

# Inside Tract<sup>®</sup>

Canada's Gastrointestinal Disease & Disorder Newsletter

ISSUE 193 | 2015

## HEPATITIS C

### WHAT YOU NEED TO KNOW

**+** Plus information on IBD, natural health, *H. pylori*, health care, and more.



**badgut.org**  
Gastrointestinal Society  
Canadian Society of Intestinal Research



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ISSN 1206-6028

## About Us

As the Canadian leader in providing trusted, evidence-based information on all areas of the gastrointestinal tract, the GI Society is committed to improving the lives of people with GI and liver conditions, supporting research, advocating for appropriate patient access to health care, and promoting gastrointestinal and liver health.

Our core programs include a comprehensive series of patient education pamphlets, BadGut® Lectures, online resources at [www.badgut.org](http://www.badgut.org), and the *Inside Tract*® newsletter.

The GI Society was established in 2008 on the foundation of its partner organization, the Canadian Society of Intestinal Research (CSIR), a registered charity since 1976, and now these two organizations collaborate on many initiatives. The GI Society (Société GI) is also carrying on the legacy of L'Association des maladies gastro-intestinales fonctionnelles (AMGIF) and providing programs and services in the French language.

We have resources available in French and English on Celiac Disease, Colorectal Cancer, Constipation, Crohn's Disease, Diverticular Disease, Functional Dyspepsia, GERD (reflux), Hemorrhoids, Hepatitis B, Hepatitis C, Hiatus Hernia, Inflammatory Bowel Disease, Intestinal Gas, Irritable Bowel Syndrome, Non-Alcoholic Fatty Liver Disease, Ostomies, Pancreatitis, Stress Management, Ulcer Disease, Ulcerative Colitis, Ulcerative Proctitis, and more.



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## President & CEO Report

Gail Attara

The Canadian Agency for Drugs and Technologies in Health (CADTH) is an independent, not-for-profit organization – conceived by Canada’s federal, provincial, and territorial ministers of health – responsible for providing health care decision-makers with objective evidence to help make informed decisions about the optimal use of health technologies, including drugs, diagnostic tests, medical, dental, and surgical devices and procedures. In addition to evidence, it also provides advice, recommendations, and tools. The Common Drug Review (mentioned in this newsletter on page 14) comes under CADTH’s responsibility.

Since 2005, CADTH has hosted an annual symposium to bring together producers and users of evidence-based information on drugs and health technologies for productive discussions and information sharing. The CADTH Symposium has become a ‘must attend’ event for the health technology assessment (HTA) community in Canada and beyond – attracting up to 650 delegates from key sectors, including HTA producers, health economists, government, universities, health care providers, industry, and patient groups.

From April 12 to 14, I attended the 2015 CADTH Symposium in Saskatoon, as an invited panelist for the Opening Plenary session, ‘We Know What the Evidence Says ... Is Anybody Listening?’ HTA is a powerful tool that supports improved patient outcomes and health system sustainability. Sometimes, however, decisions are inconsistent with the evidence provided by HTA organizations. When that happens, it is hard not to wonder if anybody is listening.

Our panel provided different perspectives on the role evidence plays in decision-making. In my role as the GI Society CEO, I stressed that patients need to be at the very centre of every decision made in health care. If there were no genetic abnormalities, disease or injury, we would not need drugs and technologies, so patients and the tools they need to manage their conditions are truly the ‘object of the exercise’ in Canadian health care. I encouraged all who are working in health care to ensure that the patient comes first.

**SAVE THE DATE**

**THE INSIDE AFFAIR**

**MONTREAL OCT 1**  
**TORONTO OCT 5**  
**VANCOUVER OCT 29**

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Call Paul toll-free at  
 1-866-600-4875



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**GI Society Support Groups**

**Inflammatory Bowel Disease (IBD) – Vancouver, BC**  
 7:00pm, third Wednesday of each month  
 Raven Song Community Health Centre  
 Room 101, 2450 Ontario St

**Irritable Bowel Syndrome (IBS) – Toronto, ON**  
 7:00pm, fourth Tuesday of each month  
 College/Shaw Library  
 Meeting Room, 766 College St

\*Please call the GI Society office to check if the support group you are interested in attending is running for the month.




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# Inside Tract®

This quarterly newsletter is a primary tool of the GI Society for delivering up-to-date medical information, in lay terms, to the Canadian public. Readership includes a mix of patients and their family, friends, and caregivers; health care professionals; and business professionals who are interested in the wellness of their employees. To subscribe for a low annual fee of \$20 (\$30 outside Canada), please visit our website, or complete and submit the form on page 23.

The GI Society does not endorse the products or services contained in this newsletter. Opinions expressed by the authors are their own and not necessarily those of the GI Society. Members of our Medical Advisory Council or other professionals write or review all articles contained herein. In the interest of space, we occasionally do not publish references, but will provide them upon request. We do not intend that this newsletter replace the knowledge or diagnosis of your physician or health care team and we advise seeking advice from a medical professional whenever a health problem arises.

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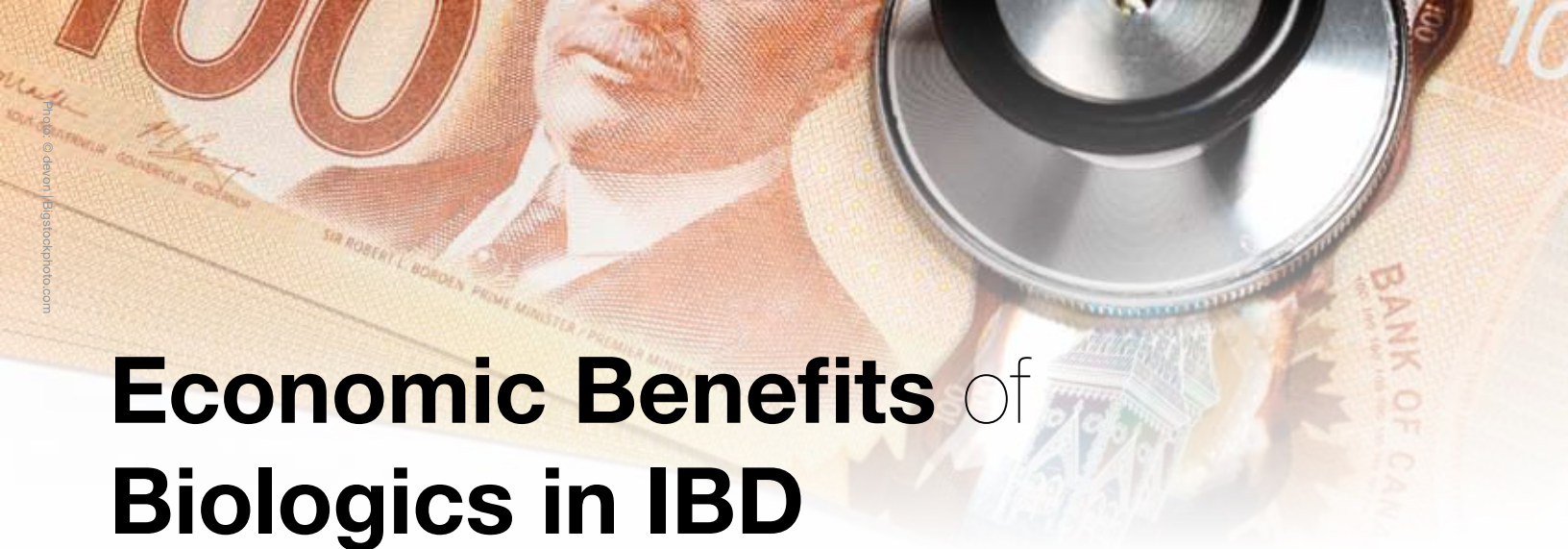
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# Economic Benefits of Biologics in IBD

Inflammatory bowel disease (IBD) is a term that primarily refers to two diseases: Crohn's disease (CD) and ulcerative colitis (UC). Both of these diseases involve chronic inflammation in the gut. This inflammation is limited to all or part of the colonic mucosa in those with UC,<sup>1</sup> but can affect any part of the gastrointestinal (GI) tract in those with CD. Individuals with IBD experience painful, frequent diarrhea, abdominal pain, rectal bleeding, anemia, and unplanned weight loss, as well as inflammation in other parts of the body. The symptoms of these diseases can be overwhelming and often lead to a reduced quality of life through the inability to work and participate in normal social activities.

Canada has the highest prevalence and incidence rates of IBD in the world.<sup>2</sup> There are close to 233,000 Canadians living with IBD: 129,000 with CD and 104,000 with UC. Physicians diagnose more than 10,200 new cases of IBD each year, comprising approximately 5,700 cases of CD and 4,500 cases of UC.

## Burden of IBD

Health economists estimated the direct medical costs for individuals with IBD to be \$1.2 billion in Canada in 2012.<sup>3</sup>

However, there are many other costs associated with IBD, and these indirect costs are higher than the direct medical costs.<sup>2</sup>

Excluding disability leaves, IBD patients take 7.2 days off work per year on average, because of their illness.<sup>3</sup> In addition, 28.9% of IBD patients report labour force nonparticipation.<sup>4</sup> This leads to a vast lack of productivity from people who wish they could be fruitful. We can reduce or eliminate these burdens by ensuring that individuals with IBD receive proper treatments.

## Biologics Increase Productivity

The productivity of individuals with IBD increases greatly when they receive biologic medications to manage their disease. A systematic review of 8 studies for work-related outcomes in CD and UC patients with biologics found that biologics had a

positive effect on employment status after 24 weeks of treatment. 64% of UC patients were employed at baseline, and that number grew to 69% after treatment. In individuals with CD, after 54 weeks, 31% of patients who experienced remission were employed and only 16% of those who did not reach remission were employed. In addition, they found that patients treated with biologics significantly improved their productivity. The amount of absenteeism reduced by 7-15%, presenteeism reduced by 15-20%, and total work productivity impairment reduced by 19-21%.<sup>5</sup>

## Use of Health Care Resources

A recent study found that IBD patients who used a biologic in the previous year were 3.8-5.6% less likely to be hospitalized and 2.4-6.1% less likely to require a visit to the ER than individuals with IBD who were not using biologics.<sup>6</sup> In UC patients, adalimumab leads to a reduction of close to 50% in the risk of hospitalization.<sup>7</sup> In CD patients, infliximab demonstrated a decrease in the annual incidence of all surgeries (38%) and endoscopies (43%).<sup>8</sup>

BIOLOGICS PER INDICATIONS IN CANADA		
Drug	CD	UC
Remicade® infliximab	✓	✓
Humira® adalimumab	✓	✓
Simponi® golimumab	-	✓
Entyvio® vedolizumab	-	✓

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- Rubenstein JH *et al.* Infliximab decreases resource use among patients with Crohn's disease. *Journal of Clinical Gastroenterology*. 2002;35:151-6.

# Probiotic VSL#3®



Many individuals take probiotics to reduce symptoms from gastrointestinal (GI) disorders or to improve their overall intestinal health. Since most people view probiotics as safe, natural, and effective, they are popular products. However, not all probiotics are equal.

The World Health Organization defines probiotics as “live microorganisms which when administered in adequate amounts confer a health benefit on the host.” They include bacteria as well as yeasts. Probiotics work in many possible ways, including:

- lining the surface of the gastrointestinal tract and stopping harmful organisms from reaching it (competitive exclusion),
- strengthening the tissue of the bowel wall,
- acting as antibiotics against other bacteria, and
- regulating the responses of the immune system, both at the level of the bowel wall and the body as a whole.

As natural health products rather than prescription medications, probiotics aren’t required to complete the same rigorous testing as pharmaceutical medications, so it can be difficult to know what you are getting with many products. Due to labelling regulations (or lack-thereof), companies can claim whatever they want on the bottle, but it doesn’t mean the information is true. That is why it’s important to choose a product with proven results.

Evidence shows that VSL#3®, which is a probiotic blend of live, freeze-dried lactic acid bacteria and *bifidobacteria* is beneficial for individuals with ulcerative colitis. There are 450 billion bacteria in each dose, which is the highest concentration currently available, consisting of a set ratio of the following eight probiotics: *Bifidobacterium breve*, *Bifidobacterium longum*, *Bifidobacterium infantis*, *Lactobacillus acidophilus*, *Lactobacillus plantarum*, *Lactobacillus paracasei*, *Lactobacillus bulgaricus*, *Streptococcus thermophilus*.

Available in unflavoured or lemon flavoured, each VSL#3® dose comes in a sachet that you add to a non-carbonated, cold beverage of your choice such as water, juice, or milk. If you are on antibiotics while taking VSL#3®, the product’s effectiveness will be reduced because antibiotics often destroy good bacteria along with the pathogen they are prescribed to fight. VSL#3® may cause mild bloating in new users, as the body adjusts to the change in colonic microbiota. However, there are no other known interactions or side effects. These strains of probiotics are frequently occurring species in the human gut and are generally safe.

Studies conducted with VSL#3® have shown great promise in the efficacy of this probiotic combination

for inducing and maintaining remission in those with ulcerative colitis. One study, conducted on children with this disease, found that after 4 weeks of steroid therapy along with either VSL#3® or placebo, 92.8% in the VSL#3® group achieved remission, compared with only 36.4% in the placebo group. To maintain the remission, the researchers gave the children 5-ASA along with either VSL#3® or placebo. They then monitored the children over the next 12 months, and found that 73.3% of those who had 5-ASA and placebo experienced a relapse, compared with only 21.4% of those who were taking 5-ASA and VSL#3®. This study also reported no biochemical or clinical adverse effects from VSL#3®.<sup>1</sup>

Many probiotic formulas contain beneficial bacteria, but due to differences in preparation in some products, these bacteria die off from varying conditions throughout the GI tract and never make it to the place they need to be. Another study<sup>2</sup> shows that probiotics from VSL#3® do make it to the colon, which is the area they need to reach to be effective.

VSL#3® does not require a prescription, but you should talk to a physician before you decide to take it, to ensure it is right for you and that it will be a beneficial treatment for your disease.

- 1 Miele E *et al.* Effect of a Probiotic Preparation (VSL#3) on Induction and Maintenance of Remission in Children With Ulcerative Colitis. *American Journal of Gastroenterology*. 2009;104:437-43.
- 2 Bibiloni R *et al.* VSL#3 Probiotic-Mixture Induces Remission in Patients with Active Ulcerative Colitis. *American Journal of Gastroenterology*. 2005;100:1539-46.
- 3 Health Canada. Search Licensed Natural Health Products. Available at: <http://webprod5.hc-sc.gc.ca/lnhpd-bdpsnh/index-eng.jsp>. Accessed 2015-02-04.



Photo: © iStockphoto.com

Natural health products don’t require rigorous testing; however, Health Canada does have a system in place for acknowledging the products that use research to prove their efficacy, safety, and quality. These products will have an 8-digit number on their label called a Natural Product Number (NPN). You can use a product’s NPN to search the Licensed Natural Health Products Database<sup>3</sup> online, where you can find information about the product, such as licensing, dosing, ingredients, recommended uses, warnings, and more. **The NPN for VSL#3 is 80042116.**

## HOPE IS THE THING WITH FEATHERS THAT PERCHES IN THE SOUL – AND SINGS THE TUNES WITHOUT THE WORDS – AND NEVER STOPS AT ALL ~ EMILY DICKINSON

It came seemingly out of the blue. We take our good health as a given each day without question or thankfulness; yet all else in life is dependent upon it and the joyous world all around us. I was fit and full of vigour one day and seriously ill the next, so ill that I was taken aback confused and very unnerved. The trigger for my autoimmune disease is unknown, which makes my situation all the more humbling and shattering. I know that the medical establishment is not omniscient, but when your doctors have no idea what is wrong with you or how to help you, then life feels very precarious indeed. Medical specialists and family might surround you, but you realize quickly that you face this medical threat alone, on your own terms. It took years for me to discover effective treatments, and I didn't find complete relief until I found one specific natural health product. It could help you as well. How did I get to this point? I sat crouched over and wracked by pain and cramping with large amounts of blood in my stool. This was the beginning of a battle, and I had no idea how it would end or where it would lead me. My unfamiliar and threatening descent into ill health began in the spring of 2004 after taking a strong antibiotic prescribed to my wife and then to myself. It took months for the doctors to suggest a likely diagnosis – ulcerative colitis. They initially felt I had developed *Clostridium difficile* colitis or inflammation of the large intestine, which tends to

occur following antibiotic treatment for another infection. My doctors prescribed prednisone for this, which I heard can be a miracle drug for many ailments, but the science behind the relief remains elusive in many cases.

As the summer of 2004 progressed, I was still seriously ill but determined to provide my family with some summer vacation time. We took our tent trailer on a camping trip to the Rocky Mountains. By this time, my feet swelled like melons from the side effects of prednisone and I felt extremely weakened. So, when I attempted to collapse the tent trailer for the return trip home, I had no strength to do it. I refused to believe this, so I continued to try to complete the task on my own in vain. Finally, my wife couldn't bear the sight any longer and beckoned help from the next campsite. We had befriended a group of vacationing police that were the epitome of health and strength. They quickly collapsed the tent trailer with good humour and robust fitness. I was left thankful and chastened. This was just another humbling experience that I was becoming to realize was my new way of being.

In late August that year, I attended a scheduled appointment with my gastroenterologist. She took one look at me and immediately said, "Frank, you are not leaving this hospital. You are deathly ill and require urgent medical intervention." I was shocked, but deep down not surprised by the situation.

I was struggling mightily to remain engaged in the day-to-day world and continue working. I underwent surgery on September 2, 2004 with the complete removal of my large intestine. Later, the diagnosis changed to Crohn's disease. I now take a weekly dosage of Humira® by self-injection pen. This relatively new biologic drug is my miracle drug. It keeps my symptoms under control to a large degree. I still experience bouts of diarrhea, cramping, and gas. When I started to feel this way, I asked my specialist if there was any other treatment available. My specialist said that some patients had experienced good results with a powerful probiotic called VSL#3®. It is unlike other probiotics, which typically come in a pill form. This probiotic requires refrigeration at all times. I took it three times a day for the first month and now once a day to maintain a healthy gut flora. I have found this probiotic in conjunction with Humira® helpful. I never have a completely symptom free day, but the severity of the symptoms is greatly diminished. We have two children and I fight every day to stay active and able to work. You can continue to have quality of life and enjoy the wonders of this world even with some form of inflammatory bowel disease. It takes a new attitude and new way of living your life.

Sincerely,

Frank W. Fraser



# Washroom Access Initiative



Our communities are homes to people with a variety of needs, and there has, traditionally, been one reason why people living with Crohn's disease and ulcerative colitis hesitate to shop in neighborhoods. Publicly accessible washrooms are a need for a variety of individuals, including people who live with Crohn's disease, ulcerative colitis, and other gastrointestinal disorders, as well as those with cancer or chronic conditions such as multiple sclerosis, diabetes, or Parkinson's. In the past, retail shopping malls won the draw with their accessible facilities, but Crohn's and Colitis Canada, together with the Gastrointestinal Society, and The Canadian Continence Foundation, is launching a new initiative – GoHere – that can help make our communities more inclusive, and keep local customers in our neighborhoods.

GoHere is a pilot initiative in Calgary to encourage local businesses to open up their washroom facilities to those suffering from Crohn's, colitis, and other incontinence issues. "We want to reach out to small and medium sized businesses in the Calgary area to participate in the decal project. Businesses want to give back to their community and this is a way for them to increase their visibility within the incontinence community," says Natasha Mistry, Crohn's and Colitis Canada's Manager of Public Policy and Stakeholder Relations, "there is no-cost involved and all it takes is to post a decal and open up washrooms." The project has the potential to improve the quality of life for the estimated 7,500 Calgarians living with Crohn's and colitis. It will also help countless other individuals living with disabilities, cancer, other chronic conditions, seniors, young children, and pregnant women.

With funding from The Calgary Foundation – a Foundation that nurtures caring communities and supports charitable organizations that serves the needs of the community – Crohn's and Colitis Canada is partnering with organizations including the Gastrointestinal Society and the Canadian Continence Foundation to encourage Calgary businesses to post decals on their storefront windows. Decals

will signal that washroom facilities are open and available. This initiative will educate and inform the business community about the immediate and urgent need of washrooms when living with these lifelong conditions.

"Working together with like-minded charities is a big step forward in helping these individuals," says Gail Attara, national Chief Executive Officer of the Gastrointestinal Society, and a partner organization of the project. "The broader the collaboration, the greater community awareness about this important initiative," she adds.

"It is a well kept secret that millions of Canadians practice what is termed, 'toilet mapping', by which they cannot leave their homes unless they know where there are toilets they can access en route to their destination. The Washroom Decal project will definitely assist those who need ready access to toilets," says Jacqueline Cahill, Executive Director of The Canadian Continence Foundation and another partner organization of the project.

The GoHere Washroom Access Initiative is a project that will engage local businesses and recruit volunteers with a passion to make change in their own local communities. Businesses that participate will have free advertising space to showcase their logos at [www.go-here.ca](http://www.go-here.ca), and their locations will be added to a (soon-to-be-released) free GoHere mobile App that identifies washrooms in local vicinities across the country. Through the GoHere App, Washroom Access Cards will be virtually available to serve as medical alerts for people with Crohn's disease and ulcerative colitis to identify themselves when entering business locations. If successful, this project will expand to other regions of the country.

If you represent a business in Calgary, or anywhere else in Canada, and are interested in learning more about GoHere, please visit [www.go-here.ca](http://www.go-here.ca) and order free decals. Partnering organizations will encourage their communities to support businesses that participate.





# H. pylori

## More than Gastric Ulcers

The scientific community used to believe that stress caused gastric ulcers. It wasn't until 1982, when two scientists, Dr. Barry J. Marshall and Dr. J. Robin Warren, discovered that a bacterium that lives in the gut, *Helicobacter pylori*, is the real cause of most gastric ulcers. They would later receive the 2005 Nobel Prize for Physiology or Medicine for this important discovery. Around half the population is infected with *H. pylori*, which they typically contract in childhood,<sup>1</sup> but many of these individuals do not develop ulcers, and the scientific community is not sure why. Recently, researchers have been conducting more research into this newly discovered bacterium, to see what other effects it may have in the human body.

### Could treating *H. pylori* be a risk factor for obesity?

In the previous edition of the *Inside Tract*<sup>®</sup> newsletter, issue 192, we discussed the impact that gut bacteria can have on your weight and the amount of body fat you carry. In further support of this, a recent study analyzed the possible impact of *H. pylori* on the population's propensity toward obesity.<sup>2</sup> The study authors found that in populations where *H. pylori* infection was most prominent, people tended to be thin, and in cultures where *H. pylori* eradication is common, the obesity rates were very high.

The researchers ran a meta-analysis, combining data from 49 studies from 10 European countries, Japan, the US, and Australia that had information on *H. pylori* rates and obesity.

In some of the studies they looked at, researchers compared weight gain in individuals being treated for *H. pylori* to weight gain in those who received placebo treatment, and found significant weight gain in patients upon treatment of *H. pylori* that was not present in those who received the placebo treatment.

In addition, animal studies showed that *H. pylori* infection suppressed weight gain, decreased fasting blood glucose levels, improved glucose tolerance, and increased levels of leptin (a hormone that causes you to feel full).

However, this tendency toward lower weight is also harmful for some individuals: children who were never infected, or those who cleared the infection, grow faster than those with persistent *H. pylori*.

The researchers are unsure why this correlation exists, and more studies need to be conducted to really understand, but it does seem clear that our

unique microbiomes have more effects on our bodies than we realize.

### Inverse Correlation between *H. pylori* and IBD

Previous research has provided some evidence of an inverse relationship between infection with *H. pylori* and inflammatory bowel disease (IBD), meaning that lack of this bacterium in the body seems to relate to a greater risk of IBD.

In a large study from Texas, researchers compared 1,061 IBD patients with 64,451 non-IBD control participants.<sup>3</sup> Individuals in the control group were twice as likely to harbour *H. pylori* infection. In addition, the study showed that IBD patients who experience gastritis (inflammation of the stomach), which is commonly associated with *H. pylori* infection in healthy individuals, are much less likely to be infected with *H. pylori* than non-IBD patients with gastritis. Future research could determine the full nature of this inverse relationship with *H. pylori* and of the particular microbial balance present in the gut of IBD patients when they experience gastritis without *H. pylori* infection. The researchers say that understanding this relationship would bring them much closer to understanding the development (pathogenesis) of IBD.



**H. pylori** is the  
real cause of most  
gastric ulcers.

1 Goodman KJ *et al.* *Helicobacter pylori* infection in Canadian and related Arctic Aboriginal populations. *Canadian Journal of Gastroenterology*. 2008; 22(3):289-95.

2 Lender N *et al.* Review article: associations between *Helicobacter pylori* and obesity – an ecological study. *Alimentary Pharmacology and Therapeutics*. 2014;40:24-31.

3 Sonnenberg A *et al.* Low prevalence of *Helicobacter pylori* infection among patients with inflammatory bowel disease. *Alimentary Pharmacology & Therapeutics*. 2012;35:469-476.



# Can Money Buy Happiness?

What makes people happier: spending money on themselves or giving to others? It might surprise many of us to learn that research done by Elizabeth W. Dunn, a social psychologist at the University of British Columbia, shows that spending money on other people may have a more positive impact on happiness. So, potentially, people who live generous lives may live happier lives.

Increased happiness is just one of the potential benefits of making a generosity plan. Planning charitable giving can also have the benefits of reducing taxes and leaving a legacy for future generations. Gifts can either be made immediately or at the end of life. A good generosity plan seeks to strike a balance between family needs and charitable aspirations.

The most common planned gift, a bequest made in a will, is made out of a person's accumulated estate assets. A bequest can result in generosity that might not be possible in a person's lifetime. While a will can be an expression of love for family or friends, it can also be a testament to causes a person supported during a lifetime. In this way, a will can become a satisfying final statement of values. For Jane this means leaving a percentage of her estate to charity. Karn and Rheta, who have three children, have planned their wills as if charity were their 'fourth child'.

Planning allows donors to look for ways to give beyond their current cash flow. For those who hold publicly traded securities outside of registered retirement plans, there are tax incentives available for

giving these assets "in kind" to charities. This allows Millie to transfer securities directly to her charity of choice, receive a receipt for tax purposes for the total value of the gift and avoid paying the tax on capital gains had she sold the securities.

Buying and donating a life insurance policy or naming charity as beneficiary of a current policy is another way to plan a gift. By giving a gift of life insurance, Lucille and Jian can anticipate leaving a more substantial gift for charity than would otherwise be possible.

Gift planning can be a group project

honoring a significant person. An extended family or any like-minded group may pool resources to establish an endowment fund that gives long-term support for a shared passion. By establishing a bursary for students pursuing careers in gastrointestinal medicine, the extended Jones family can honour their family member, support the university and influence future generations of young people.

If you would like to explore your own plan to give, talk to us, or Paul Evered, the GI Society and CSIR's development director. You may be happier if you do!

## Top 8 Things You can do Today to **Create a Legacy**

1. Arrange to meet with your lawyer or financial advisor, who can assist you in developing a planned giving strategy.
2. Leave a gift in your Will for the Gastrointestinal (GI) Society, because of the difference the GI Society has made in your life. You can call the GI Society office for the precise wording to appear in your Will.
3. Leave a specific dollar amount or a percentage of your personal possessions to the GI Society.
4. Consider using specific chattels for your Legacy Gift.
5. Name the GI Society as the beneficiary of your RRSP, RRIF, or pension plan.
6. Purchase a life insurance policy naming the GI Society as the beneficiary.
7. Recognize and remember loved ones with Memorial, Graduation, or Birthday gifts to the GI Society.
8. Make the GI Society aware that you have created a Legacy Gift through your Will, knowing that the GI Society respects your privacy and wishes and that the personal information you share will remain strictly confidential.

# Are you curious about the secrets your genes might hold?

Find out some of the important health information encoded in your genome through 23andMe. After you send a small sample of spit in the DNA collection tube provided, and open your account to register your kit, the company analyzes your DNA, looking for genetic markers that point to increased or decreased likelihood of developing certain diseases and having certain traits. Extensive, personalized reports then become available through a personal, password protected account via its secure website. 23andMe also offers some interesting ancestry information, such

as where your maternal and paternal lines hail from, your specific ethnic makeup, and even what percentage of Neanderthal DNA is within your own genome. You can also browse the raw data of your genome, allowing you to view all of your genes and SNPs that 23andMe determines from your sample.

Canadians (note that the product described here is not available to US residents) will be privy to at least 108 health-related reports, including genetic risk factors for various health conditions, predicted drug response, trait reports, and inherited conditions. More than 20,000 Canadians have already taken advantage of its services, which cost \$199 plus shipping per kit. If you buy more than one kit at a time, you can save on shipping and receive 10% discount on additional kits.

The GI Society is now a 23andMe marketing affiliate. This means that \$30 from your purchase of the testing kit will be donated by 23andMe to the GI Society, but only if you purchase by going to [www.badgut.org/donate/23andme](http://www.badgut.org/donate/23andme) and press the image or text link on our website, which will transfer you to the online store page at 23andMe. Please remember to go via our website each time, and tell your friends about this too.

*Thanks for your support!*

#### Note :

The 23andMe Research Team's ongoing quality review process allows them to offer one of the most up-to-date, rigorously tested and credible studies in the field of genomics. Your results will become more accurate based on continual updates to 23andMe's analysis and as their DNA database grows.



## Support the GI Society at **darelle.com**

We're excited to introduce you to darelle.com, a cause-driven online marketplace designed to bring buyers, sellers, and charities together. It works by letting shoppers request the things they want, called Buy Requests. Businesses can then make Offers, and when transactions occur, darelle.com donates to Charity. It is that simple.

The GI Society is a preferred charity at darelle.com, providing you new and exciting ways to support the cause. The site is simple to use and since they donate a minimum of 25% of their transaction revenue to charity, darelle.com provides a way for you to do some shopping or selling and make a difference at the same time. Please take some time to explore this innovative concept and let us know if

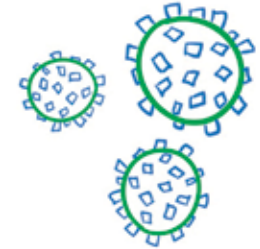
you have any ideas on how you might like to help us grow this initiative.

The screenshot shows the darelle.com website interface. At the top left is the darelle logo. To its right is the badgut.org logo with the text 'Gastrointestinal Society' and 'Société gastro-intestinale'. Below these are three columns of text, each with a red dot bullet point and a corresponding icon in a colored box: 'Join or create Buy Requests you are interested in' with a 'BR' icon; 'Choose from the Offers you receive from Businesses' with an 'MS' icon; and 'Raise money for your favourite Cause with each transaction' with an orange ribbon icon. At the bottom of the interface is a red bar with the text 'darelle.com'.

# HEPATITIS C

## WHAT YOU NEED TO KNOW

The hepatitis C virus (HCV) can damage the liver. Infection begins as acute hepatitis C, and while the virus can run its course through the body with no lasting consequence, approximately 75% of those infected will go on to develop chronic hepatitis C. Many individuals are unaware that they carry HCV. Due to recent breakthroughs in medication therapy, chronic hepatitis C is now curable.



### DID YOU KNOW?

170 million individuals worldwide have HCV



350,000 of those are Canadians



## HOW DOES HCV SPREAD?

### SPREADS

through blood to blood contact.



### VERY RARELY SPREADS

from mother to child, sexual activity, health or dental procedures, or by modern blood transfusions.

### DOES NOT SPREAD

through other bodily fluids.





## SYMPTOMS/COMPLICATIONS

### EARLY

- often silent
- mild to severe fatigue
- discomfort in abdomen



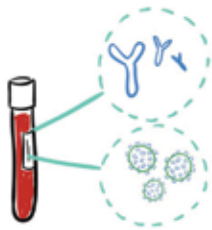
### LATE (AFTER LIVER DAMAGE)

- severe fatigue
- confusion
- fluid accumulation in the abdomen
- bleeding from veins in the esophagus or stomach
- risks for liver failure & liver cancer

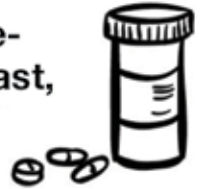


## DIAGNOSIS & TREATMENT

Often detected during routine blood tests.



New treatments cure hepatitis C and have an improved side-effect profile with shorter treatment durations than in the past, though the treatment takes 8 to 48 weeks to complete.



Watch our video at [www.badgut.org](http://www.badgut.org) to learn more about Hepatitis C.

This information does not replace the knowledge or diagnosis of your physician or health care team. We advise seeking advice from a medical professional whenever a health problem arises. © Gastrointestinal Society, 2015. All rights reserved. Whiteboard illustrations: © Tanya Gadsby.



Scan here to watch the video.



# A CURE FOR HEPATITIS C!

Since identifying the hepatitis C virus (HCV) in 1989, scientists have attributed it with causing more than 500,000 deaths worldwide each year. Millions more suffer with chronic symptoms.

HCV can damage the liver. Infection begins as acute hepatitis C, and while the virus can run its course through the body with no lasting consequence, approximately 75% of those infected will go on to develop chronic hepatitis C. Many individuals are unaware that they carry the virus. See more information in the infographic on pages 12-13.

The good news is that research has resulted in new combination medications that have catapulted hepatitis C treatment from managing the infection to curing it. Remarkably, these medications are easy to take, have shorter treatment duration, fewer side effects, and are highly effective, curing more than 90% of cases. Current therapy to cure hepatitis C relies on medications taken for 8-48 weeks, depending on the particular patient and viral genotype.

## Canadian Context

After a drug is approved for use (receives Notice of Compliance or NOC) by Health Canada – based on evidence supporting its safety and efficacy – it goes before the Common Drug Review (CDR), which is the body that looks at health technology and cost-effectiveness of drugs and devices on behalf of the public drug programs (except Quebec).

Harvoni® received NOC on 2014-10-15

and Holkira™ PAK on 2014-12-22 for Hepatitis C. This means that they are now available for sale in Canada and that many private drug plans are already covering them. However, for coverage (listing) by public drug plans (formularies) the medications must go through a secondary review process at the CDR. When these drugs go before the CDR, the GI Society and other patient groups prepare patient impact submissions to be sure the reviewers consider patient-level concerns.

The results from the CDR have been favourable for Harvoni®, and Holkira™ PAK is undergoing a rapid review. Currently, most Canadian public plans are covering Harvoni® and we look forward to similar availability for Holkira™ PAK once it moves through the system. It makes sense to us, and to the patients who we represent, that when a medication is available that offers a cure, the person with the disease should have reasonable access. Both those groups who have not responded to previous treatment and those who are naive to treatment should be able to have the opportunity for a cure.

## Breakthrough Treatments

The hepatitis C virus replicates by using proteins to make copies of itself. These new therapies attack the hepatitis C virus by directly inhibiting proteins that are vital to the virus's ability to replicate. Many different direct acting antivirals (DAAs) with unique mechanisms of action are now available for use either in combination, with or without ribavirin,

and in some cases with pegylated interferon as well.

**Sovaldi®** (sofosbuvir) is an NS5B nucleotide polymerase inhibitor, taken orally as a single tablet, once daily. It is used in combination with ribavirin alone for treatment durations of 12 to 24 weeks (in genotypes 2 and 3), or with pegylated interferon and ribavirin for 12 weeks (in genotypes 1, 2, and 3).

**Harvoni®** (sofosbuvir/ledipasvir) is a combination of ledipasvir, an NS5A inhibitor, which has been co-formulated with sofosbuvir into an all-oral single-tablet regimen, taken once a day. This regimen, when taken for 8 to 24 weeks, is currently widely used in Canada for genotype 1 disease with emerging data in other genotypes.

**Holkira™ PAK** (ombitasvir/paritaprevir/ritonavir and dasabuvir) is an all-oral combination of three DAAs plus ritonavir, taken as 4 pills divided into twice daily dosing. The regimen includes an NS3 protease inhibitor, an NS5A inhibitor, and a non-nucleotide NS5B polymerase inhibitor. It is used with or without ribavirin for a treatment duration of 12 (most individuals) or 24 weeks depending on the individual patient. In Canada, it is approved and widely used for genotype 1 individuals only, although there are data in other genotypes.

Please visit [www.badgut.org](http://www.badgut.org) for more information on these treatments, and to watch our Hepatitis C video.



FEBRUARY 10, 2015

# Federal Government Announces Requirement for Reporting of Drug Shortages

## Providing clear and concise information on drug shortages to help ensure the health and safety of Canadians

At a media conference in Vancouver in February, the Honourable Rona Ambrose, Federal Minister of Health announced that the Government of Canada is advancing regulations that will require manufacturers to report publicly any anticipated or actual drug shortages. By providing advanced warning of upcoming shortages, Canadians will be able to better proactively work with their health care professionals to find alternative options.

The pharmaceutical industry launched a voluntary reporting website, [www.drugshortages.ca](http://www.drugshortages.ca), in March 2012. While most manufacturers are cooperating with this initiative, some are not, leading to this need for regulation. In September 2013, Minister Ambrose announced a Protocol and Toolkit to help to prevent and mitigate the impacts of drug shortages.

To reflect and encourage industry accountability, Health Canada has launched a Public Notification Register listing all manufacturers that fail to voluntarily post their shortages. Once the reporting of drug shortages becomes mandatory, companies will face fines and penalties for failing to comply.

The new Public Register and the proposed approach to mandatory reporting will contain timely, comprehensive, and reliable information on actual and anticipated drug shortages. During the development of this new website and the regulations, manufacturers are still expected

to voluntarily post information on all shortages on the industry-run website.

All stakeholders across the health care system have important roles to play in addressing drug shortages. Manufacturers, purchasers, provincial and territorial governments and health care institutions continue to have an important role in mitigating drug shortages and responding quickly to reduce the impact on patients. The Government of Canada is listening to Canadians and doing its part, and is calling on all stakeholders across the drug supply chain to do theirs.

The Gastrointestinal Society's CEO, Gail Attara, who is also Chair of the Best Medicines Coalition (BMC), was a Witness before the Standing Committee on Health regarding this issue in 2013. "Today's announcement on mandatory reporting of actual and anticipated drug shortages by the Federal Government is a significant step in providing vital health information. Patients all over Canada will benefit from improved accountability and transparency on the timely reporting of shortages," she said, following the media conference. "The Gastrointestinal Society and the BMC strive to ensure that Canadians have safe and timely access to medications, and this recent development will help address some of the issues related to continuity of patient care and safety."

# IBD Updates

IBD mainly includes Crohn's disease and ulcerative colitis, and it involves chronic inflammation and associated symptoms, such as severe abdominal pain, diarrhea, and rectal bleeding. In ulcerative colitis, the inflammation, which only involves the inner mucosa, begins at the anus, with the disease continuously progressing upward through the colon only. In Crohn's disease, the inflammation sometimes extends right through the entire thickness of the bowel, can occur in multiple patches or one large patch, and might involve any area throughout the entire digestive tract. Extra-intestinal complications of Crohn's disease can involve the skin, joints, and eyes. The cause of IBD is still undetermined but there is considerable research evidence suggesting that interactions among environmental factors, intestinal microorganisms, immune dysregulation, and genetic predisposition are responsible.



## The Origins of IBD

As our understanding of the human genome continues to grow, researchers are able to delve much deeper than ever before into their analysis of the genetics behind disease, including inflammatory bowel disease (IBD).

In a recent study published in *Nature*, geneticists analysed the genes that make individuals more susceptible to IBD.<sup>1</sup> They discovered an overlap of many of these markers between IBD and other inflammatory diseases, such as psoriasis and ankylosing spondylitis. More surprising, however, they also discovered an overlap of genetic markers for mycobacterial infections, such as tuberculosis and leprosy. This new information points to early pathways formed through interactions between human cells and the microbial cells residing in the human gastrointestinal tract as the origin of IBD. While this new research does not yet provide a definitive cause of IBD, it offers striking new information on the very

origin of the disease in humans and its shared history with seemingly unrelated diseases, such as leprosy and tuberculosis.



## IBD Management and the Importance of Partner Support

During IBD flares, support from friends and family can help patients cope with painful disease symptoms and associated stress. Even when the disease is in a period of remission, IBD patients are vulnerable to becoming socially isolated, suffering from low self-esteem or body image, and being fearful of sexual intimacy because of their disease. A healthy strategy for coping with the various consequences of IBD includes strong social engagement and ongoing support from close friends and family. Conversely, research shows that when patients try to deal with the stress of IBD by avoiding friends, not talking with partners about their fears and concerns, and insisting on going to appointments alone, then it can be more difficult for them to endure the physical disease symptoms.

One very recent study, published in *Clinical and Experimental Gastroenterology*,<sup>2</sup> involved asking patients in steady relationships about their partners' engagement in their IBD management. While 93% of the 101 participants (53 men and 48 women) reported talking with their partners about their IBD, 70% said they wished their partner were more involved. Only 42% of patients reported that their partner accompanied them to gastroenterologist visits. This study shows a need for health professionals treating IBD patients to find ways of encouraging partner participation in IBD patients' disease management. This partner engagement might include accompanying the patient to appointments, helping with reminders about medication times, and simply being well-informed about IBD and the current status of the patient's disease.

1 Jostins L *et al.* Host-microbe interactions have shaped the genetic architecture of inflammatory bowel disease. *Nature*. 2012;491:119-24.

2 Lahat A *et al.* Partners of patients with inflammatory bowel disease: how important is their support? *Clinical and Experimental Gastroenterology*. 2014;7:255-259.

3 Saha S *et al.* Menstrual Cycle Changes in Women with Inflammatory Bowel Disease: A Study from the Ocean State Crohn's and Colitis Area Registry. *Inflammatory Bowel Disease*. 2014;20(3):534-40.



Research also shows that chronic disease, including IBD, has psychological effects on patients' entire family. Everyone benefits when partners become more involved with the management of IBD.



### Abnormal Menstrual Cycle Sometimes a Precursor to IBD Diagnosis

Scientists have conducted a breadth of research on the topic of reproductive consequences of IBD, but they know less about how the hormonal changes associated with menstruation might affect IBD progression, or vice versa.

Research shows that women with IBD, regardless of disease activity, tend to experience GI-related symptoms during their menstrual cycle more often than women without IBD. A recent study, involving women of child-bearing age with IBD, went further and analysed menstrual cycle abnormalities in women in the year before IBD diagnosis and during the first two years following diagnosis.<sup>3</sup>

Of the 121 study participants, 25% reported changes to their menstrual cycle interval in the year before their IBD diagnosis and 21% reported a change in the duration of their menstrual flow. Of the 48 women who usually experience pain during their menstrual cycle (dysmenorrhea), 16 of them (about 40%) indicated that the pain was more intense in the year before their IBD diagnosis and 13 of them reported an increase in the duration of menstrual pain in the year before IBD diagnosis. The only significant change participants reported experiencing in the two years following IBD diagnosis was an altered length of menstrual flow during an IBD flare.

The study authors say their research suggests that gastroenterologists should pay closer attention to women's reports of menstrual changes in their evaluation of a possible IBD diagnosis. When women undergoing evaluation for IBD report an increase in menstrual pain, it is possible that they are mistaking pain originating in the gastrointestinal tract for increased menstrual pain. The study authors say that menstrual cycle changes might also directly relate to changes in the GI system due to advancing IBD. Future studies will help determine the exact nature of this association.

## Don't take risks make a plan

**Louise Hanvey**

Project Director, Advance Care Planning  
Canadian Hospice Palliative Care Association

Remember when seat belts weren't mandatory and people considered bicycle helmets nerdy? Today, thanks to public health campaigns based on research and evidence, we have seat belt laws and most cyclists don a helmet before heading out on the road. Why don't we take the same precautions for our future health care?

Advance care planning (ACP) is a process of reflection and communication, a time for you to reflect on your values and wishes, and to let others know your future health and personal care preferences in the event that you become incapable of consenting to or refusing treatment or other care. Recent polls indicate that 60% of Canadians believe it's extremely important to talk to someone about their end-of-life care preferences – but only 45% have done so.

Advance care planning is a process, not just a document. Follow these five steps to make your plan:

1. **Think** about what's important to you
2. **Learn** about different medical procedures and what they can or can't do
3. **Decide** on a substitute decision maker – someone who is willing and able to speak for you if you can't speak for yourself
4. **Talk** about your wishes with your loved ones
5. **Record** your wishes with an advance care plan

Advance Care Planning is just another way to care for yourself – and for those around you. When you do advance care planning, you give others the gift of knowing your health care wishes, allowing them to speak confidently for you, in the event that you couldn't speak for yourself.

**Don't take risks - make advance care planning part of your healthy lifestyle.  
Learn more today: [www.advancecareplanning.ca](http://www.advancecareplanning.ca)**

### Call for Patient Perspectives

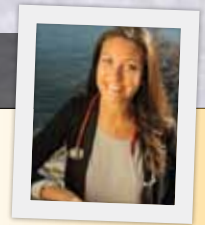
We are looking for Canadian patients with inflammatory bowel disease (IBD), or their caretakers, to fill out a survey on their opinions and experiences regarding biologic and subsequent entry biologic (SEB) medications. If you complete this survey, you will be entered into a draw to win an iPad mini.

**Go to [www.badgut.org](http://www.badgut.org) to take the survey.**



Photo: © Mandav / Bigstockphoto.com

Natalie Rahr, BSc, ND



# Is Your Gut Friend or Foe?

## ***“All disease begins in the gut”***

Hippocrates made this statement more than 2,000 years ago. Since then, much has changed in medicine. However, this theory remains of great interest in the medical community, especially when considering the terrain of the individual, how robust their immune system may or may not be, and determining ways to treat our modern day chronic illnesses.

We live in an age when having a diagnosis of some kind is almost as common as having a job. We hear the terms IBS, IBD, autoimmune disease, hormone imbalance, arthritis, allergies, migraines, MS, asthma, neurodegenerative disease, eczema, depression, obesity, and so on.

Having a definitive diagnosis can certainly be beneficial for us to have an understanding of what is going on in the body and how it might be causing symptoms, but none of these diagnoses actually tell us *why*.

What if understanding the gut is the key to understanding why disease occurs? What if Hippocrates was right? This would mean that for almost all diseases and diagnoses out there, the root cause is in the gut, that what is going on in the gut has ripple effects in the body and that the gut is always a factor in determining disease or health, either partially or completely.

In my practice as a naturopathic doctor, I see a wide variety of health conditions, and more often than not, when we treat the gut, along with making sure all other ‘pillars of health’ are in place, such as sleep, nutrition, exercise, stress management, etc., the symptoms of disease diminish and often go away altogether.

How can that be? What does your gut have to do with your headache or your skin rash or your joint pain?

## The Importance of Having Guts: A Genetic Potluck

Not only is the gut our second brain (and some would argue it to be our first), due to the multitude of neurons in the enteric nervous system and the amount of neurotransmitter production that takes place in the gut,<sup>1</sup> it contains the majority of the microbial DNA that dictates our complex functioning as humans. That delicate balance of the good and bad bacteria in the gut, also known as the microbiome, plays a large role in the health of the whole person. We are even more aware of this since scientists mapped out the human genome early this century, surprising us when they discovered the unexpectedly small size of the human genome, which is roughly equivalent to that of a dragonfly, and much smaller than that of wheat.

The human genome is only one part of the influence, as we now know that the human body is a complex ecosystem containing trillions of bacteria and other microorganisms that live on our skin, in the genitals, mouth (both saliva and mucosa), surrounding the eyes, and flourishing in our intestines. It turns out that most of the cells within and on the human body are not human at all; these microorganisms outnumber human cells ten to one.

### The Good, the Bad, and the Commensal

When talking about the balance of good (beneficial) and bad (pathogenic) bacteria in the gut flora, there is one more category of microbe to be aware of when thinking about the gut's influence on the rest of the body and, prior to that, the influence of the environment on the gut. Commensal bacteria are those bacteria that can go either way; they are neither fully beneficial nor are they pathogenic, they act neutrally. This is where much of our own lifestyle influences come into play in the development of health or disease. If we eat a clean and healthy diet, manage stress well, get lots of sleep, fresh air and activity, these commensal bacteria are inclined to go over to the good side. If the opposite is true, then they can turn bad. The stronger one side is over the other, the more influence it has over these commensal microbes, just like a game of red-rover, the side with the strongest hold grows and wins.

To add complexity, we require all these types of microbes in the right amounts to benefit the body. The beneficial bacteria provide the body with nutrients and help remove waste. The pathogenic bacteria, in a balanced amount, train the immune system. When the pathogenic bacteria overtake and overwhelm the beneficial bacteria things can go awry in the body. Dysbiosis, or an imbalance in the microbiome, has effects on the gut such as increasing permeability and decreasing the integrity of the gut

lining, leaving the body more susceptible to autoimmunity and inflammatory disorders.<sup>2</sup>

In short, our microbiome influences our health, and we influence the health of our microbiome.<sup>1</sup>

### From the Gut to Disease

So if something is going wrong or is out of balance in the gastrointestinal tract, how does this translate to symptoms in areas of the body that, seemingly, have nothing to do with the gut?

The common analogy I use to illustrate for patients how some health care professionals believe gut health affects health of the entire body is that of a clogged kitchen sink. Imagine the things that end up in your kitchen sink every day, and imagine it all building up. That drain eventually clogs.

In the body, the main drain is analogous to the gut and your liver, your main detox pathways and means for waste elimination. Should their function become impaired to some degree due to being overwhelmed with the quantity or quality of what it is trying to eliminate, the rate at which your body (the sink) can eliminate potentially toxic by-products of metabolism slows.

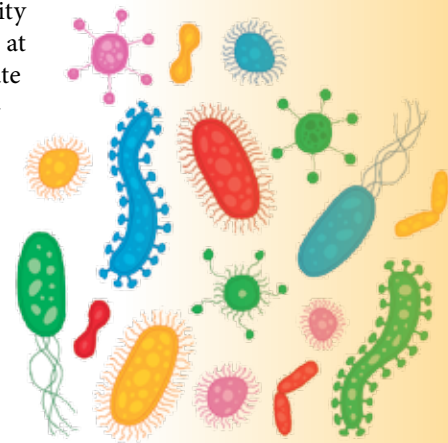
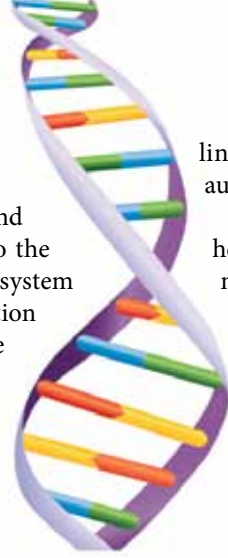
Now imagine this continues for years. The level in that clogged kitchen sink begins to rise, eventually reaching the point of spilling over. Each individual exhibits unique symptoms when this spillover occurs. Early research suggests that these symptoms can include fatigue, mood disorders, developmental disorders, skin rashes, allergies, asthma, to serious complications such as multiple sclerosis (MS) or other severe immune dysregulation or autoimmunity.

This seems to depend on the degree of impairment in function of the drain, the quality of what is accumulating in the kitchen sink (what we put in and what we are exposed to, whether it be the food we eat, the medications we take, the environmental toxins we take in, or other factors), and what tools we use to assist the drain with the elimination of waste and toxicity.

Essentially, the integrity of the gut is analogous to the integrity of a drain, responsible for allowing everything to flow through the body with ease.

### The Gut, the Brain, and the Gut-Brain Axis

Do you ever get a gut feeling: something you know in your gut even before your brain can explain it? What about butterflies in your stomach when you're anticipating something? Perhaps when you experience stress you feel it in your gut without necessarily thinking about it.



- 1 Hadhazy, A. Think Twice: How the Gut's "Second Brain" Influences Mood and Well-Being. The emerging and surprising view of how the enteric nervous system in our bellies goes far beyond just processing the food we eat. *Scientific American*. February 12, 2010.
- 2 Cho I *et al.* The human microbiome: at the interface of health and disease. *Nature Reviews Genetics*. 2012;13:260-70.
- 3 Deretzi G *et al.* Gastrointestinal immune system and brain dialogue implicated in neuroinflammatory and neurodegenerative diseases. *Current Molecular Medicine*. 2011;11(8):696-707.

Research continues to show us the strong links between the brain and the gut. An imbalance in the gut flora could create a playground for inflammation that cascades systemically throughout the body. Inflammation occurring in the gut might even lead to inflammatory processes in the brain.<sup>3</sup> Similarly, what is occurring in the brain could affect the gut via the vagus nerve,<sup>4</sup> altering motility, function, and secretions.

The gut can also exhibit localized symptoms such as gas, bloating, diarrhea, and constipation among others, which can be transient and benign, or involve disease processes that penetrate deeper into the gut wall. “The clearest correlation between dysbiosis and disease has been found with inflammatory bowel diseases (IBD)...”<sup>7</sup> including Crohn’s disease and ulcerative colitis, in which strictures<sup>5</sup> and obstructions are among some of the serious complications.<sup>6</sup>

Effects on the gut-brain axis can cause changes to gut flora in conditions such as irritable bowel syndrome (IBS).<sup>7</sup> Recent research also links depression and anxiety to an inflammatory reaction in the gut.<sup>8,8</sup>

Individuals with obsessive-compulsive disorder (OCD), pediatric acute-onset neuropsychiatric disorder associated with streptococcal infections (PANDAS),<sup>9</sup> and neurodevelopmental disorders such as autism and attention deficit hyperactive disorder (ADHD) have all shown alterations in gut flora.<sup>1,10</sup>

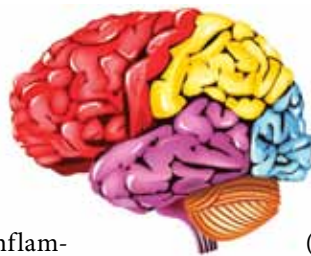
Understanding the gut’s influence on the brain as well as the brain’s influence on the gut is a fascinating step toward treating the person as a whole, and not exclusively by symptoms.

### The Gut, Allergies, and Atopic Disease

While an obvious allergic reaction or anaphylaxis clearly allows you to identify its cause, the increasingly more common delayed food sensitivities can cause an array of symptoms anywhere from local abdominal pain and bloating to migraines, body pain, skin issues like rashes or acne, and so on.<sup>11</sup> These symptoms may not show up for hours or even days, making it tricky to figure out what is causing the reaction.

In practice it is quite common to have patients test positive for a few-to-many food allergens, when testing for serum immunoglobulins, only to have them eliminate those foods and find that 3 to 6 months later, they now test sensitive to foods they did not initially test sensitive to. This leads some practitioners to suspect that intestinal hyperpermeability could be a factor and might play a role in developing food sensitivities,<sup>12</sup> although there is still not enough research on this subject.

Dysbiosis might also be a contributing factor. In infants, the development of food allergies and sensitivities could be related to an overabundance of



certain types of pathogenic bacteria, such as *Clostridiaceae* along with fewer good bacteria.<sup>13</sup>

One study found that in atopic disease such as atopic dermatitis (eczema), the skin microbiome, which the balance of the gut microbiome indirectly alters, is very different from that of healthy skin. The study found the same to be true for psoriasis.<sup>14</sup>

Other symptoms of atopic disease, such as asthma, also relate to gut health. Functional and structural abnormalities, specifically in asthma, relate to persisting inflammation in the lungs and link to altered gut flora. This predisposes an immune response to occur when allergens are present, causing sensitization to these allergens and subsequent symptoms of asthma.<sup>15</sup>

### The Gut and Joint Pain

Dysbiosis and intestinal hyperpermeability might play a role in joint inflammation. When an antigen, such as an offending food or toxin enters the blood stream from the gut, the immune system kicks in. An antibody, plus its target antigen, bind together to form a ‘complex’. This complex circulates, causing other cascades of inflammation as it goes, finally depositing in places like the joints. The joints are particularly susceptible because there is low blood circulation to flush the inflammatory complexes out.

A toxemic theory, proposed at the turn of the 20<sup>th</sup> century, alluded to a build-up of this toxicity in the body from infectious agents ultimately promoting joint inflammation.<sup>16</sup> In a recent study, researchers have correlated an overgrowth of *Prevotella copri* to an increased susceptibility to rheumatoid arthritis.<sup>17</sup>

### The Gut and Obesity

Alterations in the gut flora may play a part in the development of obesity.<sup>18</sup> (See the *Inside Tract*<sup>®</sup> issue 192.) Reduced bacterial diversity is common in obese individuals, which researchers believe may be interfering with metabolic pathways, since the gut harbours many microbes responsible for regulating metabolism and extracting energy from otherwise indigestible elements of the diet. One study reviewing the microbiome diversity of obese and lean mice suggests that microbes play a role in the efficiency of calorie use and calorie storage in the body.<sup>19</sup>

### The Gut and the Immune System

Have you ever been the only person in your household who doesn’t get sick, or are you the first to get sick?

The gut is our main route of contact with the external world; 70% of the immune system is located in the gut. This is mediated through the gut-associated lymphoid tissue (GALT), which is responsible

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for orienting immune response to contents in the gut and for the production of 80% or our main first immune response, that of Immunoglobulin A (IgA) in the mucous layer.

In a study on the effect of the gut microbiome on the flu virus infection, the immune modulating effects stretch far beyond the gut to the respiratory mucosa, acting protectively.<sup>20</sup>

Increasingly, some health care professionals recognize that disruptions in the commensal microflora may lead to immune dysfunction and autoimmunity.<sup>21</sup>

### **So Is Your Gut Friend or Foe? It's your friend!**

If the gut is the root of all disease, as Hippocrates suggested, then, it could also be the root of all wellness.

In other words, if it is true that disease does begin, or has something to do with some amount of disruption, in the gut environment, then this could mean that the root of all health also lies in the gut and in healing the diversity of this environment.

### **What to Do?**

Thus begins your journey of healing the gut.

First, when looking to protect and nourish a healthy gut, think basics: think slow food, single ingredient, whole food, colourful food, and think fresh, unprocessed, and seasonal food, live and fermented foods, and nutrient-dense foods.

As for what to minimize or avoid as much as you

can, think medications such as antibiotics, oral birth control, NSAIDs, caffeine, alcohol, processed and genetically modified foods, processed sugar, foods you are sensitive or allergic to, food dyes, packaged, and pasteurized foods.

There is also much talk around seeding the microbiome of a baby's gut before, during, and after birth. This promotes the development of a healthy immune system, through prenatal health care and preparation of the mother and father, natural vaginal birth, and breastfeeding, along with ongoing exposures to the environment through childhood to train the immune system and increase the diversity of the child's microbiome.<sup>22</sup>

These basic things are a great start to help the gut move to a state of greater health, and therefore help the whole person establish or maintain health.

Keep in mind that once a disease state is already in process, testing and stronger treatments are required. These might include high dose nutrient supplementation, medications, or natural methods of assisting the body with eliminating accumulated toxins. Naturopathic doctors and functional medicine doctors are the experts in holistic care to help get you on track, deal with the root cause of illness, and address your individual needs. We work closely with your conventional medicine team to ensure a smooth, effective treatment plan.

**Dr. Natalie Rahr practices at the Yaletown Naturopathic Clinic in Vancouver, BC. Visit her website at [www.drnatalierahr.com](http://www.drnatalierahr.com)**

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# Cheese Croquettes

Preparation: 10 min | Cooking: 10 min | Total: 20 min | 420 calories/serving | yields 4 servings

- 1 egg, large
- 2/3 cup pine nuts
- 1 cup ricotta cheese
- 1 1/2 cup Gruyère cheese, grated
- 1/2 cup bread crumbs
- 3 scallions, finely chopped
- 1 1/2 tbsp chives, fresh, finely chopped
- 4 tsp parsley, fresh, finely chopped
- [to taste] salt, pepper, Tabasco sauce
- 1 tbsp white flour [optional]
- 1 tsp canola oil

Lightly beat the egg in a bowl using a fork. Grind the pine nuts using food processor, then add them to the bowl. Add the ricotta, grated Gruyère, and bread crumbs, then mix well.

Finely chop the green onions, chives, and parsley, then add them to the mixture. Season with a little bit of salt, pepper, and Tabasco sauce to taste. Mix well.

Using floured hands, form the mixture into flat patties (2 per person).

Add the patties to a lightly oiled pan. Cook over medium heat 5 min per side, until golden-brown. Serve immediately.



## Recipe Provided by SOS Cuisine.com *(Nutrition Partner of the Gastrointestinal Society)*

Whether or not you suffer from health problems, you are no doubt aware that diet plays a vital part in your wellbeing and overall health. As the official nutrition partner of the Gastrointestinal Society, SOS Cuisine.com is able to provide personalized menus for digestive health. Their team of dietitians has designed suitable menus for individuals suffering from constipation, diverticulosis, gluten or lactose intolerance, celiac disease, gastroesophageal reflux disease (GERD), and many other conditions.

The SOS Cuisine.com team updates these balanced menus every week to reflect the arrival of fresh local produce. They come with a grocery list that takes into account weekly specials at your favourite supermarket to guarantee a healthy diet at low prices.

Go to [SOSCuisine.com](http://SOSCuisine.com) to find the right GI meal plan for you and part of your subscription fee will go toward supporting the GI Society.



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We need your ongoing support to continue to help the millions of Canadians who live with gastrointestinal and liver diseases and disorders, and for those who want to maintain a healthy digestive tract.

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- Advocacy to encourage governments to put digestive health on the agenda and implement policies that will improve quality of life

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