dilution series
- Ability to receive and categorize samples safely and accurately in Specimen Reception area, including adherence to laboratory policies on leaking specimens and specimen rejection policy
- Telephoning for information or to give results which have validated
- Using a centrifuge (other than an ultracentrifuge) safely, including balancing
- Archiving of samples for longterm storage

Stage B

- Training for Category 3 Laboratory working
- Examination of grids by transmission electron microscopy and identification of virus by EM
- Running random access serology analyzer
- Running an automated nucleic acid amplification system eg Tigris, Viper
- Setting up a plate enzyme immunoassay for IgG and for IgM
- Validating a test run through understanding of appropriate control values
- Understanding of the Westgard rules in monitoring assay quality
- Downloading simple serological results and reporting them with appropriate comments
- Reporting of relevant results to public health colleagues
- Discussing the need for and if required arranging for the issue of immunoglobulins for prophylaxis against viral infections
- Setting up a plate agglutination assay



- Using an ultracentrifuge safely
- Ability to accurately use analytical balance
- Ability to accurately use pH meter
- Ability to prepare laboratory reagent solutions

Stage C

- Identification of virus in cell culture including recognition of cytopathic effects followed by testing to determine the identification of the suspected virus
- CPE in cell culture
- Setting up and reporting immunoassays with appropriate interpretation
- Initiation of confirmatory tests to verify IgM reactive results eg avidity tests
- Setting up and reporting with appropriate interpretation quantitative viral PCR tests eg HIV, HBV, CMV
- Reporting of incidents
- Setting up and reporting virus typing by LIPA
- Setting up and interpretation of immunoblot assays in serology eg HIV immunoblot, HCV RIBA, treponemal immunoblot

Stage D

- Setting up, reporting, and interpreting antiviral resistance tests
- Setting up, reporting and interpretation of virus sequence analysis eg typing of HCV
- Initiating, setting up, reporting of any immunoassays for antigens and antibodies from viruses where samples can be handled at category 2 or 3, with interpretation of results
- Chairing and coordinating the response to an outbreak
- Optimizing primer and probe concentrations for a realtime PCR
- Ability to carry out molecular sequencing and to link viruses together phylogenetically in a potential outbreak (molecular epidemiology)
- Familiarity with advanced EM techniques eg recognition of viral infection in histological sections
- Familiarity with Category 4 laboratory working
- Retrieval and analysis of computerized laboratory data
- Raising a RIDDOR report

