Clinical Guideline

JAUNDICE IN INFANTS

SETTING	Primary and Secondary Healthcare Institutions in the Western Cape which refer to Red Cross War Memorial Children's Hospital (RCWMCH)
FOR STAFF	Primary and Secondary Doctors and Nurses who refer patients to RCWMCH
PATIENTS	Patients under the age of 1 year old with jaundice

Introduction

Management of jaundice in infants is quite different in primary and secondary care settings. It is the role of the primary level clinician to identify patients with jaundice and to refer them for an assessment to identify which of these patients need further investigations, management and referral to the appropriate specialities. This assessment can usually be done at a secondary level hospital. Cases that are assessed at secondary level to be non-physiological will need specialist input from gastroenterology and possibly paediatric surgery.

The purpose of this guideline is to assist primary healthcare workers to identify patients who need referral and to guide secondary level healthcare workers through the initial assessment, work up and referral criteria.

Background

Jaundice is the clinical term that clinicians use to describe the yellow discolouration seen in the skin, eyes and mucous membranes of patients with hyperbilirubinemia (high bilirubin levels in the blood). Hyperbilirubinemia is a common finding in the newborn period.

Hyperbilirubinemia can be physiological (meaning that it is the result of normal changes in the neonatal period) or it may be non-physiological (meaning that a pathological process is causing the change in bilirubin level). Non-physiological hyperbilirubinemia requires investigation and management to identify any underlying cause and to protect the infant from the result of these high levels of bilirubin.

Jaundice is related to the metabolism of haemoglobin in the red blood cells. When old red blood cells are broken down haem is released. Haem is then broken down into biliverdin and then into fat-soluble bilirubin which we call unconjugated. This unconjugated bilirubin is then transported to the liver. The liver conjugates bilirubin making it water soluble. It is then excreted via the biliary tree into the duodenum before being excreted in stool and urine. A small amount of this conjugated bilirubin will be processed back into unconjugated bilirubin by bacteria in the gut and will recirculate - this is called enterohepatic recirculation.

The reason that newborn babies, and especially prem babies, get jaundiced so easily is that there are several factors that line up to make them more likely to build up bilirubin in their blood steam. These factors are a raised bilirubin production rate due to increased red blood cell breakdown, liver immaturity and an increase enterohepatic recirculation rate.

When we test blood levels of bilirubin, we will usually test for both conjugated and total bilirubin. This is because this can guide the clinician as to what the most likely underlying cause of the jaundice is.

For instance: in small babies, **unconjugated hyperbilirubinemia** is the most common. This is the result of increased production of bilirubin and the most important management strategies are to monitor and control the levels with phototherapy to prevent complications such as kernicterus (brain damage).

In patients with **conjugated hyperbilirubinemia**, the cause is more likely going to be due to a problem with bile flowing out of the liver. In that case the cause is often surgical in origin and the management plan is very different.

Although jaundice is quite a common problem in babies, there are a large number of possible causes which can be dangerous and often require early investigation and management to achieve the best outcomes. In certain cases, a delay in diagnosis can make the difference between survival or the long-term need for a liver transplant.

Important details on history

How old is the infant in days?
Were they born premature?
As the birth traumatic with evidence of haematomas?
Did the mom undergo antenatal screening and where her booking bloods normal?
Is the infant breastfeeding?
When was the jaundice first noticed?
Was there any illness or new medication started at the same time as the jaundice (including traditional medication)?
Has the caregiver noticed any bleeding or bruising anywhere on the baby?

Ask about the colour of the stool and urine.

Important details on examination

Assess the general status of the infant:

- Signs of sepsis
- Failure to thrive
- Dehydration
- Bruising or bleeding

Abdominal examination, especially assessing for hepatomegaly and signs of asites

Systemic examination to confirm no comorbidities

Inspect the stool – is it pale or normally pigmented (scratch below the surface layer to see the colour inside)

Management and referral guidance

Management and referral at Primary level: All patients under the age of 1 year old with jaundice are referred for general paediatric assessment – this may be to a secondary level hospital.

Management and referral a secondary level:

All infants presenting with jaundice should be assumed to be at risk of severe sepsis, bleeding disorders and metabolic derangement. The initial priority is to confirm the infant is stable prior to further investigation or consideration of transfer.

Patient age	Management and referral guidance
< 3 days	This is almost always unconjugated hyperbilirubinemia. The concern here is the possibility of haemolysis as the underlying cause AND that an exchange transfusion may be needed to prevent kernicterus. Bloods: Total serum bilirubin level, full blood count and blood film, LDH, Coombs tests, TORCHES *screen This patient should be urgently discussed with a neonatal or general paediatric team for referral for further assessment and management
>3 but <14 days	This is usually physiological jaundice, but consideration for haemolysis, sepsis, metabolic causes should still be kept in mind. Confirm and monitor the total serum bilirubin to confirm the patient levels don't require intervention. **Please see the national paediatric guideline for guidance on management of phototherapy and referral of these patients.**
>14 days	Always confirm if the hyperbilirubinemia is conjugated or unconjugated if the jaundice persists or presents after 14 days. <u>Unconjugated:</u> - Exclude sepsis including a UTI - TORCH screen (especially Syphillis) - Confirm thyroid status - Discuss with general paediatric team or gastroenterology as required <u>Conjugated</u>: - Neonatal hepatitis is the most common cause - Extra-hepatic biliary obstruction - Metabolic disorders - All patients should be discussed with paediatric gastroenterology as soon as the conjugated hyperbilirubinemia is identified.

*TORCHES screen: toxoplasmosis, rubella, cytomegalovirus, herpes simplex, HIV, syphilis