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**15/MHS06/014.**

**MLS516: TECHNIQUES IN CLINICAL CHEMISTRY.**

1. The steps taken to ascertain the suitability of the new method of glucose estimation in Yeenx Inc., is done through a process known as Validation of Assay.

Validation of assay is the evaluation of a test method to determine its fitness for a particular use. Ways by which the suitability of the new glucose method includes:

1. Blanks: Use of various types of blanks enables assessment of how much is attributable to the analyte and how much is attributable to other causes.
2. Reference materials and certified reference materials: Use of known materials can be used to assess the accuracy of the method, as well as obtaining information on interferences.
3. Fortified (spiked) materials and solutions: Recovery determinations can be made from fortification or spiking with a known amount of analyte.
4. Incurred materials: These are materials in which the analyte of interest may be essentially alien, but has been introduced to the bulk at some point prior to the material being samples.
5. Measurement standards: These are substances used for calibration or identification purposes. When placed periodically in an analytical batch, checks can be made that the response of the analytical process to the analyte is stable.
6. Replication: Replicate analysis provides a means of checking for changes in precision in an analytical process which could adversely affect the results. The test can also be run by a superior or supervisor, the results should be with ±2 range.
7. Statistics: Statistical techniques are employed to evaluate accuracy, precision, linear range, limits of detection and quantification, and measurement uncertainty.
8. To determine if a test was performed properly, an accuracy check is performed which involves the following sequential steps:
9. Use of control: A control is a sample whose value is already known after being tested by other validated methods. The value of the control after the assay should be as close to the value of the control as possible, the closer the tested value is to the known control value, the more accurate the result is.
10. Matching the results gotten with the provisional diagnosis: In ascertaining the accuracy of a result, the results gotten from the test should match the provisional diagnosis. In the case of glucose, the provisional diagnosis should query diabetes mellitus and if the test results after several runs, does not match the provisional diagnosis, it is possible that the result is not accurate.
11. Matching the results with other analytes: When ascertaining the accuracy of result, th results of the test is compared with other related analytes. For glucose, the haemoglobin a1c is used to compare it as both values go hand in hand, that is, when glucose levels are high, haemoglobin a1c levels are also high, if it is in this order, then the result is accurate, if the values do not match then the result is not accurate.
12. COVID-19 is the disease called coronavirus disease which is caused by the virus Severe Acute Syndrome Coronavirus -2 (SARS CoV 2). The first case of COVID-19 was in December 2019 at Wuhan, China and has become an ongoing pandemic. Common symptoms of COVID-19 include common cold, fever, sore throats, pneumonia, bronchitis. COVID-19 is now known to cause blood clots in the minor and major blood vessels, these blood vessels transports blood which includes oxygen and nutrients to various organs and also remove waste nutrients from the organs for excretion, when the blood vessels are occluded, this process can no longer continue which leans to organ failure as the cells of the organ begins to die.

As a laboratory scientist, there are various tests to check the function of the various organs, this is done by collecting the right samples for the respective test, in order to do this, the medical laboratory scientist has to get in contact with the COVID-19 patient with correct personal protective equipment (PPE) which includes the use of long sleeve disposable fluid repellent gown (covering the arms and body), respirators, eye protection, fluid resistant (Type IIR) surgical masks. Aprons and gloves are subject to single use with disposal and hand hygiene after each patient contact. The tests to be carried out to check the organ functions includes:

* For Kidney: Electrolytes (Potassium, sodium, bicarbonates) test, urea test, creatinine test, these tests are used to check for the filtration, reabsorption and excretion capacity of the kidney.
* For Liver: test for liver enzymes can be used to ascertain the integrity of the liver which include AST, ALT, ALP, N-nucleotidase, gamma-glutamyl transferase, etc.
* For the Heart: lipid profile tests are done which includes, high density lipid (HDL), low density lipid (LDL), triglycerides, cholesterol, etc.