PATHOLOGY				
NO	**INDICATOR**	**DIMENSION**	**STANDARD**	**SECONDARY DATA REPORTING FREQUENCY**
1	Percentage of urgent Full Blood Count (FBC) with laboratory turnaround time (LTAT) within (≤) 45 minutes	Timeliness	≥ 90%	3 Monthly
2	Percentage of neonatal total bilirubin results > 300 µmol/L notified within (≤) 30 minutes after result verification	Safety	≥ 95%	6 Monthly
3.1	Accuracy of the External Quality Assurance (EQA) programme report for Anatomic Pathology (General Module)	Effectiveness	≥ 90%	Yearly
3.2	Accuracy of the External Quality Assurance (EQA) programme report for blood parasites (Malaria)	Effectiveness	≥ 95%	6 Monthly

Discipline	:	**Pathology**
Indicator 1	:	**Percentage of urgent Full Blood Count (FBC) with laboratory turnaround time (LTAT) within (≤) 45 minutes**
Dimension of Quality	:	Timeliness
Rationale	:	1. One of the objectives of a pathology laboratory is to provide fast laboratory results for the management of medical emergency. 2. Timelines of the services is the capability of the laboratory providing fast results. 3. A fast laboratory turnaround time (LTAT) is desirable and is one of the indicators of efficient laboratory service. 4. FBC is a basic and commonly requested test provided in all healthcare facilities.
Definition of Terms	:	**Full Blood Count (FBC):** Automated measurement of blood cell parameters. **Laboratory turnaround time (LTAT)**: Measuring the time laboratory receives the specimen to the time the test results is validated. **Urgent FBC**: FBC requested as urgent for immediate management of patient or emergency cases.
Criteria	:	**Inclusion**: 1. All requests sent for FBC that are labelled as urgent. **Exclusion**: 1. Requests for non-urgent FBC. 2. Request short turnaround time (STAT) not for immediate management of patient or emergency cases. 3. FBC done at POCT site.
Type of indicator	:	Rate-based process indicator
Numerator	:	Number of urgent FBC with LTAT within (≤) 45 minutes
Denominator	:	Total number of urgent FBC
Formula	:	Numerator x 100 % Denominator
Standard	:	≥ 90%
Data Collection & Verification	:	1. **Where**: Data will be collected in all laboratories providing the test. 2. **Who**: Data will be collected by Officer/ assigned laboratory personnel of the department/ unit. 3. **How to collect**: Data is suggested to be collected from FBC request form/ urgent sample record book/ LIS. 4. **How frequent**: Monthly data collection within department. Validated summarised secondary data to be sent 3 monthly to Quality Unit of the respective hospital for monitoring. PVF to be sent 6 monthly to Quality Unit of hospital. 5. **Who should verify**:

	Prepared by	Validated by
Primary Data	Officer/ Paramedic/ Nurse in-charge	Supervisor of the person who prepared the data
Secondary Data	Officer/ Paramedic/ Nurse in-charge	Head of Department/ Specialist in-charge

		PVF must be verified by Head of Department, Head of Quality Unit and Hospital Director.
Remarks	:	*This indicator is also being monitored as HPIA and Outcome Based Budgeting (OBB) indicator.

Discipline	**:**	**Pathology**
Indicator 2	:	**Percentage of neonatal total bilirubin results > 300 µmol/L notified within (≤) 30 minutes after result verification**
Dimension of Quality	:	Safety
Rationale	:	1. Neonatal jaundice is a common medical condition in newborn babies. High levels of unconjugated bilirubin may lead to acute and chronic bilirubin encephalopathy if appropriate treatment is not promptly instituted. Prolonged hyperbilirubinaemia in neonates may cause neurodevelopmental problem including athetoid cerebral palsy, hearing loss and visual impairment. Acute hyperbilirubinaemia can result in kernicterus. 2. Active communication of critical results is part of overall responsibilities of patient care in clinical pathology service. Requestor has a responsibility to ensure contact details are clear. Individual laboratory must defined their pathway for critical result reporting and define a failsafe system. 3. This is in line with the Malaysian Patient Safety Guideline 2012, Patient Safety Goal No. 8, which require critical result to be notified within 30 minutes from result is ready to be reported. Failure of timely communication and follow-up of critical laboratory values (results) can lead to errors, increased morbidity and mortality. 4. Hyperbilirubinaemia > 300 µmol/L is indication for urgent medical intervention (e.g. exchange transfusion) to avoid complication. Therefore, it is important to ensure timely critical result communication between the laboratory and the clinician. Reference: • Paediatric Protocol for Malaysian Hospitals 3rd edition 2012. • Clinical Practice Guidelines on Management of Neonatal Jaundice 2nd edition 2014.
Definition of Terms	:	**Critical result:** Test result or value that falls outside the critical limits or the presence of any unexpected abnormal findings which may cause imminent danger to the patient and/ or required immediate medical attention. **Critical limit:** Boundaries of the low and high laboratory test results beyond which may cause imminent danger to patient and/ or require immediate medical attention. **Result verification:** Results are analysed, confirmed and ready to be released. **Neonate:** Day 1 to Day 28 of life. **Notification:** Any mode of communication (e.g. telephone, SMS). All communication must be documented.

Criteria	:	**Inclusion**: 1. First sample of neonatal total bilirubin results > 300 µmol/L in babies ≤ 28 days old. **Exclusion** 1. Subsequent sample of neonatal total bilirubin results > 300 µmol/L. 2. Neonatal total bilirubin results > 300 µmol/L in babies more than 28 days old. 3. Neonatal total bilirubin results > 300 µmol/L but the requesting location (ward or clinic) cannot be identified from the request form. 4. Unable to contact after 2 attempts within 15 minutes. *Results will be reported with the comment.*
Type of indicator	:	Rate-based process indicator
Numerator	:	Number of neonatal total bilirubin results > 300 µmol/L notified within ≤ 30 minutes after result verification
Denominator	:	Total number of neonatal bilirubin results > 300 µmol/L
Formula	:	Numerator x 100 % Denominator
Standard	:	≥ 95%
Data Collection & Verification	:	1. **Where**: Data will be collected in all laboratories providing the test. 2. **Who**: Data will be collected by Officer/ assigned laboratory personnel of the department/ unit. 3. **How to collect**: Data is suggested to be collected from critical value result record book/ critical value notification record book/ LIS. 4. **How frequent**: Monthly data collection within department. Validated summarised secondary data to be sent 6 monthly to Quality Unit of the respective hospital for monitoring. PVF to be sent 6 monthly to Quality Unit of hospital. 5. **Who should verify**:

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Primary Data	Officer/ Paramedic/ Nurse in-charge	Supervisor of the person who prepared the data
Secondary Data	Officer/ Paramedic/ Nurse in-charge	Head of Department/ Specialist in-charge

PVF must be verified by Head of Department, Head of Quality Unit and Hospital Director.

Remarks	:	

Discipline	:	**Pathology**
Indicator 3.1	:	**Accuracy of the External Quality Assurance (EQA) programme report for Anatomic Pathology (General Module)**
Dimension of Quality	:	Effectiveness
Rationale	:	EQA is one of the methods to monitor the quality of histopathological diagnosis and competency of the Anatomical Pathologist.
Definition of Terms	:	**EQA programme:** It is as a system for objectively checking the laboratory's performance using an external agency or facility. The General Module of the Histopathology EQA programme comprises of unknown cases encountered in general histopathology. Correct diagnoses

		include concordant and minor discordant reports. Submission of the reports is based upon the average of the Pathologist performance.
Criteria	:	**Inclusion**: 1. Results from at least 2 cycles of General Module of Histopathology EQA programme participated by an individual Anatomical Pathologist in the current calendar year. **Exclusion**: 1. EQA results received after the calendar year.
Type of indicator	:	Rate-based outcome indicator
Numerator	:	Number of correct diagnoses achieved by the Anatomical Pathologist
Denominator	:	Number of all cases attempted by the Anatomical Pathologist within a calendar year
Formula	:	Numerator x 100 % Denominator
Standard	:	≥ 90%
Data Collection & Verification	:	1. **Where**: Data will be collected in all laboratories providing the test. 2. **Who**: Data will be collected by Officer/ assigned laboratory personnel of the department/ unit. 3. **How to collect**: Data is suggested to be collected from EQA result or report/ Anatomic Pathology record book. 4. **How frequent**: Yearly data collection within department. Validated summarised secondary data to be sent yearly to Quality Unit of the respective hospital for monitoring. PVF to be sent yearly to Quality Unit of hospital. 5. **Who should verify**:

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Remarks	:	

Discipline	**:**	**Pathology**
Indicator 3.2	:	**Accuracy of the External Quality Assurance (EQA) programme report for blood parasites (Malaria)**
Dimension of Quality	:	Effectiveness
Rationale	:	1. To ensure competency of staff on malaria parasites detection as correct detection is crucial for early treatment and surveillance purposes. 2. BFMP is performed in all laboratories with or without Pathologist.
Definition of Terms	:	**Correct detection (Detected/ Not Detected)**: It is determined by designated personnel in local and/ or National Malaria Control Programme or Malaria Reference Laboratory and/ or EQA results.
Criteria	:	**Inclusion**: 1. All malaria slides submitted for review by local and/ or National Malaria

<table>
<tr><td></td><td></td><td>Control Programme and Malaria Reference Laboratory (first positive peripheral blood smear and blinded rechecking slides).
2. All malaria EQA programmes samples examined and reported.

Exclusion:
1. Poor quality smear provided by requestor.
2. Detection of malaria parasite by other method than microscopy examination.

Sampling:
All positive slides shall be submitted for review by local or national malaria control program. Random selection for the 10% of the negative slides should be representative of the total malaria slides examined. Each department shall establish and document its own procedure for the negative smear sampling method.</td></tr>
<tr><td>Type of indicator</td><td>:</td><td>Rate-based outcome indicator</td></tr>
<tr><td>Numerator</td><td>:</td><td>Number of correct malaria result reported on slides examined in six months</td></tr>
<tr><td>Denominator</td><td>:</td><td>Total number of all malaria slides sent to local and/ or National Reference Laboratory and EQA programme samples in six months</td></tr>
<tr><td>Formula</td><td>:</td><td>Numerator x 100 %
Denominator</td></tr>
<tr><td>Standard</td><td>:</td><td>≥ 95%</td></tr>
<tr><td>Data Collection & Verification</td><td>:</td><td>1. Where: Data will be collected in all laboratories providing the test.
2. Who: Data will be collected by Officer/ assigned laboratory personnel of the department/ unit.
3. How to collect: Data is suggested to be collected from BFMP record book/ EQA result or report/ result from local and/ or National Malaria Control Programme and Malaria Reference Laboratory/ LIS.
4. How frequent: 6 monthly data collection within department.
Validated summarised secondary data to be sent 6 monthly to Quality Unit of the respective hospital for monitoring.
PVF to be sent 6 monthly to Quality Unit of hospital.
5. Who should verify:
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