Memorandum

Office of the Medical Officers of Health
South Zone

Date: **22 July 2016**

To: **South Zone Physicians**

From: **Office of the Medical Officers of Health - South Zone**

RE: **ENTERIC ILLNESS - July 2016**

Late spring and summer are typical months where there are increased rates of confirmed enteric illness, primarily due to *Campylobacter, Salmonella, E.coli* (verotoxigenic strains), *Cryptosporidium and Giardia*. It is not uncommon for Southern Alberta to have the highest national annual incidence rates for *Campylobacter, Salmonella and E.coli*.

From January to the end of June 2016, there have been:

	# of confirmed cases
HUS	4
Verotoxigenic E.coli	14
Salmonella	44
Campylobacter	51

Most exposures this year have been directly or indirectly epidemiologically linked to contact with animals, followed by contact with the environment, recreational water, food including unpasteurized milk, and exposure via secondary transmission within a household.

ACTION FOR PHYSICIANS

1. Please keep a heightened alert for enteric illness in your patients, including illness caused by such organisms as *E. coli, Campylobacter, Giardia, Cryptosporidium, Salmonella, Shigella, etc.*

2. Refer to the **attached guidance document for Shigatoxin producing E.coli** developed by Dr. Freedman, Pediatric Emergency physician at ACH.

3. Please request stool samples when clinically indicated.

4. Exclusion of symptomatic adults working in sensitive occupations such as health care or food handling, and exclusion of very young symptomatic children attending daycare may apply as determined by Public Health.

5. In general, recommend that patients be ≥ 48 hour symptom free prior to returning to work, at least 48 hours post-treatment (if indicated). For patients with *Cryptosporidium*, at least 2 weeks symptom free before entering public swimming pools,

6. Remind patients of safe animal handling and food preparation, hand hygiene, and safe use of recreational water.

Attached - guidance document for Shigatoxin producing E.coli

Dr. Vivien Suttorp & Dr. Karin Goodison
Medical Officers of Health
801 – 1st Avenue South, LETHBRIDGE, Alberta T1J 4L5
Phone (403) 388-6007 Fax (403) 320-0145

Dr. Lena Derie-Gillespie
Medical Officer of Health
2948 Dunmore Road, MEDICINE HAT, AB T1A 8E3
Phone (403) 502-8217 Fax (403) 502-8403

E. coli (STEC) Info for Health Care Providers

This document has been developed to answer questions and provide clinical guidance about E. coli O157:H7, other Shiga Toxin producing E. coli and enterohemorrhagic E. coli (collectively referred to as STEC) infections in children that are frequently asked by health care providers.

This document is not intended to guide the management of established hemolytic uremic syndrome (HUS), which is best managed by pediatricians or internists working in conjunction with nephrologists and infectious disease specialists (as appropriate).

What are *STEC*?
STEC are Shiga toxin producing *E. coli.* When identified in stool samples, STEC are considered to be pathogens that cause diarrhea, often bloody, and may lead to the development of Hemolytic Uremic Syndrome (HUS). While persons of any age can develop HUS, the greatest risk is in children and the elderly.

What are the sources for *STEC*?
E. coli infections are generally acquired when a person eats food or drinks water that is contaminated with human or animal feces, through direct contact with either a person who is sick or an animal that is carrying the bacteria can also cause infection. In Alberta, source tracing is routinely performed by public health authorities who are notified automatically by laboratory personnel of all cases of *STEC* but often the source of sporadic cases is not identified.

How contagious is *STEC*?
Secondary spread is a significant concern. Families of affected individuals with diarrhea should exercise good hygiene which includes washing hands with hot, soapy water often, including after going to the washroom, before preparing food, after touching raw meat, and changing diapers. Other standard precautions to prevent primary acquisition continue to apply.

What is the incubation period?
The average incubation period of *STEC* is approximately 3 days, with a range between 1 and 12 days.

What are the symptoms?
Most cases have the following symptoms:
- Non-bloody diarrhea (usually > 5/day) progressing to bloody diarrhea (~85% of cases)
- Abdominal pain, often worse with defecation
- History of fever but often resolved by time of presentation for care
- Presence of vomiting is variable

Who should receive a stool culture?
Collect stool for bacterial culture as soon as possible in patients with:

- Acute bloody diarrhea
- Painful, non-bloody diarrhea
- Acute diarrhea in immune-compromised patients
- Diarrhea with fever (during outbreak situations)
- Diarrhea in a patient with a family member or other contacts with a positive stool culture for STEC

How long does it take for cultures to identify *STEC*?
Usually *STEC* can be identified from stool cultures within 72 hours of incubation. Some laboratories also perform tests to identify the presence of Shiga toxin. While they are not 100% sensitive, they are very specific and thus a positive test should be considered as evidence of infection by an *STEC* pathogen.

How should *STEC* patients be treated?
Antibiotics
Antibiotics should not routinely be provided to patients with *STEC* diarrhea. There are no data to support the notion that antibiotic administration can prevent an incubating infection. Antibiotics also do not hasten clearance. However antibiotics should not be withheld when clinically indicated for other reasons.

Anti-motility Agents
Patients with *STEC* should not take over-the-counter or prescription medications that slow the gut, including antimotility, antidiarrheal or anticholingeric agents, or narcotics, and NSAIDs. The latter is important as NSAIDS can diminish renal blood flow.

Fluid Therapy
Maintaining patients well hydrated may protect renal function. Oral rehydration and intravenous therapy should be considered in patients at risk of developing HUS.

Complicated/Hospitalized Cases
Early consultation with a nephrologist is strongly recommended for patients with *E. coli* positive diarrhea or suspected HUS who have evidence of renal involvement.

What percent of children with *STEC* infection develop HUS?
10-15% of children with *STEC* develop complete HUS (hematocrit < 30 percent, creatinine above upper limit of normal for age, platelet count < 150,000/mm^3), one of the most common causes of acute kidney injury in childhood. A similar percentage of infected children develop partial HUS (two of these three criteria are met). The average age of children with HUS in North America is 4 years, but it can occur at any age. Patients with less severe diarrhea can still develop severe HUS.

What blood tests are needed?

In individuals with evidence of *STEC* infection or at high risk ***and*** whose last diarrheal stool was < 72 hours ago, the following tests should be performed as soon as possible (i.e. once informed of culture result):

- CBC with blood smear
- Urea
- Creatinine
- Electrolytes
- Lactate dehydrogenase (LDH)

What to look for and when should blood tests be repeated?

If any of the above tests are abnormal or if the patient is unwell, dehydrated or has history of oliguria, anuria or tea coloured urine, it is advised that the individual be referred for care at a centre with experience managing patients with HUS. Remote locations should consult a pediatrician or nephrologist as appropriate to determine the need for transfer and guide interim management. Though some variables are associated with avoidance of HUS, no single test or intervention can completely exclude this outcome as often these tests are initially normal in individuals who later develop HUS; therefore all patients with *STEC* in their stool should have these tests repeated in 24-48 hours to assess trends. A decreasing platelet count and an increased LDH are usually the first abnormalities to be noticed in the progression to HUS, and the first abnormalities to correct.

If any of the following are noted, specialist consultation should be obtained:

- Creatinine above reference range or ≥ 30% higher than recent value
- Platelets below reference range or ≥ 30% lower than recent value
- Elevated LDH
- Anemia with evidence of schistocytes or anicystosis on peripheral blood film. In dehydrated patients, the CBC should be repeated after fluid resuscitation has been completed as the anemia can be masked by dehydration
- Dehydration or unwell appearance

What does one do with a patient who looks "good," when the report of the stool culture becomes known?

Unfortunately, there is an imperfect relationship between the severity of the enteric disease and the development of HUS. The same diagnostic and therapeutic precautions are encouraged regardless of gastrointestinal symptom severity. However, patients whose diarrhea has resolved for 3 days without laboratory evidence of HUS are very unlikely to develop this complication.

When does HUS occur and when should testing be stopped?

Infected individuals should be closely followed (actively with repeat blood tests) until at least 3 days after the diarrhea has resolved or there is evidence of a stable (i.e. < 5% decrease over 48 hours) or rising platelet count.