Quality-Based Procedure for Hyperbilirubinemia in Term and Late-Pre Term Infants (≥ 35 weeks)

Webinar Questions & Answers

Glossary

CEAG – Clinical Expert Advisory Group (the group who created the QBP)
PCMCH – Provincial Council for Maternal and Child Health
QBP – Quality-Based Procedure
TSB – Total Serum Bilirubin
TcB – Transcutaneous Bilirubin

Questions Regarding Risk Factors

When the term "sepsis" is used for risk assessment, does that refer to a blood culture which has been sent and is pending, or a positive culture only?

Clinical judgement should be used. Any baby with a suspicion of sepsis, being treated with antibiotics and with a blood culture pending, should be considered septic. Cultures sent on babies who otherwise seem fine (i.e. a culture was done because of a ruptured membrane in a GBS positive mother or because of some other screening), would not be considered septic.

How is asphyxia defined?

Asphyxia is defined as per the American Congress of Obstetricians and Gynaecologists definition– Low cord pH, low Apgar at 5mins and later, need for resuscitation, and/or evidence of organ dysfunction.

Is history of asphyxia considered a risk factor if the baby is now well?

No. One needs to consider if there are things that are currently making the infant unstable and are increasing the risk of transference across the blood-brain barrier. If the baby has had a rough start but is now well, history of asphyxia would not be a risk factor.

Can you explain the breastfeeding statement at the bottom of the Phototherapy Treatment Graph?

The risk factors noted on the Phototherapy Treatment Graph are those for bilirubin encephalopathy. Breastfeeding is not a risk factor for bilirubin encephalopathy, thus exclusive breastfeeding does not affect the treatment line.

Regarding the risk factor "exclusive breastfeeding not well established" (under risk factors for Severe Hyperbilirubinemia) – In most babies discharged at 24 hours, breastfeeding is not well established. Wouldn't this mean that most babies would have this item as a risk factor?

This was the topic of significant discussion amongst CEAG members. As per the note on the phototherapy graph, exclusive breastfeeding would not affect the treatment line. Where it would come into play would be in determining the follow-up algorithm (A, B or C), and timing for follow-up, which would require a judgement call on the part of the clinician.

In the case study, a decision was made based on the patient's age and deciding if they had any of the risk factors listed. The clinician would likely be aware of many of those risk factors based on history, but how would one know if the patient was G6PD deficient? Given that G6PD has often been implicated in kernicterus, should it be part of screening?

The CEAG is not advocating that all patients be screened for G6PD (or other risk factors they may not be aware of), but these risk factors should be considered if you know of them (i.e. from a previous pregnancy).

Questions Regarding Bilirubin Screening

Do we know what is done across the province with regards to screening methodology – TSB versus TcB? It is not easy to do a TSB in a community practice setting as getting a timely lab result is difficult (results tend to take 24 hours). As a result, some patients get sent to a local hospital where results can be returned within two hours. Sometimes the only option clinicians have is to send the baby to the ED, which is the most costly option for the province.

While a formal survey regarding screening methodology was not done, expertise from the CEAG provided the sense that both TSB and TcB are currently being used (although we do not know relative proportions of who is using which method across the province). The CEAG feels that TcB may be the most practical answer to the issues noted in the question above, however, it is important to note that even when TcB is being used, there needs to be a back-up method to get a TSB if necessary. The issue of increasing community services, such as lab availability, will be tabled by PCMCH for further discussion in the near future.

If TcB is available, would you recommend TcB be used for follow-up bilirubins, or TSB?

This will depend on the circumstance. If the patient has received phototherapy, then a TSB is required (not a TcB). If the patient did not require phototherapy, use of TSB versus TcB would be at the discretion at the practitioner. If TcB is used and the patient is within 50μmol of the phototherapy treatment line, then it should be followed-up by a TSB.

Some babies will plot just below the phototherapy level in high-intermediate zone , will require repeat bilirubin within 24 hours, and then will keep plotting in this zone. Is there any way to address the babies who get repeat bilirubins, but don't require phototherapy, and plateau at this level?

If the baby maintains the curve (neither increasing nor getting worse) and they are at the end of the nomogram, they can be referred to primary care. There can be some clinical discretion regarding reducing the number of bilirubins if a plateau is identified.

Should a baby be kept in hospital to assess for rebound hyperbilirubinemia?

In the algorithm, a rebound Hyperbili check occurs at 12-24 hours after discontinuing phototherapy. Whether the baby stays in the hospital or goes home is up the discretion of the clinician. The patient-centred approach would be to allow the patient to go home and to coordinate follow-up testing within the 24-48h timeframe. This would, however, be dependent on the availability of follow-up resources. It is important for the clinician to balance the resources available with the risks to the baby as the rebound hyperbilirubinemia check is extremely important.

Is there any concern regarding the accuracy of TcB if there is a variation in child's skin pigmentation?

Correlation of TSB with TcB is impacted by a number of factors, including skin pigmentation. To help mitigate this, the CEAG recommends TSB be done if the TcB bilirubin level is within 50μmol of the phototherapy treatment line.

What is the expectation for bilirubin checks for babies born at home?

Midwifery was represented at the CEAG table and this was discussed. While babies born at home have excellent follow-up by their midwives, clinical assessment alone is not sufficiently accurate to identify patients in need of treatment for hyperbilirubinemia. These patients are included in the QBP and the expectation would be that midwifery practices use TcB to assess their patients (with a plan for lab backup), work out an agreement with a local lab to process samples obtained in the home or to obtain samples from patients presenting to the lab.

Overall, have you increased the number of follow-up bilirubins required post-discharge in the various risk zones?

No, the intention is that the patients will have fewer bilirubins overall. It was found that lack of communication between providers resulted in extra bilirubins being ordered and further follow-up when not actually necessary. It is hoped that the pathway will improve communication between clinicians, and by using the follow-up algorithm which specifies when bilirubin measures should be done, the superfluous use of bilirubin testing will be reduced.

In a baby who is DAT positive, the algorithm recommends cord TSB. We currently do a 12hr bilirubin in this scenario. Is this acceptable?

Most of the time it will be acceptable but waiting 12 hours in the most severe cases will be too late. Thus, the CEAG opted to be cautious and recommend cord TSB.

Which nomogram should be used, the hour specific or phototherapy?

Both are used as the Hour Specific Nomogram and the Phototherapy Treatment Graph address two different things – First the Phototherapy Treatment Graph is used to determine if the patient requires phototherapy. If the patient does not need phototherapy, the patient is then assessed on the Hour Specific Nomogram to determine follow-up protocol.

Does the advisory group support the use of the bilitool.org website to plot results and receive recommendations?

Bilitool.org is almost the same algorithm as it is based on the same data, graphs and nomogram. If the organization is used to using Bilitool.org it should be fine to use in the appropriate step of the pathway.

Questions Regarding Phototherapy

Would home phototherapy not be an advantage even if the parents need to go to a lab to get the blood work done? This would save the baby from being admitted to hospital or prolonging their hospital stay for phototherapy.

Home phototherapy is dependent on whether or not it would be possible to get timely blood results a lab. Each community needs to evaluate what resources are available to them in order to determine the feasibility of home phototherapy. PCMCH is very aware of all of the issues relating to newborn screening needs (all screenings that need to take place between 24-72 hours after birth) and has raised the issue with government. PCMCH hopes to have a provincial dialogue about how to best help communities support the screening of newborns so that all babies get consistent, high quality screening, and do not fall through the cracks due to gaps in services.

If an infant is receiving phototherapy, how far below the phototherapy line do you recommend their bilirubin be before stopping phototherapy?

There was a lot of discussion amongst the CEAG about this as no current guidelines provide a recommendation. The CEAG decided to recommend discontinuing phototherapy once bilirubin is below the line as phototherapy is not a totally benign therapy. Some hospitals opt to "step down" the therapy to a lower radiance, however, there is currently no evidence for or against this method.

With regards to phototherapy devices, do you recommend using the blue light systems?

Phototherapy is most effective around the blue light spectrum, thus these systems are most effective. That does not mean that hospitals have to change their current systems. The CEAG recommends that hospitals check the irradiance of their systems to ensure optimal function and provision of the recommended dose of phototherapy.

While using the Bilisoft blanket, what is best practice about eye and gonad protection?

Manufactures recommend that eye and gonad protection is not needed. At the time of the webinar, no further information was known about this.

Other Clinical Questions

Does the pathway state anything about standardizing the approach to the investigation of clinically significant jaundice, in particular, isoimmunisation?

The pathway discuses mothers identified as having red cell antibodies, when to consider consultation, when to consider cord blood in isoimmune patients, and patients whose mother's are type O, and follows the recommendations of the Canadian Paediatric Society guidelines.

How long can visible jaundice last?

Breast milk jaundice can last a couple of months, however, that is outside the scope of this QBP.

Is there a standardized rate of supplementation?

There is not a standardized rate for supplementation. The CEAG felt that supplementation rates should be measured as an increase in rate would be a negative, unintended consequence of the pathway, and thus should be monitored. The vast majority of infants do not require supplementation and it is not the intention that this pathway be used as an excuse to supplement. The detailed instructions of the pathway outline the importance of providing lactation support, even during phototherapy, and it is outlined that phototherapy is not an indication for supplementation unless there is a high risk for exchange transfusion.

Does the pathway universally screen DAT/COOMBS?

No, the pathway does not universally screen DAT/COOMBS. It is indicated for pregnancies where there are maternal antibodies noted during the maternal screening, or in pregnancies where the mom is blood group O and the infant needs treatment.

If mom is O pos, at what point are we testing for ABO incompatibility?

ABO and COOMBS testing is recommenced when phototherapy is required (as per Canadian Paediatric Society guidelines), and is outlined as a specific step in the pathway.

Has there been any discussion regarding an increase in hyperbilirubinemia rates following delayed cord clamping in the term population?

This QBP is focused on treatment based on the bilirubin value. Any cases of hyperbilirubinemia as a result of delayed cord clamping would be treated based on bilirubin levels.

Other Non-Clinical Questions

Are there any plans for the PCMCH or other expert panel to address guidelines for treatment of hyperbilirubinemia for infants less than 35 weeks gestation?

This is not something that has been discussed at this point.

Have you thought about adding vertical lines to the chart so that it is easier to plot the results, or provide a numeric chart broken down by 4 hour intervals with the 3 risk categories (as some currently use)?

Gaining permission to edit the copyrighted graphs proved difficult. One option suggested to improve usability of the graphs is to use a clear ruler to direct the reader to the appropriate line intersection.

How will this be disseminated to community paediatricians and family medicine so that everyone is using the same criteria for treatment and referral?

In addition to having the materials available on the PCMCH website (www.pcmch.on.ca), PCMCH will work to communicate with community-based paediatricians and family physicians through the Paediatric and Family

Medicine Sections of the Ontario Medical Association and through the College of Family Physicians. In addition PCMCH will also communicate with midwifery through the Association of Ontario Midwives, with Public Health and also with hospitals to ensure awareness of this QBP and the materials made available.

Will this protocol be recommended/adopted by midwives?

It is the expectation that midwifery patients be included in the roll-out of this QBP. Midwives were represented on the CEAG and provided input into the pathway, thus it is the expectation that they and their patients be included.