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1. As the scientist in charge of a laboratory, before a new method can be adopted by the laboratory it has to be ascertained to be a suitable method and for that to happen there are two main considerations which are Premilinary consideration and Technical consideration.
2. Premilinary Consideration: This is the first step and if this fails there is no reason to continue to the technical considerations. This includes Cost, Safety, make versus buy decisions, required technical input and the turn around time.
3. Cost: This is one of the first things to be considered when adoption a new method in the laboratory. It involves taking into consideration the price and expenses it will take in procuring the reagents and equipments that will be required for the success of the new method and as a result, the price per test in which the patients will be charged. The main aim of a business is to make profit and hence it is important to confirm before hand if they will be made. If cost isn’t considered, the laboratory may run into a loss as they might lose their patients or customers as those will prefer going to a laboratory that is cheaper and they will still get the same results.
4. Safety: The safety of the method is the upmost priority when adapting a new method. This involves being free from risks that might be associated with the method. Before ascertaining that this new method is adoptable it must be considered if it is safer than the method its replacing.
5. Make versus buy decision: This mostly involves the reagent that will be required in adopting this new method. The question that comes to mind in this consideration aspect is this ‘’ Is it easier and cheaper to make the reagent in the lab than to buy it?’’ If it is easier and cheaper to make the reagent that will be required for the method then it can be considered. If it requires that the reagent be purchased because that is the safer easy option cost also comes into place. So when considering a new method for a laboratory the make versus buy decision must be made.
6. Required technical input: This has to do with the technical personnels that will be required. It is important to know if the method will require expertise or a new skill acquisition and training for the laboratory staff. It is also important to know if any scientist in the lab can carry out the procedure or additional cost will be spent in employing a new analyst with the technical knowledge or conducting a training for the member of staff involved.
7. Turn around time: This is the time taken to conduct the test and produce a reliable and accurate result for the patients. The turn around time for a new method involves taking into consideration the time it will take to perform the test. The turn around time for most analytical techniques are required to be as short as possible so that treatment can be given based on the result gotten. It helps in saving lives in cases of emergency.
8. Technical Consideration: This includes Accuracy, Precison, Free from blunders, ruggedness, recovery, specificity and sensitivity.
9. Accuracy: This is the nearness to the true value. This is the technical aspect to confirm if the new methpd is capable of giving results that are actually close to the actual value. This can be done by testing the result of the standard gotten and comparing it with that of the manufacturer. A person can be said to be accurate if they get values like 3.5, 3.7, 4.0 and the true value from the manufacturer is 3.8.
10. Precision: This is reproducibility. The precision of an analytical method is the ability of the result to remain the same despite a change in the analyst, time or place it was conducted. A person can be said to be precise it they get values like 4.0, 4.0, 4.0 and the actual value from the manufacturer is 3.2. The analyst is not accurate but precise.
11. Free from blunders: This is the ability of a new method to produce results that are free from errors or that are grossly inaccurate. Before a new method is adopted it must be confirmed to be trusted and free from errors.
12. Ruggedness: This is the ability of a method to be both accurate and precise irrespective of the analyst, the place or time the test was conducted. It must always be accurate and precise.
13. Recovery: This is the ability of how much of the analyte used in carrying out the new method can be recovered.
14. Sensitivity: This is the positive predictive value. Sensitivity is the ability of a test to be a true positive. A test is said to be a true positive if it can detect a minute amount of the analyte present. It is sensitive enough to detect a change in concentration.

Sensitivity = True positive x 100

Positive predictive value All positive

All positive = True positive + False positive

1. Specificity: This is the negative predictive value. It is the ability of a test to be a true negative. Specificity is the ability of a test to be negative when the analyte it is supposed to be detecting is actually absent.

Specificity = False Positive x 100

All positive

All positive= True positive + False positive

1. Steps in determining whether an analytical run has been well performed or not.
2. Use of control: Controls are samples whose value is known only to the quality control officer or the scientist in charge. After an analytical run has been performed, the quality control officer or the scientist in charge should also give the analyst some control to run, which the values are unknown to the analyst prior to the analysis. After the test has been performed, if the values of the control gotten is similar to the actual value or precise, then the other tests performed by the analyst are correct.
3. Matching result with provisional diagnosis: After a test has been run and the result has been gotten, the scientist in charge can also confirm if the result is correct by matching it with the provisional diagnosis made by the physician. For example, if a provisional diagnosis of a patient is anaemia, and the result gotten says the patient has a packed cell volume (PCV) of 45 it is already obvious that the result gotten is wrong. This makes it a reliable acceptability step.
4. Passing a result with other parameters: For example urea, creatinine and Uric acid are both markers for glomerular filtration rate/ function. So after an analyst performs a test like this the laboratory scientist in charge can confirm by carrying out one of the test e.g Urea, from the result gotten from the urea test one can already know what the creatinine value will look like. Another example is potassium and bicarbonate.
5. Assessment of an imminent multiple organ/system failure sequel to COVID 19 infection.

This involves how the corona virus infection causes multiple organ or system failure after infecting an individual.

**Coronavirus:**a type of common virus that infects humans, typically leading to an [upper respiratory infection](https://www.medicinenet.com/upper_respiratory_infection/article.htm) (URI.)  Seven different types of human coronavirus have been identified. Most people will be infected with at least one type of coronavirus in their lifetime. The [viruses](https://www.medicinenet.com/viral_infections_pictures_slideshow/article.htm) are spread through the air by [coughing](https://www.medicinenet.com/chronic_cough/article.htm) and [sneezing](https://www.medicinenet.com/sneezing/symptoms.htm), close personal contact, touching an object or surface contaminated with the virus and rarely, by fecal contamination. The illness caused by most coronaviruses usually lasts a short time and is characterized by [runny nose](https://www.medicinenet.com/runny_nose/symptoms.htm), [sore throat](https://www.medicinenet.com/sore_throat_pharyngitis/article.htm), feeling unwell, [cough](https://www.medicinenet.com/chronic_cough/article.htm), and [fever](https://www.medicinenet.com/aches_pain_fever/article.htm). Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment.  Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes.

**Multiple organ failure:**  is a syndrome that represents a complicated and dynamic pathophysiologic pathway leading to **organ** functional derangement and eventual death. Some of these organs are the heart, lung, liver and kidneys.PPE (Personal protective equipments): PPE is equipment that will protect the user against health or safety risks at work. It can include items such as safety helmets, gloves, eye protection, high-visibility clothing, safety footwear, laboratory coats and safety harnesses. It also includes respiratory protective equipment (RPE). PPEs protects the lungs, eg from breathing in contaminated air, the head and feet, eg from falling materials the eyes, eg from flying particles or splashes of corrosive liquids, the skin, eg from contact with corrosive materials, the body, eg from extremes of heat or cold.

**Laboratory tests**

1. **Kidney:**
2. **Urinalysis**
3. **Estimated GFR**
4. **Serum creatinine**
5. **Urea**
6. **Bicarbonate**
7. Liver:
8. [alanine transaminase (ALT)](https://www.healthline.com/health/alt)
9. [aspartate aminotransferase (AST)](https://www.healthline.com/health/ast)
10. [alkaline phosphatase (ALP)](https://www.healthline.com/health/alp)
11. [albumin](https://www.healthline.com/health/albumin-serum)
12. [bilirubin](https://www.healthline.com/health/bilirubin-blood)
13. Heart:
14. [Lipid panel](https://labtestsonline.org/tests/lipid-panel) (LDL-C,HDL-C, cholesterol, triglycerides)
15. [hs-CRP](https://labtestsonline.org/tests/high-sensitivity-c-reactive-protein-hs-crp)
16. Lipoprotein
17. [Troponin (high-sensitivity troponin)](https://labtestsonline.org/tests/troponin)
18. [CK-MB](https://labtestsonline.org/tests/ck-mb)
19. [BNP](https://labtestsonline.org/tests/bnp-and-nt-probnp)
20. [Pericardial fluid analysis](https://labtestsonline.org/tests/pericardial-fluid-analysis)