



Gastroenteritis

By: Marshall J. Benbow, M.D.

In the experience of parents, this illness is vomiting and / or diarrhea and is all too common. In the experience of pediatricians, the illness like so many of the common illnesses we deal with, is caused principally by a small group of viral pathogens. If one hundred children present to the office with symptoms of vomiting and / or diarrhea, virtually all of them have an infectious cause for those symptoms. Of those with an infectious cause for symptoms, virtually all have a viral illness. Be mindful that if the only symptom is vomiting and diarrhea or at least some change to looser and more frequent stools never develops, the assumption that all vomiting represents a gastrointestinal infection can be inaccurate.

To consider a bacterial pathogen rather than a viral pathogen, one and more likely, two or three critical elements will be present in the history of the illness in any given patient. Those distinguishing historical features include significant fever (>102 F), frequent stools (> ten or twelve per day), and the presence of blood in the stools. In the absence of these features, stool laboratory cultures are very unlikely to produce a diagnosis of a bacterial pathogen. The cultures are expensive, and as with so many things, the accuracy of outcome is related to the details of collection and laboratory handling. As a result, on the uncommon occasion where we want a stool culture, you may see us send you to the lab to have rectal swabbing done to minimize the time from specimen acquisition to laboratory culturing. These bacterial pathogens are fragile and minimizing handling time markedly affects the accuracy of the results. Not all bacterial infections are best treated with antibiotics. So, even if a bacterial pathogen is discovered, just when you'd figure we'd unleash some sort of antibiotic, we may not. Supportive care may be all that is called for even in the bacterial variation on this theme. Given the cost and unlikelihood of a bacterial pathogen and the probable outcome that therapy may not be altered by culture results, you can appreciate why there is a deserved reluctance to perform tests in the common presentation of vomiting and diarrhea.

The pediatric experience with viral gastroenteritis has changed markedly over the past fifteen years.



As with many other common childhood illnesses, altering the scope of this illness has been linked to vaccinations. After one of the largest vaccine trials in medical history, Rotateq[®], a vaccine to protect against rotaviral gastroenteritis, was licensed and the landscape of viral gastroenteritis in the United States would change quickly and markedly. Some years later a second vaccine, Rotashield[®] would be licensed. In the pre-vaccine era, rotaviral gastroenteritis was an annual winter epidemic with sporadic disease year round. Quite contagious by nature, once introduced to a daycare or school setting with the typical crowding there, widespread illness was common. It's estimated that natural immunity requires approximately five separate rotaviral illnesses before exposure would result in sub-clinical (unapparent) disease. This was the quintessential vomiting and diarrheal illness of modern times in this country. So prolific were the symptoms that one child in seventy-five would be hospitalized for medically significant dehydration in the first years (mostly the first two years) of life. Though deaths were few in this country (usually less than thirty), the health care costs and lost productivity in the work place were massive. On a world-wide basis, a completely different experience with annual deaths exceeding one half million children per year gives a chilling reminder of how important and how frugal vaccine development can be in modern medicine. Vaccinated infants can still acquire rotaviral gastroenteritis, but like influenza the rotavirus vaccinated child has a much milder illness and severe disease and hospitalization that often stretched into a several day experience is an exceedingly uncommon experience. The intent of the vaccine to eliminate "severe disease" and hospitalization has been exceedingly successful in the United States.

In the pediatric experience after rotavirus vaccine, a busy pediatrician could go an entire year without a patient having a multi-day hospitalization for dehydration. The more common experience currently would be home care or brief out-patient care with an IV fluid bolus and a few hours of IV fluids to be followed-up the following day in the office.

So in this vaccination-mediated, kinder and gentler world of vomiting and diarrhea, who should be worried about and watched more closely and how, early in the illness do you keep from being one of those patients? Most medical intervention will be directed at vomiting and oral rehydration and the use of antidiarrheal medication should be shunned as ineffective and potentially associated with additional hazards. Medical attention early to establish the diagnosis and begin therapy with anti-



nausea medication can be helpful. The widening use of Zofran (ondansetron-generic terminology) has been very helpful in limiting nausea and interrupting the cycle of vomiting. The use of a medical oral rehydration solution rather than water, soda, sport drinks, fruit juice, homemade "rice-water", broths or other ill-conceived choices is a must if the symptoms are persistent and significant. All the other choices have too much sugar and improper amounts of the needed electrolytes to be effective which can lead to additional and potentially serious issues that increase the possibility of hospitalization, complications and poor outcomes. Modern oral rehydration beverages are available in various flavors and taste is acceptable. With an especially discriminating infant or child, a tiny bit of sports drink as a flavoring agent could be considered, but keep it to a very minimal portion of the whole volume or the medical impact of the beverage will be adversely affected. These liquids can be frozen and offered as a slush by spoon and may be more acceptable to some patients. Offer small portions, often starting with as little as a teaspoon or syringe-full at scheduled intervals. Small portions will generally be better tolerated if nausea persists. Larger portions may create nausea if the patient isn't already that way, so be prudent and don't rush to larger portions. Frequent administration of smaller portions over large infrequent portions will usually be better accepted. As a patient improves, appetite will return. Once again, don't rush. Calories are secondary to hydration in the short term. After a day or two at the most, if nausea and vomiting are abating, some return to calorie consumption is important. If you rush this, you'll pay the price of a return to nausea and likely vomiting. Use small portions and stay fat free. Dairy products are usually fat laden so a precautionary warning usually accompanies the dairy options as well. Fruits and veggies are fat free for the most part and are good first options. Fat free pasta, rice, crackers and bread may make suitable early choices as well. Carefully consider the patient's progress before animal products are chosen as they usually contain some fat that could prove to be difficult. Remember, small portions and hydration in the short term are the priority. The pattern of symptoms is unpredictable. Usually vomiting will resolve before the diarrhea. This is not always true as periodic vomiting can persist for days.

Pay attention to urination, as it is the best and most reliable indicator of early dehydration. In the face of persistent vomiting, and if accompanied by fluid loss in large watery stools, a fall-off in urine production will be an effort by the patient to conserve vital fluids. Consider keeping a written record of urination, vomiting and diarrhea, as the accuracy of that information can be lost to one's memory



in a short span of time. It's difficult to be precise, but if the gap between urination is widening and begins to exceed eight to twelve hours, (be more concerned and conservative the younger the patient) dehydration is beginning. It is particularly troubling if the patient that had been willing to drink becomes unwilling in a persistent manner. In this scenario, biochemical changes are likely taking place that predict worsening nausea and anorexia. In the face of persistent abstinence regarding drinking, biochemical changes will deepen and recovery without medical intervention is unlikely. Prompt medical attention is likely necessary at this point. If the patient is moving around the house with ease, be reassured. The patient in bed and unable or unwilling to move around the house, be concerned. Again, prompt medical attention is likely necessary at this point.

Remember, virtually all of this is infectious and the potential for contagion is significant. Hand washing is the best preventative for an illness that has good potential to produce symptoms in care giving adults.

Like most illnesses with a viral cause, recovery is based mostly on supportive care and tincture of time.