LifeLabs®
Formerly MDS Diagnostic Services

# Inside Diagnostics

## NEONATAL BILIRUBIN

The updated Ontario MOHLTC Laboratory Requisition (OHIP) includes a new section specifically designed to capture information required to properly interpret and act upon bilirubin measurements in the newborn.

Babies may be placed at risk if communication with the laboratory is imprecise. Conversely, 'Critical' calls may be initiated which would have been considered unnecessary had the laboratory received (clinical) information permitting proper interpretation such as information concerning phototherapy or previous results.

Potentially 'Critical' results or results indicating the need for therapy are determined in relation to the child's age in hours[1] which should be provided on the requisition. For truly 'Critical' results, it is important that we have a contact number for the responsible clinician which is effective 24 hrs. per day. As a back-up there is a field in which to provide the telephone number of the parent or care giver which should be the home number effective nights and at the weekend. This is important should an 'on-call' clinician be required to manage the baby.

From time to time we encounter a situation in which a nurse visits a home to procure a sample which is submitted to our laboratory without the name of a clinician and without contact information. Clearly this is a problem if a 'Critical' value is generated. Nurses performing home visits on behalf of a physician should be instructed to provide the necessary information.

Kernicterus[2] is fortunately a rare condition but cases still occur. ■

### REFERENCES


1. Approach to the management of hyperbilirubinemia in term newborn infants. Paediatrics and Child Health 4 (2):161-164 1999
2. Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. Pediatrics Vol. 114 297-316 2004
3. CMPA Information Sheet June 2007 iso769E


## NEUTROPENIA – WHAT TO DO?

Profound neutropenia is a dangerous condition when unexpected for it will render an individual susceptible to overwhelming sepsis. Because of this OAML laboratories have determined a Critical value for Absolute Neutrophil and Total WBC Counts < 0.5 $X10^9$/L.

We recognize the problem that such values are not always unexpected particularly in the practice of specialists such as hematologists and oncologists. Exceptions (for individual patients) can be made in order to prevent unnecessary calls to specialists or when this is requested in writing and approved by the Laboratory Director. For individual patients known to have critical values, requests not to call may be written on the requisition. In addition we do not call clinicians if the critical value is a repeat value within a four month time frame. There is no question that administration of this critical value is a challenge. We do encounter patients with profound neutropenia secondary to drug reactions for whom prompt management is important.

We can improve critical call reporting at LifeLabs if clinicians communicate known exceptions for particular patients as required or based on type of specialist practice as suggested above. ■


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# MORE ON LIPID TARGETS

The table published in Inside Diagnostics, summer 2007, taken from OAML Guideline for Adult Lipid Testing August 2007 does not clearly represent the Canadian Cardiovascular Society Position Statement, September 2006.
The table below includes current recommendations.

| Risk Level | 10 y CAD risk | Recommendations | Supplemental Test Apolipoprotein B Optimal plasma level |
|---|---|---|---|
| **High** Includes patients with diabetes, atherosclerotic disease, renal failure | ≤20% | Treatment Targets Primary LDL-C <2.0 mmol/L<br><br>Secondary TC/HDL-C <4 | <0.85 g/L |
| **Moderate** | 10%-19% | **Treat when:** LDL-C ≥3.5 mmol/L **or** TC/HDL-C ≥ 5 | <1.05 g/L |
| **Low** | <10% | **Treat when:** LDL-C ≥5.0 mmol/L **or** TC/HDL-C ≥6 | <1.2 g/L |

Please note treatment targets are stated for the high risk level based on LDL-C as the primary treatment target.

For the moderate and low risk levels, values at which treatment should be initiated are stated based on either elevated LDL-C or TC/HDL-C. These are not treatment targets. When treatment is indicated for moderate and low risk levels the objective is to lower the LDL-C by at least 40%, optimally LDL-C < 2.5 mmol/L for moderate risk individuals and <3.5 mmol/l for low risk individuals.

We apologize that the previously published table did not clearly indicate this. ■

# HEPARIN ASSAYS

There are two types of heparins. The oldest and best known is unfractionated heparin (UH) which is usually given intravenously (IV). Rarely, it is given in therapeutic doses by the subcutaneous (SC) route, in which case it is administered twice a day. In either case, monitoring is usually done by the APTT test. In very rare circumstances, APTT results are confirmed by an anti-Xa assay. This assay is based on the ability of UH to accelerate the inhibition of added activated coagulation factor X (Xa). The residual Xa then reacts with a chromogenic substrate to generate a colour which can be measured. The intensity of the colour is then translated into a UH concentration. This is done by using a reference curve that is constructed using specific UH standards. Blood for anti-Xa activity is drawn, like the APTT, at any time during a continuous IV heparin infusion and at mid interval during twice a day SC dosing.

Low molecular weight heparins (LMWH) are derived from UH by either enzymatic or chemical digestion and have a longer half life. LMWH are always administered by the subcutaneous route and are given either once or twice a day depending on the clinical indication. Monitoring is not necessary, and cannot be done with the APTT test. In certain circumstances, such as extreme obesity, renal failure, or use in patients with artificial heart valves, it is necessary to verify the dose by measuring the anti-Xa activity. This activity is measured using reference curves that are constructed using specific LMWH standards. Peak levels are measured 3-4 hours following the LMWH injection. The range of therapeutic peak anti-Xa concentrations varies with the type of LMWH, the dose, and the dosing regimen (QD or BID).

Another anticoagulant, Danaparoid, is referred to as a heparinoid. It is composed of a mixture of heparan sulfate and dermatan sulfate. It is used exclusively for in-patients with heparin induced thrombocytopenia. It is given intravenously and is monitored by an anti-Xa assay. Specific Danaparoid standards are used in this assay. Danaparoid is rarely used now, because of the advent of the specific thrombin inhibitors, Hirudin and Argatroban.

LMWH are the only anticoagulants used frequently in the community, and usually for the treatment of deep venous thrombosis. Only in rare circumstances is monitoring necessary, and this, only when full therapeutic doses are used. Anti-Xa tests are referred to the Toronto Medical Laboratories (TML). The type of anticoagulant must be specified (UH, LMWH, Danaparoid). In addition, for LMWH, it is necessary to indicate when the blood was drawn (peak or trough), and the dosing regimen. Anti-Xa levels cannot be requested on an urgent basis.

TML does not provide therapeutic ranges for LMWH, when reporting anti-Xa levels. There are several reasons for this. As stated above, therapeutic anti-Xa levels vary with the type of LMWH, the dose, and whether the dosing is once or twice a day. Furthermore, there are no published ranges for some LMWH preparations. Consequently, monitoring LMWH with anti-Xa levels in the community should only be done by physicians with a specific expertise in this area. ■

## REFERENCES


1. Barrowcliffe TW. Low Molecular Weight Heparin (s). Br J Haematology 90: 1-7, 1995
2. Kessler CM. Low molecular weight heparins: practical consideration. Seminars in Hematology 34: 35-42, 1997
3. O'Shea SI, Ortel TL. Issues in the utilization of low molecular weight heparins. Seminars in Hematology 39: 172-178, 2002 ■


# ERRATUM

The Gestational Glucose Tolerance Screen does not require an 8 hr fast as was incorrectly stated in Inside Diagnostics Fall 2007. A fast is required for post screening confirmation when this is necessary. ■