Objective:
Significant variation exists in the approach to the febrile infant both within Children’s Mercy Hospital and throughout the nation. Although most physicians report adhering to guidelines when making decisions for infants presenting with fever, data suggests that true compliance with the recommendations is poor. Despite recommendations to the contrary, many physicians prescribe systemic antibiotics to febrile infants without a lumbar puncture. We don’t know the effect of this practice variation or lack of adherence to guidelines on patient outcomes. (Meehan, Fleegler et al.)

The purpose of the Febrile Infant Clinical Practice Guideline is to standardize care around a common clinical problem with the goal of improving patient outcomes (including patient experience). There is currently no...
The guideline was made based upon what we believe is the best available evidence. We recognize that some of this evidence is old, but the low risk criteria developed in the late 1980’s and early 1990’s has not been updated since the pneumococcal vaccine. We hope to change that with this guideline and subsequent research protocol.

The guideline is supposed to apply to 80-90% of the population and will not encompass all scenarios. Clinical decision making by the individual physician at the point is a critical component of any guideline. We hope to learn from those decisions that are made in adherence with the guideline as well as those that are different from the following recommendations.

**Definition:** Fever in infants 29-60 days is elevation of the rectal temperature to 38º Celsius (C) or higher

**Target Users:** Clinicians and Nurses in CMH Emergency Department, Urgicare center, PCC, and hospital

**Guideline Inclusion Criteria:** This guideline is intended to direct care for infants 29-60 days of life who present with a temperature greater than or equal to 38.0º C by any route by healthcare worker or parental report or taken in the ED/UCC/inpatient setting.

Infants with gestational age less than 37 weeks, with congenital medical and/or surgical co-morbidities, and those hospitalized at any time since birth are high risk for SBI and are included in this guideline.

**Guideline Exclusion Criteria:** Infants less than 29 days of age and greater than 60 days of age, infant without a fever either on exam or by history

**Clinical Questions Answered by Guideline:**
1. What is the most accurate site (eg axillary, rectal) to measure temperature in infants 29-60 days of age?
2. What criteria can be used to determine if an infant 29-60 days of age is low risk for SBI?
3. What is the management of infants 29-60 days of age that are low risk for SBI?
4. What is the diagnostic workup of a febrile infant 29-60 days of age with confirmed RSV infection?
5. When should infants 29-60 days of age with confirmed enterovirus infection be discharged?

**Differential Diagnosis:** The main differential is a serious bacterial infection that can manifest as urinary tract infection, bacteremia, meningitis, pneumonia and/or bacterial gastroenteritis. Viral illness such as enterovirus infection in the summer months can also cause fever in infants.

**Practice Recommendations:**

**Assessing Fever in the Infant**

**History:** Fever in infants less than 29 days of age is not to be ignored. Parent report of fever, regardless of the temperature measurement technique used, is to be believed and the infant evaluated further (Callanan 2003). There is mixed evidence about the ability of parental report to accurately detect fever in the infant population without a thermometer. Whether the clinician accepts the report as sole evidence of fever is an individual decision. (Teng, Ng et al. 2008; Katz-Sidlow, Rowberry et al. 2009)

**Physical Assessment:**
1. **Initial temperature measurement:**
The Office of Evidence Based Practice, 2010
Center of Clinical Effectiveness

Approved: January 2011

1. Rectal temperature is the only method with sufficient accuracy to detect fever in infants less than 60 days (Asher C 2008)
2. Axillary, tympanic, and temporal artery temperature measurement cannot be recommended for initial temperature measurement in this age group.

2. **Ongoing temperature measurement:**
   a. When fever has already been detected and the infant is admitted to the hospital, repeated temperature measurements may be taken via the axillary route in order to facilitate rest.
   b. When the axillary temperature is elevated to 37.5°C or higher, rectal temperature is measured to accurately detect the extent of fever. Consensus opinion of the Febrile Infant CPG working group based upon (Asher C 2008)
   c. When a febrile infant is administered antipyretic medication, the temperature is measured one hour after administration. (Vital Sign Policy. (2010). Patient Care Services Standards Manual, Children’s Mercy Hospitals & Clinics).

**Rationale and Evidence Base**
Once the febrile infant is admitted, evaluation is complete, and antibiotics have been administered, the absolute accuracy of temperature measurements is less critical in clinical decision making and infant and family comfort may favor axillary temperature measurements.

**Management of Febrile Infants 29-60 Days**

**Identification of infants at risk for serious infection**
1. Infants 29 - 60 days of age presenting with fever are at risk for serious bacterial and viral infections.
2. Physical examination and diagnostic work-up are performed in all.
3. A full diagnostic workup to assess the “risk” of serious bacterial infection is performed in all febrile infants 29 - 60 days unless they have documented Respiratory Syncytial Virus (RSV) infection. Further information on the management of infants with confirmed RSV, confirmed Enterovirus (EV), and suspected/confirmed Herpes Simplex Virus infection is included in separate subheadings below.
4. There are two reasonable approached to the diagnostic evaluation. These include (a) performing a lumbar puncture in all febrile infants 29 – 60 days of age as part of the initial screening criteria and (b) forgoing the lumbar puncture until the results of initial screening tests are back and base the decision on whether or not to perform the lumbar puncture on those tests (Rochester criteria). We recommend the former approach as described below, but there is enough evidence supporting the second approach that clinicians experienced with the Rochester criteria may choose this clinically acceptable alternative. Please read below for the details surrounding this decision.

5. Infants with gestational age less than 37 weeks, with congenital medical and/or surgical co-morbidities, and those hospitalized at any time since birth are high risk for SBI (low risk criteria do not apply)
Determination of Risk - Low Risk Febrile Infant Checklist

Febrile infants 29-60 days can be classified as low risk if they meet all of the following criteria. The low risk classification equates to a 99.7% negative predictive value for having a serious bacterial infection.

- Well appearing infant
- Previously healthy with no previous antibiotic use
- WBC between 5,000 and 15,000
- Absolute Immature Granulocyte Count less than 0.04 x 10^3/mcl or Band/Neutrophil of less than 0.2
- UA with less than 5 WBC/hpf
- CSF with less than 8 WBC/mL
- CXR (if obtained) with no focal infiltrate
- Stool cx (if obtained) with no RBC or WBC

Management of Febrile Infants 29-60 Days that do not meet Low Risk Criteria

1. Hospital admission is required
2. Intravenous access is established
3. Empiric administration of intravenous Ceftriaxone (50 mg/kg/dose, every 12 hours) is required.
4. Antipyretic administration
5. Treatment of the infant with a positive blood, urine, or CSF culture is based upon the infection site and the bacteria identified.
6. Infectious disease consultation is recommended for infants with confirmed bacterial meningitis.
7. Hospital discharge is planned when urine, blood, and CSF cultures are negative for 48 hours if the patient appears well.

Management of Febrile Infants 29-60 Days at Low-Risk of SBI

1. Infants at low risk for SBI may be considered candidates for care at home when all the low risk criteria are clearly met and the caregivers’ ability to provide care at home and follow-up as instructed is assessed and judged to be reliable.
2. Blood, urine, and CSF cultures are assessed until final results are available. Any positive culture judged not to be a contaminant at any time requires the infant be cared for in the hospital.
3. Alternatively, the infant is admitted to the hospital without antibiotic prescription until the culture results can be assessed.
4. Hospital discharge is planned when urine, blood, and CSF cultures are negative for 48 hours if the patient appears well.
5. Treatment of the infant with a positive blood, urine, or CSF culture is based upon the infection site and the bacteria identified.
6. Infectious disease consultation is recommended for infants with confirmed bacterial meningitis.

Rationale and Evidence Base

Fever in young infants often accompanies bacterial disease. Approximately 10% of febrile infants younger than 2 months will have associated bacteriuria, bacteremia, or meningitis. Unlike infants less than 29 days, however, criteria have been developed to identify infants 29 – 60 days of age with a low risk of SBI. (Baker 2008)
criteria with the best negative predictive value were developed by Baker, et al. (Baskin, O'Rourke et al. 1992; Baker, Bell et al. 1993) If infants meet all of the criteria proposed, there is a negative predictive value for SBI of 99.7% in this age group. We adapted the Philadelphia criteria in the following ways:

- Added the lower value for WBC at 5,000 to take into account the importance of leukopenia in sepsis
- Decreased the value of the UA WBC/Hpf to fit within our current reporting system
- Changed the Band/Neutrophil ratio to Immature Granulocytes/Neutrophil ratio to account for the reporting mechanism of our lab (changed the negative predictive value to 100% in the Baker study)

All of these changes are conservative and may even further increase the negative predictive value.

Baker et al identified 747 infants between 29 and 56 days of life. A total of 287 infants met low risk criteria: 148 assigned to inpatient observation without antibiotics and 139 were discharged without antibiotics and followed up at 24 hours. Only one of the 287 patients had an SBI. This patient was treated successfully for a UTI. A total of 65 patients (8.7%) had a serious bacterial infection. Of those 65, all but one was identified by using the low risk criteria. The one infant again had a UTI that was successfully treated. There were numerous complications in the patient admitted, including infiltrated IVs (18%), drug rash, and contaminated cultures. (Baker, Bell et al. 1993)

The data is based on retrospective and prospective cohort and case control studies.

There is currently one set of criteria (Rochester) that recommends screening for low risk infants 29-60 days of life without an LP. We chose to recommend performing a lumbar puncture as our primary recommendation because two other cities (Boston and Philadelphia) with populations similar to Kansas City suggest screening with an LP while one (Rochester) suggests screening without one. Other reasons we decided not to use the Rochester criteria as the primary driver of this decision include:

1) Many physicians administer antibiotics without following guidelines or doing a lumbar puncture (Meehan, Fleegler et al.)
2) The criteria include specific historical questions which, on a chart review, are rarely documented (no perinatal antibiotics, discharged the same time as mom).
3) They have the lowest negative predictive value (98.9% compared to 99.7%)

However, given the excellent negative predictive value and acceptance of these criteria by several institutions, a reasonable alternative to the recommended practice as described above and suggested in the algorithm is to follow the Rochester Criteria. The Rochester criteria suggest that a lumbar puncture is not needed as part of the screening criteria to determine risk in febrile infants 29-60 days of age. (Rochester Criteria, Table I). The negative predictive value of the Rochester criteria is 98.9% when the full complement of historical questions and laboratory values are assessed as meeting low risk. If any of the criteria move the child out of the low risk classification or if antibiotics are going to be started, a lumbar puncture should be performed. (Dagan, Powell et al. 1985; Dagan, Sofer et al. 1988; Jaskiewicz, McCarthy et al. 1994)
Table I: Rochester Criteria

<table>
<thead>
<tr>
<th>Term infant 29 – 60 days of age</th>
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<tbody>
<tr>
<td>No perinatal antibiotics given</td>
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<tr>
<td>No underlying disease or co-morbidities</td>
</tr>
<tr>
<td>Not hospitalized longer than the mother for any reason</td>
</tr>
<tr>
<td>Well appearing</td>
</tr>
<tr>
<td>No ear, soft tissue, or bone infection uncovered on physician exam</td>
</tr>
<tr>
<td>WBC &lt; 5000 and &lt; 15,000</td>
</tr>
<tr>
<td>Absolute Immature Granulocyte Count less than 0.04 x 10^3/mcl or absolute band count less than 1500 (adjusted for our institution)</td>
</tr>
<tr>
<td>UA less than or equal to 5 WBC/hpf (adjusted for our institution)</td>
</tr>
<tr>
<td>Less than 5 WBC/hpf on stool specimen if obtained</td>
</tr>
</tbody>
</table>

GRADE:
We STRONGLY RECOMMEND based on low-quality evidence to admit and empirically treat with ceftriaxone all ill appearing infants and all infants who do not meet all low risk criteria. While the studies are predominantly prospective cohort studies and the low risk criteria have poor positive predictive value (they were not meant to identify high risk), the risk of missing a serious bacterial infection in infants 29-60 days of age that are either ill appearing or have identified risk factors clearly outweighs not treating these infants empirically.

We RECOMMEND based on low-quality evidence to utilize the adapted Philadelphia criteria to evaluate infants 29-60 days of age for low risk criteria. A strong recommendation was not given due to acceptable alternatives as described above.

We RECOMMEND based on low-quality evidence to discharge infants home without antibiotics if the infants 29 – 60 days of life meet low risk criteria and has adequate follow up within 24 – 48 hours. All cultures must be followed. This decision should be made in conjunction with the family and primary care physician.
Management of Febrile Infants 29-60 Days of Life During Respiratory Syncytial Virus (RSV) Season

Algorithm

RSV Risk Factors, Diagnostic Workup, and Medical Decision Making
1. The microbiology laboratory determines when rapid antigen testing for RSV antigen is performed based on seasonal variation in the prevalence of disease.
2. Rapid antigen test for RSV is performed when signs of respiratory illness, including tachypnea, wheezing, apnea, rhinorrhea, cough, are reported or accompany fever.
3. If the patient is ill appearing, a full sepsis workup is performed regardless of RSV status
4. If the patient does not appear ill, the initial diagnostic evaluation includes:
   a. Urinalysis with microscopy (UAM)
   b. Urine Culture (Catheter/Suprapubic specimen)
5. Medical Decision-Making for **RSV Negative** Infants
   a. RSV negative infants require a full sepsis evaluation and are managed according to the risk determination (i.e. do they meet Low Risk Criteria) provided in the previous section
      - Well appearing infant
      - Previously healthy with no previous antibiotic use
      - WBC between 5,000 and 15,000
      - Absolute Immature Granulocyte Count less than $0.04 \times 10^3 /\text{mcl}$ or Band/Neutrophil of less than 0.2
      - UA with less than 5 WBC/hpf
      - CSF with less than 8 WBC/mcL
      - CXR (if obtained) with no focal infiltrate
   b. Admission Criteria
      i. All infants 29-60 days of life not meeting Low-Risk Criteria should be admitted to the hospital with the administration of antibiotics
      ii. Infants 29-60 days of life who meet the established Low-Risk Criteria may be candidates for outpatient management.
      iii. Infants 29 to 60 days of life who meet Low-Risk Criteria should still be admitted without administration of antibiotics if:
         1. Patient does not have medical follow-up in 24 hours
         2. They meet admission criteria for bronchiolitis (Reference RSV CPG)
            a. Hypoxemia
            b. Respiratory rate $\geq 60/\text{minute}$
            c. Increased work-of-breathing
            d. Need for frequent suctioning of nose/mouth
            e. Unable to maintain hydration status

6. Medical Decision-Making for **RSV Positive** Infants
   a. RSV + infants who have $< 5 \text{ WBC/HPF}$ on UAM do not require further evaluation (Blood and CSF) or antibiotics and are managed according to the RSV clinical practice guideline
   b. RSV+ infants who have $\geq 5 \text{ WBC/HPF}$ on UAM require treatment for their urinary tract infection. The decision about further evaluation (blood culture and CSF culture) is left to the individual physician due to the uncommon nature of this decision and the lack of data to guide a recommendation.
   c. The admission criteria for RSV positive infants is based upon the RSV CPG
      a. Hypoxemia
      b. Respiratory rate $\geq 60/\text{minute}$
      c. Increased work-of-breathing
      d. Need for frequent suctioning of nose/mouth
      e. Unable to maintain hydration status
Rationale and Evidence Base

Several retrospective and prospective cohort studies have assessed the rates of urinary tract infections, bacteremia, and meningitis in febrile infants with RSV. (Purcell and Fergie 2002; Oray-Schrom, Phoenix et al. 2003; Titus and Wright 2003; Levine, Platt et al. 2004) There is a statistically significant decrease but still clinically meaningful rate of SBI in infants less than 60 days of age with RSV compared to those without RSV. UTIs make up the majority of these infections. (Levine, Platt et al. 2004) Levine et. al determined the rate of SBIs in RSV positive infants was 7.0% (17 of 244; 95% CI: 4.1%–10.9%) compared with 12.5% (116 of 925; 95% CI: 10.5%–14.8%) in the RSV-negative infants (risk difference: 5.5%; 95% CI: 1.7%–9.4%). The rate of UTI in the RSV-positive infants was 5.4% (14 of 261; 95% CI: 3.0%–8.8%) compared with 10.1% (98 of 966; 95% CI: 8.3%–12.2%) in the RSV-negative infants (risk difference: 4.7%; 95% CI: 1.4%–8.1%). Like the overall rate of SBI, the rate of UTI was statistically less but still clinically significant. The results were similar when looking at just the infants 29 – 60 days of life.

While there was not a statistically significant decrease in bacteremia or meningitis, the study was underpowered to detect such a difference. Combining the Levine, Oray-Schrom, and Titus papers, there were 0 cases of meningitis (0-90 days) of 453 infants and 4 cases of bacteremia in 628 infants. Levine and colleagues observed that 2 of the 3 infants with bacteremia were ill appearing.

GRADE:

We STRONGLY RECOMMEND based on low-quality of evidence a full sepsis evaluation and empiric antibiotics in all ill appearing febrile infants 29-60 days of age regardless of RSV status. The strong recommendation is based on the risk of not treating ill appearing infants with potential serious bacterial infection.

We RECOMMEND based on low-quality of evidence to do urine cultures on febrile infants with RSV who appear well and NOT starting empiric antibiotics.
Management of Febrile Infants 20-60 Days
With Suspicion of Herpes Simplex Virus (HSV) Infection

Epidemiology
1. The incidence of HSV among infants less than 60 days is low: ranging from 0.2 – 0.6% of infants tested (Caviness, Demmler et al. 2008; Caviness, Demmler et al. 2008) or 5.1 – 5.9 cases per 100,000 live births. (Kropp, Wong et al. 2006; Mahnert, Roberts et al. 2007)
2. Caviness and colleagues noted no cases of HSV in infants 29 – 60 days of life. Kropp and colleagues reported 51/55 (92.7%) were diagnosed within the first 28 days of life; the remaining 4 cases were diagnosed at 29, 30, 33, and 45 days. None of these infants died.
3. HSV in the infant 29 – 60 days of life is not related to perinatal transmission but from a close contact after birth.

HSV Risk Factors, Diagnostic Workup, and Medical Decision Making
1. Infants 29 – 60 days of life are recommended for HSV testing when they present with:
   a. Seizures (or the history of seizure)
   b. Obvious herpetic lesions/vesicles on physical exam
2. If there is a concern for HSV, historical questions elliciting contact with an individual with oro-labial vesicular lesions should be asked.
3. Diagnostic testing for HSV includes:
   a. Cerebral Spinal Fluid cytochemical analysis and HSV polynucleic chain reaction (PCR)
   b. Nasopharyngeal, eye, and rectal viral cultures
   c. Liver function tests specifically evaluating transaminases

Inpatient Management
1. Empiric administration of intravenous ceftriaxone (50 mg/kg/dose, every 12 hours)
2. Empiric treatment of suspected HSV is required: acyclovir 20 mg/kg/dose intravenously every 8 hours.
3. Treatment of confirmed HSV is acyclovir 20 mg/kg/dose intravenously every 8 hours for the general duration indicated by the clinical manifestation.
   a. Patients with disseminated disease or skin, eye, and mouth disease without central nervous system involvement are generally treated intravenously for 21 days.
   b. Patients with meningoencephalitis are treated intravenously for 21 days
   c. Infants with confirmed HSV disease require Infectious Diseases consultation specific recommendation of therapy duration and for follow-up.

Rationale and Evidence Base
Neonatal HSV is uncommon after the first month of life. There is little data on the details of presentation or the specific clinical course of disease in this narrow age range. The data that support our recommendation come primarily from descriptive and case control studies on the epidemiology and risk factors of neonatal HSV disease. (Kropp, Wong et al. 2006; Mahnert, Roberts et al. 2007; Caviness, Demmler et al. 2008) It is also important to recognize that red blood cells in the CSF are not a risk factor of HSV meningitis.

GRADE:
We STRONGLY RECOMMEND based on low quality of evidence that empiric treatment with acyclovir 20 mg/kg/dose three times daily and a thorough HSV evaluation (see # 2 above) be completed if either vesicles...
consistent with HSV or seizures are present in the evaluation of a febrile infant 29-60 days of age. The strong recommendation is based on the risk of missing HSV with these two presentations in infants slightly older than the typical presenting age.

There are no randomized controlled trials regarding the treatment of HSV infection in neonates. Data on dosing of acyclovir and length of treatment is taken from Lexi-Comp and the American Academy of Pediatrics Red Book and is largely based on a prospective, open label cohort study. (Kimberlin, Lin et al. 2001)

Management of Febrile Infants 29-60 Days With Enterovirus (EV) Infection

Algorithm

Enterovirus Risk Factors, Diagnostic Workup, and Medical Decision Making
1. The microbiology laboratory determines when CSF enterovirus PCR testing is performed based on seasonal variation in the prevalence of disease.
2. EV testing is performed in all febrile infants 29 - 60 days during enterovirus season, regardless of CSF cell count, in addition to the full diagnostic workup.

Inpatient Management
1. Empiric administration of intravenous ceftriaxone (50 mg/kg/dose, every 12 hours)
2. If the EV CSF PCR is positive and the infant meets all of the following criteria on the EV Checklist (Figure 1 - Algorithm), antibiotics can be stopped and they can be discharged home.
   a. Infant is well-appearing and afebrile
   b. All other cultures are negative for 24 hours
3. If the EV CSF PCR is negative, hospital discharge is planned when urine, blood, and CSF cultures are negative for at least 48 hours and the patient appears well
Rationale and Evidence Base
Non-polio EV infections commonly cause fever in infants 29 - 60 days of age. The use of PCR to identify febrile infants with non-polio EV infections may decrease length of hospital stay, unnecessary antibiotic administration, and charges. The studies supporting the use of enterovirus PCR screening and early discharge are retrospective and prospective cohort studies. (Byington, Taggart et al. 1999; Nigrovic and Chiang 2000; Spicher, Berclaz et al. 2000; Rittichier, Bryan et al. 2005)

We STRONGLY RECOMMEND based on low-quality of evidence to test for EV with an EV CSF PCR in all febrile infants 29 – 60 days of life during EV season. The strong recommendation is based on the ability to present the family with a confirmed diagnosis and potential utility of the test in limiting unnecessary antibiotic use and prolonged hospitalization.

We RECOMMEND based on low-quality of evidence to stop antibiotics and discharge patients home if the EV PCR is positive and the patient is well appearing, afebrile, and all cultures are negative after 24 hours. (Abzug, Levin et al. 1993; Kaplan, Harper et al. 2000)
Guideline/Outcome Measures:
- Percentage of infants meeting low risk criteria that are admitted.
- Percentage of infants meeting low risk criteria that receive antibiotics.
- Diagnostic workup variability in infants with confirmed RSV infection.
- Length of stay for infants with enterovirus infection.
- Percentage of infants with an SBI

Potential Cost Implications:
- Decrease in length of hospital stay and antibiotic use in infants that meet low risk criteria
- Decrease in length of hospital stay and antibiotic use in infants with EV infection

Supporting tools (i.e. power plans, policies and procedures, care cards, etc.)
Currently under development.
How guideline was piloted: The guideline was implemented hospital wide on February 1st, 2011.

Guideline Preparation: This guideline was prepared by The Office of Evidence Based Practice (EBP) in collaboration with content experts at Children’s Mercy Hospitals and Clinics. Development of this guideline supports the Department of Clinical Effectiveness’s initiative to promote care standardization that builds a culture of quality and safety that is evidenced by measured outcomes. If a conflict of interest is identified the conflict will be disclosed next to the team members name.

Team Members:

- **Team Leaders:**
  - Keith Mann, MD
  - Jason Newland, MD
  - Cole Condra, MD, MSc

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  - Janis Smith, RN, DNP

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  - Megan Ubben, RN

- **Office of EBP Team Members:**
  - Keri Swaggart, MLIS, Librarian
  - Jason Newland, MD Director of the Office of Evidence Based Practice
Development Process:
The review summary documents the following steps:
1. Review of existing internal and external guidelines and standards
   a. Internal guidelines: None
   b. External guidelines: Cincinnati Children’s Febrile Infant Guideline
2. Review preparation
   a. PICOT questions established
   b. Team leaders confirmed search terms used.
3. Databases searched
   a. AHRQ National Guideline Clearinghouse
   b. Medline
   c. Cochrane
   d. CINAHL
4. Critically analyze the evidence
   a. Guidelines
      i. AGREE criteria were used to analyze published clinical guidelines
   b. Literature
      i. CASP tools were used to analyze the literature (e.g. study limitations, consistency of results, directness of evidence, precision and reporting bias)
      ii. GRADE criteria evaluated the literature based on:
          1. The balance between desirable and undesirable effects
          2. Patient values and preferences
          3. Resource utilization
      The table below defines how the quality of the evidence is rated and how the recommendation is established based on the type of evidence:

<table>
<thead>
<tr>
<th>Quality</th>
<th>Type of Evidence</th>
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<tbody>
<tr>
<td>High</td>
<td>Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased observational studies.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Evidence from RCTs with important limitations (inconsistent results, methodological flaws, indirect evidence, or imprecise results) or unusually strong evidence from unbiased observational studies.</td>
</tr>
<tr>
<td>Low</td>
<td>Evidence for at least 1 critical outcome from observational studies, from RCTs with serious flaws or indirect evidence.</td>
</tr>
<tr>
<td>Very Low</td>
<td>Evidence for at least 1 of the critical outcomes from unsystematic clinical observations or very indirect evidence.</td>
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</table>

Recommendation

<table>
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<tr>
<th>Strongly Recommend</th>
<th>Type of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Recommend</td>
<td>Desirable effects clearly outweigh undesirable effects or vice versa</td>
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</tbody>
</table>

5. Recommendations for the guideline were developed by a consensus process incorporating the three principles of EBP (current literature, content experts, and patient and family preference [when possible])
**Approval Process:** Guidelines are reviewed and approved by internal (Lisa Schroeder, MD and Angela Myers, MD, MPH) and external (Chris D. Maloney, MD, PhD) reviewers. Content Expert Team, the Office of EBP, and other appropriate hospital committees as deemed suitable for the guidelines intended use. Guidelines are reviewed and updated as necessary every 3 years within the Office of EBP at CMH&C. Content expert teams will be involved with reviews and updates.

**Disclaimer:**
The content experts and the Office of EBP are aware of the controversies surrounding the care of infants less than 29 days of age. When evidence is lacking or inconclusive, options in care are provided in the guideline and the power plans that accompany the guideline.

These guidelines do not establish a standard of care to be followed in every case. It is recognized that each case is different and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time.

It is impossible to anticipate all possible situations that may exist and to prepare guidelines for each. Accordingly these guidelines should guide care with the understanding that departures from them may be required at times.
References


