Serving the Bleeding Disorders Community

Hemophilia Today

Fall 2004

www.hemophilia.ca

Vol 39 No 2

Hemophilia 2004 World Congress
Bangkok, Thailand

Also Inside: News Update • Medical News • Focus on Research • Chapter Spotlight
The XXVI Congress of the World Federation of Hemophilia was held from October 17 to 21, 2004 in Bangkok, Thailand. Many members from different CHS chapters, as well as CHS staff, were able to attend this incredible event in order to hear the latest scientific findings in the care for people with bleeding disorders and have the chance to meet with people from the world-wide hemophilia community. Much of the space in this issue of Hemophilia Today is devoted to their impressions following their travels to the other side of the world.

A number of other events have also taken place in the past three months, notably, the decision of the giant pharmaceutical company, Merck, to remove its rofecoxib drug from the market, an inhibitor of the cox-2 enzyme, better known by its commercial name, Vioxx®. Dr. Bruce Ritchie has prepared an article explaining the removal of this non-steroidal anti-inflammatory that is so popular with many hemophiliacs who use it to diminish the pain related to arthrosis. But I’d like also to call your attention to two other items. The first was highly mediatised these past few weeks while the second, in my opinion, should have a bit more coverage. I’m talking about the extension of the 86-90 Agreement for people who contracted hepatitis C following a transfusion and the indexation of HIV compensation. Regarding the extension for the 86-90 hepatitis C ruling, the news is fairly promising. Following pressure from people who are infected and federal opposition members, the Federal Health Minister, Mr. Ujjal Dosanjh, showed an openness to examining the file in a new light. In fact, with concern for compassion and justice, he foresees an extension of the program to people infected before January 1, 1986 and after July 1, 1990 so that all victims will be treated equitably. A press conference was held in Ottawa last November 2 on this topic, at which representatives from the CHS, and its Quebec Chapter, the Bloc quebecois, the Conservative Party and the New Democratic Party spoke. There was also a great deal of discussion on the issue during the exploratory debate on health issues held the same evening in the House of Commons. At the current time, four provinces have independently offered compensation to people infected outside the 86-90 period. These include Ontario, Quebec, Manitoba and British Columbia. Remember that the first recommendation of the Commission of Inquiry into the Blood System in Canada presided by Justice Horace Krever stated that governments should, without delay, take the necessary measures to instigate no-fault compensation plans for victims of contaminated blood. In the presence of a minority government and since the opposition seems to unanimously support the extension of the ruling, all signs indicate that Judge Krever’s recommendation for equal compensation for all people infected will finally be applied. What’s more, everything points to the probability that the 1.2 billion dollar fund from the original program will be sufficient to include all victims. A successful outcome, however, implies a judicial process that will last weeks, if not months, during which the original class action suit against the Canadian government will be revised. The outcome of this file seems foreseeable, but it’s always better to maintain a cautious optimism.

And finally, I’d like to say a quick word about the indexation of the HIV compensation program. As you may know, since it took over from the Extraordinary Assistance Program (EAP) in 1994, the Multi-Provincial and Territorial Assistance Plan (MPTAP) offers $30,000 annually to anyone infected with HIV from blood or blood products. But it’s obvious that this $30,000 doesn’t command the same buying power in 2004 as it did then. Many chapters have lobbied their political leaders to try and correct this situation. To date, only Ontario and Nova Scotia (the latter having its own HIV compensation package) have offered indexation. During a Federal-Provincial-Territorial First Ministers conference held last summer, in which Health Ministers took part, this subject was on the agenda. Unfortunately, at the end of the meeting, it was announced that no indexation to the MPTAP is foreseen at this time and this, without any justifiable motive being supplied to support the decision. Considering the limited amount that this represents for federal and provincial governments, the small number of people still concerned and the considerable financial impact that this represents for the latter, it is time to elaborate strategies to bring this dossier before the public and have this unjustifiable decision overturned.

Cover: A few of the people 180 attending the WFH Pre-Congress National Member Organization Training Session in Bangkok, Thailand, October 13 to 15. In the centre foreground of the photo is Brian O’Maloney who, at the end of the Congress, completed his term as WFH President. Over 10 years of his exceptional leadership, the organization went through a period of incredible growth both in terms of the number of members—there are now 107 countries in the Federation—and expanded programs.

WORD FROM THE EDITOR
François Laroche

the BLOOD FACTOR

The Novo Nordisk Fellowship

The Novo Nordisk Fellowship

FROM THE EXECUTIVE DIRECTOR

NEWS UPDATE

IN THIS ISSUE

MEDICAL NEWS

Vioxx withdrawn from the market

Pain – The Fifth Vital Sign

Physiotherapy – Another Approach to Pain Management

FOCUS ON RESEARCH

Twenty years of research endorsement (1984-2004)

CHS Research Grants Committee

CHS Research Program

Care Until Cure Research Program

The Novo Nordisk Fellowship

HEMOPHILIA 2004 WORLD CONGRESS

CHAPTER SPOTLIGHT

THE BLOOD FACTOR

THE FEMALE FACTOR
One Strong Organization

I’m currently poised to leave for Bangkok and the World Federation of Hemophilia’s XXVI International Congress. I’m eager to see if there is an expanding role for the CHS to play in our world. I’ve often expressed interest in writing a paper on the responsibility of a developed hemophilia society as a world citizen. Maybe some ideas will be stimulated in Bangkok.

But surely, unless we achieve our strategic direction of “one strong organization” any role we might play will be at least weakened, if not compromised altogether. How many world empires have fallen, not from the strength of their enemy but from the lack of internal cohesion, distrust and conflict from within? “Divide and conquer” has always been an effective strategy to weaken one’s foes.

We demonstrated our resolve during the late 80s and 90s as the horror of contaminated blood products took its toll. A common “enemy” can galvanize effort and determination. Our very lives were at stake and we met the challenge valiantly but with heavy casualties. Even with a measure of internal friction, we showed ourselves to be one strong organization. Canada listened and we have a safer blood system as a result.

I’ve heard it said that you can tell when troops are in battle or not by what they complain about. When engaging in combat, the troops complain about not enough ammunition. When at peace, they complain about warm beer.

We are facing a significant challenge in the area of resource development, particularly in public fundraising. Our direct marketing endeavours, which used to net us more than $600,000 during the days of the Krever Inquiry now net us only a modest $250,000. Significant money to be sure, but not enough to be one strong organization. The challenge of declining revenues must be met with the same resolve we had during the tainted blood days. Indeed, without greater resources our organization, Canada listened and we have a safer blood system as a result.

Our organizational mettle will be tested early in 2005 when we come together for a summit on organizational fundraising. Plans are already underway for this initiative and you’ll be hearing much more following Bangkok. As one strong organization we need a national funding policy that gives strength and unity to our philanthropic efforts.

We must get beyond regional/provincial/national interests to thinking together as one community of people with bleeding disorders throughout Canada. How can we maximize donor income from the grassroots to the Board room? If we were to enable ourselves, through a unified philanthropic policy, to increase our $250,000 to $600,000 and beyond, imagine the strength at all levels of our organization. We have an opportunity to build a funding foundation that will outlast the instability of market trends and increase both public support and the actual percentage of public fundraising dollars that go to our programs and aren’t eaten up through expensive direct marketing firms.

The importance of this is highlighted by the 75% of hemophiliacs in the world who have no access to treatment. As a strong CHS maybe we can play an important role, not only in Canada by preserving and improving care here, but actually increasing the life expectancy of our community members in other less fortunate countries. One strong organization – let’s continue to press this strategic direction forward.

Priority 1: Fundraising

In my first months as Executive Director I quickly understood that the coming years would be decisive for the organization. The environment at the CHS has changed substantially; our members enjoy a more satisfactory quality of life than ever before. Some receive a respectable compensation, and all benefit from some of the best care and clotting factors in the world.

Unfortunately, the very positive developments of the last few years have had some regrettable repercussions: pressing issues are seen as secondary; motivation to do volunteer work is falling; the media pay less attention to blood-related problems; the CHS is no longer in the public eye; and our fund-raising activities have declined to the point that our future is increasingly uncertain.

In order to take up this challenge, CHS leaders from across the country will soon be meeting to formulate a new global fund-raising strategy. We must all work to find the most effective ways to benefit from the generosity of Canadians who are sympathetic to our cause. The job will obviously not be easy, for a number of reasons. Among other things, because we compete with a growing number of agencies, some 180,000 in Canada, who, like us, need donations in order to function.

But other more positive factors play in our favour. A recent study of Canadians’ generosity conducted by the Canadian Centre for Philanthropy and Volunteer Canada shows that 91% of Canadians gave an average $259 in 2002, representing an impressive total of $4.94 billion dollars. Out of this figure, close to $1 billion was invested in health-related organizations. Thus, despite the large number of agencies, there is good reason to believe that we can garner a reasonable share of these charitable contributions.

In order to succeed in our efforts, however, we have to become more efficient in our philanthropic approach. What this means is that we have to develop a system that maximizes our limited volunteer resources. It must also foster development of a long-term relationship with our donors. We have to set up a cohesive structure embracing the different levels of the organization so that everyone comes out of this initiative a winner. If our approach is truly original, we could satisfy the expectations of the most demanding among us and raise the CHS’s public profile.

But the most important factor of success in this endeavour will always remain the dream, the one that stirs and motivates us: the dream of finding a final cure, the dream of never again having to experience a blood contamination crisis, the dream of helping hemophiliacs around the world who still have no access to blood products; the dream of always having access to the best care that exists. That’s the sole energy source that can ensure we reach our goals.

The CHS has a wealth of unique experiences, amazing achievements, and successes, both individual and collective. For all these reasons, the CHS is one of the most respected volunteer organizations in Canada. It may be that fund-raising represents the organization’s weak link, but the odds are good that people who have to cope with coagulation disorders will take up this new challenge, as the history of the CHS has taught us.
GOVERNMENT OF CANADA TO DISCUSS COMPENSATION OPTIONS FOR PERSONS INFECTED WITH HEPATITIS C

November 22, 2004

OTTAWA - Health Minister Ujjal Dosanjh announced today the Government of Canada’s intention to enter into discussions on options for financial compensation to people who were infected with hepatitis C through the blood system before January 1, 1986, and after July 1, 1990.

“Since becoming Minister, I have heard from Canadians who have contracted Hepatitis C through the blood supply,” he said. “Representatives of those infected with hepatitis C through the blood system before 1986 and after 1990 have asked us to reconsider the government’s position on compensation. In reviewing this matter and in discussion with cabinet colleagues and caucus, we have reflected on a number of circumstances that have changed since the original compensation decision was taken in 1998.

“We have therefore decided that it is right and responsible to revisit the decision and begin discussions on options for financial compensation to those who were infected through the blood supply before 1986 and after 1990.”

“Hepatitis C places a tremendous burden on infected people and their families,” said Minister of State (Public Health) Dr. Carolyn Bennett. “Building on previous actions, I am very happy that there is the possibility to do more to relieve this burden for those people infected through the blood system.”

Since 1998, the Government of Canada has committed approximately $1.4 billion to compensate and assist people infected with hepatitis C through the blood system. Of this amount, $875 million was allocated to a trust fund that fulfills the Government of Canada’s financial obligations to those infected Canadians under the 1986 to 1990 Hepatitis C Settlement Agreement. The Government has also committed $525 million for a comprehensive package to support treatment for people infected before January 1, 1986, and after July 1, 1990, improved blood regulation, as well as surveillance, prevention, support and research.

Discussions on developing options for compensating Canadians infected with hepatitis C through the blood supply before 1986 and after 1990 will commence as soon as possible but are expected to take several months and involve many players. There will be discussions with the lawyers who oversee the 1986-1990 Settlement Agreement and with the lawyers of Canadians infected with hepatitis C through the blood system before 1986 and after 1990, and the provinces and territories.

ENCOURAGING NEWS ON COMPENSATION FRONT

Jeff Rice, CHS Hepatitis C Coordinator

In recent weeks, those victims of the tainted blood scandal who contracted the hepatitis C virus (HCV) through the blood system prior to January 1, 1986 and after June 30th, 1990, and who were left out of the original federal compensation package created to compensate those infected between 1986 and 1990, have seen signs from the federal government that the dates of the original agreement may soon be reviewed, and that the compensation package may be opened to include those who were originally left out.

The ‘forgotten victims’ as they have come to be known, remain cautiously optimistic as, at the time of writing, no firm commitment has been made by the federal government. New movement began on this issue early in the autumn as media reports began filtering out that funds ($300 million) provided by the federal government to the provinces and territories to be used for the care and treatment of those left out of the ‘86-’90 window period, as part of The Undertaking Agreement (commonly called care not cash) between the federal government and the provincial and territorial governments, were not reaching those in need, and may have been finding their way into the general revenues of some provinces and territories. The origins of this situation are found in the decision-making processes that began to unfold as early as the 1970s, before HCV even had a name.

Hepatitis, or inflammation of the liver, is a disease that has been known for centuries. Some causes are viral. Hepatitis A is acquired mainly through contaminated drinking water. Transfusion-transmitted hepatitis B was recognized soon after blood transfusions began to be widely used in the 1940s. Non-A, non-B hepatitis (now known as hepatitis C) resulting from transfusion, was first recognized in the mid-1970s. In November 1981, after a report by the U.S. National Institutes of Health predicting that ALT testing (a liver function test) of blood donations would reduce the incidence of post-transfusion hepatitis by 29 percent, a Canadian Red Cross Blood Transfusion Service (CRCBTS) advisory committee recommended that ALT testing of blood donations not be implemented as a surrogate test for non-A, non-B hepatitis. Further studies from other countries in the early to mid-1980s supported ALT testing for non-A, non-B hepatitis, as well as anti-HBC testing (antibody to the core of the hepatitis B virus). In November 1985, the majority of U.S. fractionators begin using ALT-tested plasma to manufacture blood products, and in February 1986, the U.S. Food and Drug Administration’s Blood Products Advisory Committee recommended that all blood donations be tested...
for both ALT and anti-HBc as surrogate tests for non-A, non-B hepatitis. In March of that same year, the American Association of Blood Banks (AABB) and the American Red Cross issued a joint statement recommending that blood collection agencies begin planning to implement surrogate testing. The AABB’s Board of Directors decided that both ALT and anti-HBc testing of blood donations should be implemented. The CRCBTS advisory com- mittee recommended against surrogate testing for non-A, non-B hepatitis, pending further study of data from a Toronto incidence study and of the efficacy of HIV-antibody testing as a surrogate test for non-A, non-B hepatitis. In June of 1990, the CRC implemented first-generation HCV antibody testing.

Many feel that the 1998 decision by the federal government to compensate only those who contracted hepatitis C through the blood supply between 1986 and 1990 was made on the basis of incomplete information. The government deemed that there were no tests available to screen for non-A, non-B hepatitis in the blood prior to 1986, and that tests were in place for screening blood after 1990. The evidence has always pointed to the availability of useful tests prior to 1986. In 1997, the Commission of Inquiry on the Blood System in Canada, headed by Justice Horace Krever, recommended compensation for all people harmed by the blood system, regardless of when they were infected. In 1998, the federal, provincial and territorial governments proposed and subsequently established a $1.2 billion legal settlement (the 86-90 Agreement) for people who became infected with HCV through the blood system between 1986 and 1990. People infected with HCV through the blood system prior to January 1, 1986 or after June 30, 1990 were not offered any direct assistance at the time, but were to receive assistance for care and treatment through another fund—care not cash. Original estimates that 22,000 people would be eligible under the 86-90 Agreement, and that compensating more would ‘bankrupt’ Canada’s health care system, have proven incorrect as fewer than 5,000 infected individuals have qualified as of November, 2004. Based on the response to a small settlement negotiated with the Canadian Red Cross, the expected number of people excluded from the 86-90 Agreement is fewer than 5,500.

The Canadian Hemophilia Society has always supported Justice Krever’s recommendation to compensate everyone equitably, and remains committed to ensuring that all people infected with HCV through the blood supply are treated fairly.

As John Plater, Vice-President of the CHS, and Chairperson of the CHS Task Force on Hepatitis C and HIV states, “We wish the federal Liberal government of the day had treated everyone equally, but we applaud the present federal Health Minister’s desire to make equal treatment a reality as soon as possible.”

Given the current minority government situation in the federal Parliament, and strong opposition support for this initiative, the outcome appears inevitable; however, until a firm commitment is made by the federal government, proponents of fair and equitable compensation remain cautiously optimistic.

**BAYER GETS OK FOR KOGENATE NEEDLE-LESS RECONSTITUTION SYSTEM**

Bayer HealthCare has announced it has received Health Canada approval for a new needle-less reconstitution system, called BioSet® for its recombinant factor VIII product, Kogenate® FS. The new system is reportedly safer than existing systems because it has fewer components and a vacuum seal which decreases the risk of accidental contamination. Bayer also said the pre-filled syringe means patients and caregivers are not exposed to needles during the reconstitution. The system has also recently been approved for use in Europe.

Prior to launching the product, Bayer is making a minor modification to the diluent syringe. The modification consists of a finger plate added to the diluent syringe to make it more convenient for the user to attach the syringe to the concentrate vial.

Bayer is working with the Canadian Blood Services and Héma-Québec to launch BioSet in spring 2005.

**2004 BAYER HEMOPHILIA AWARDS PROGRAM RECIPIENTS HONOURED AT WFH CONGRESS**

At a special dinner program held October 21, 2004 in conjunction with the World Federation of Hemophilia Congress in Bangkok, Thailand, Bayer Biological Products honoured recipients of grants from the Bayer Hemophilia Awards Program. In the second annual cycle of awards, 26 recipients, representing leading junior and senior health care professionals with expertise in hemophilia from ten countries around the world, will receive grants for basic and clinical research and educational projects in the field of hemophilia.

Three Canadians are included among this year’s recipients: Dr. Jacques Galipeau of the Lady Davis Institute for Medical Research in Montreal received a Hemophilia Special Projects Award; Sylvie Lacroix from Hôpital Sainte-Justine in Montreal and Pamela Hilliard of Toronto’s Hospital for Sick Children received Caregivers Education Awards.

The Bayer Hemophilia Awards Program was initiated in 2002 and provides annual grants totaling US $2.75 million to senior and early career investigators, fellows in training, and other hemophilia care professionals. The award categories include hemophilia special projects, early career investigators, clinical scholarships, and caregiver education.

The cycle for accepting applications for 2005 awards began in August. For complete information on the Bayer Hemophilia Awards Program, award categories, and submission process, visit the Web site at http://www.bayer-hemophilia-awards.com.

**VCJD RISK NOTIFICATION FOR FACTOR XI CONCENTRATES IN CANADA**

David Page, CHS Blood Safety Coordinator

On September 21, 2004, all people with hemophilia and other bleeding disorders in the United Kingdom who had infused plasma-derived clotting factor concentrates made from U.K. plasma between 1980 and 2001, as well as people who had infused certain other plasma products, notably anti-thrombin III, were told that they were “at risk” of variant Creutzfeldt-Jakob Disease (vCJD) for public health purposes. U.K. health authorities have said their actions are “precautionary” and the actual risk to individuals is very low.
vCJD is the human form of BSE, commonly called Mad Cow Disease. Approximately 150 people, mostly in the U.K., have contracted vCJD since 1996 from eating contaminated beef.

In a previous notification in 2001, U.K. health officials had notified those individuals who received plasma products from donors who later died of vCJD.

This broader notification comes after a new risk assessment was conducted in the U.K. One person died of vCJD in December 2003 after receiving blood from a donor who later died of vCJD, and a second person, who died from other causes, was found to be infected with vCJD in July 2004, again after receiving blood from an infected donor. In both cases, red blood cells were transfused. These cases are thought to confirm that vCJD can be transmitted by transfusion. No cases of vCJD are known to have been caused by plasma products.

### Implications for Canadians

Approximately 40 Canadians received Factor XI Concentrate manufactured by Bio Products Laboratory (BPL) in the U.K. to treat factor XI deficiency, also called hemophilia C. Factor XI is a congenital bleeding disorder affecting a small but unknown number of Canadians. Only a small percentage of those who have the condition require the infusion of factor concentrates.

During the years 1980 to 1998, some BPL products were made with plasma from donors who later developed vCJD. According to BPL, these products were not imported into Canada. Other lots of Factor XI Concentrate, however, manufactured with plasma from donors who may still be in the asymptomatic period of the disease, were imported into Canada.

According to records reviewed by Health Canada, the Canadian Blood Services and Héma-Québec wrote to Canadian physicians who had requested Factor XI Concentrates through Health Canada’s Special Access Programme. The physicians were provided with the lot numbers they received and the initials of the patient for whom they were requested. They were also given information on the U.K. notification process so as to adequately inform patients.

### Reaction of Canadian authorities

On October 14, the Canadian Blood Services and Héma-Québec wrote to Canadian physicians who had requested Factor XI Concentrates through Health Canada’s Special Access Programme. The physicians were provided with the lot numbers they received and the initials of the patient for whom they were requested. They were also given information on the U.K. notification process so as to adequately inform patients.

On October 18, the Blood Safety Surveillance and Health Care Acquired Infections Division of the Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, published A Cursory Analysis Addressing the Question of the Assessment of Exposure to Particular Batches of variant Creutzfeldt-Jakob Disease (vCJD) Implicated Plasma Products. The report says:

> The risk assessment concludes that the risk of transmission of vCJD to the Canadian factor XI deficient patients is very low, the range being between 1 in 100,000 to 1 in 1,000,000 depending on the amount of product used.

On October 21, the National Steering Committee on Infection Control Guidelines (SCICG) issued the following recommendation:

**SCICG recommends that no extra infection control precautions need to be taken with surgical instruments used in surgeries on individuals who have received a transfusion of Factor XI theoretically contaminated with vCJD at the rate described in the Risk Assessment.**

People who believe they may have received products made from U.K. plasma are encouraged to contact their Hemophilia Treatment Centre and treating physician for more information.
**CHS CREATES NETWORK OF RARE BLOOD DISORDER ORGANIZATIONS**

David Page, CHS Blood Safety Coordinator

In April 2004, the Canadian Hemophilia Society received a Sector Development Grant from Health Canada’s National Voluntary Health Organizations to create and coordinate a network of rare blood disorder organizations.

The purpose of the project is to create an active network of key volunteers and staff from within the following blood disorder groups: the Canadian Hemophilia Society, the Canadian Hereditary Angioedema Society (CHAES), the Canadian Immunodeficiencies Patient Organization (CIPO), the Thalassemia Foundation of Canada, the Aplastic Anemia and Myelodysplasia Association of Canada (AAMAC), the Neutropenia Support Association Inc. and the Canadian Organization for Rare Disorders (CORD).

The goal is to raise the level of awareness and knowledge of the patient groups’ roles in the following key issues: the importance of patient registries, the advantages of specialized care centres for complex, rare disorders, the tracking of blood and blood products to permit inventory management and effective recall and notification procedures, and the need for active adverse reaction reporting and post-marketing surveillance of therapies used to treat these disorders.

The first face-to-face meeting held in Toronto the weekend of June 19-21 allowed the Network to create a grid to measure where each group stands in relation to these key issues. Documents were presented on a variety of topics, including each disease condition and its concerns, the Specialized Systems for Blood and Immunology registry, the Blood Borne Pathogens Surveillance Project, accessing Emergency Room care and a guide to government relations.

Monthly teleconferences since June have focused on the need for the creation of comprehensive care centres for these rare blood disorders on the model of the 24 hemophilia comprehensive care centres across Canada. Another issue that has emerged is the need for orphan drug legislation to facilitate access to treatments for rare disorders in Canada. Currently, pharmaceutical companies hesitate to go through the onerous drug approval process for drugs if the market is considered too small.

Members of the group intend to maintain the links created after the end of the initial project in March 2005.

---

**2004 SCHOLARSHIP AND BURSARY RECIPIENTS**

The applications received this year were once again of an exceptionally high standard and indicate that the next generation of leaders in the Society will bring strong and varied talents to the organization. The CHS Scholarship and Bursary Program is made possible thanks to a generous educational grant from Baxter BioScience.

The 2004 Scholarship, based on academic excellence, was awarded to Calvin Lakham of Brampton, Ontario. Calvin is currently a third-year economics major at York University and intends to pursue post-graduate studies. His program entails analyzing the various components of the market mechanism, and utilizing mathematical and graphical systems. With this knowledge, Calvin aspires to become a financial forecaster. In addition to his academic focus, Calvin’s interests include martial arts, weight lifting and volunteer work, particularly within the hemophilia organization. He feels that with the generous award he has received, he will have more time to devote to those who have given so much to him in the past.

The 2004 Bursary was awarded to Daniel Adler of Calgary, Alberta. Daniel is currently enrolled in his third year of Computer Science and Applied Mathematics at the University of Calgary. Upon graduation next year he will hold two honours degrees in these subjects, and plans to pursue post-graduate studies in either Computer Science or Engineering. As a hobby, he is taking opera singing lessons with a professor at the University of Calgary.

The 2004 Mature Student Bursary was awarded to Christine Hines of Dutch Brook, Nova Scotia. Christine Hines is the mother of six children ranging from 2 to 22 years of age. Christine has been nursing as a Licensed Practical Nurse for almost 20 years. She decided to further her nursing career so that she could expand her horizons. Christine is now in her second of four years of the Bachelor of Nursing Program at University College of Cape Breton. Having two nephews with severe hemophilia, as well as being a carrier herself, Christine has a keen interest in educating people about bleeding disorders. She has organized education days at Cape Breton Regional Hospital and has been a great asset in fundraising for the Nova Scotia Chapter.
On September 30th, Merck & Company, Inc. withdrew their popular arthritis drug Vioxx® (Rofecoxib) from the market after a large clinical trial showed that patients taking Vioxx had almost 4 times the rate of heart attack and stroke compared to patients taking placebo.

On September 30th, Merck & Company, Inc. withdrew their popular arthritis drug Vioxx® (Rofecoxib) from the market after a large clinical trial showed that patients taking Vioxx had almost 4 times the rate of heart attack and stroke compared to patients taking placebo. This was an unexpected finding in a 3-year study of 2600 people designed for a completely unrelated reason. Although there have been suggestions of a problem since the VIGOR trial published in 2000, the data from this and other clinical trials did not show a significant difference. The Adenomatous Polyp Prevention on Vioxx (APPROVe) study was designed to be large enough to find a small difference in the rate of recurrence of intestinal polyps, and so was large enough to find a significant increase in heart attacks. Heart attacks and strokes began to increase after the first year, reaching 3.9 times the risk found in patients taking placebo.

Vioxx is withdrawn from the market

Bruce Ritchie, M.D., Chair, CHS Medical and Scientific Advisory Committee

On September 30th, Merck & Company, Inc. withdrew their popular arthritis drug Vioxx® (Rofecoxib) from the market after a large clinical trial showed that patients taking Vioxx had almost 4 times the rate of heart attack and stroke compared to patients taking placebo.

On September 30th, Merck & Company, Inc. withdrew their popular arthritis drug Vioxx® (Rofecoxib) from the market after a large clinical trial showed that patients taking Vioxx had almost 4 times the rate of heart attack and stroke compared to patients taking placebo. This was an unexpected finding in a 3-year study of 2600 people designed for a completely unrelated reason. Although there have been suggestions of a problem since the VIGOR trial published in 2000, the data from this and other clinical trials did not show a significant difference. The Adenomatous Polyp Prevention on Vioxx (APPROVe) study was designed to be large enough to find a small difference in the rate of recurrence of intestinal polyps, and so was large enough to find a significant increase in heart attacks. Heart attacks and strokes began to increase after the first year, reaching 3.9 times the risk found in patients taking placebo.

Vioxx is a member of a class of drugs known as Coxibs that inhibit the action of Cyclo-oxygenase-2 or Cox-2, an enzyme involved in the production of a group of molecules called prostaglandins. The name prostaglandin comes from the prostate where they were originally discovered, but they are produced in many places in the human body and have a variety of activities, depending on the site and the particular prostaglandin produced. In the stomach, for instance, prostaglandin E2 and I2 are produced by Cox-1 and protect the stomach lining from breakdown by stomach acid. In blood platelets, the prostaglandin known as prostacyclin is produced by Cox-1, and activates platelets prior to forming a blood clot. Inhibiting these actions makes it easier for people to bleed, particularly from the stomach. The Cox-2 inhibitors were thought to specifically inhibit the production of prostaglandins in cells involved in the inflammation of arthritis, without affecting those prostaglandins used to make blood clots and protect the stomach lining. It now turns out that Cox-2 also produces prostaglandin I2 in blood vessels which blocks blood clotting, so inhibition of this Cox-2 leads to blood clots.

The Cox inhibitors, including aspirin, are the mainstay of treatment of arthritis, since they effectively reduce the inflammation, pain and stiffness of arthritis. Patients with bleeding disorders have been told to stay away from these drugs in the past because they induced bleeding, so the discovery of the Cox-2 inhibitors, or Coxibs, seemed to be breakthrough for these people, until now.

Pfizer has announced that trials of Celebrex® (Celecoxib) sponsored by the National Cancer Institute, the National Institutes of Health, and the company itself did not show a similar problem, but recently Health Canada announced that it was looking into adverse events reported for Celebrex. Adverse event reporting is a much less rigorous tool then a double blind placebo controlled trial, so it seems unlikely that Health Canada will be able to come to any solid conclusions from their analysis.

The withdrawal of Vioxx is a big problem for people with arthritis, since the Cox-2 inhibitors in general and Vioxx in particular, are so good at easing the pain and stiffness of arthritis. More than that, the finding will make drug companies much more cautious in bringing drugs in this class to market, a process which can cost a billion dollars. No public pharmaceutical company can easily afford to have a drug withdrawal after the development and marketing dollars are spent, and before they can be recouped in sales. The share price of Merck fell to an eight-year low after the announcement of the withdrawal and then by a further 10% percent after the announcement of a class action suit claiming that Merck ignored warnings that the drug posed a problem. Other members of this class of drugs include Bextra® (Valdecoxib), which is licensed in Canada, and Prexige® (Lumiracoxib) which is approved in Europe and undergoing assessment in the U.S. and Canada.

What should people with bleeding disorders do? It appears that the non-selective Cox inhibitor Voltaren® (Diclofenac) is as effective as the Coxibs, and as safe with respect to bleeding. There have been no reports of excess blood clotting problems with this drug, so it is a reasonable substitute for now. Additionally, it is important not to underestimate the usefulness of acetaminophen for pain relief and strengthening and stretching exercises to prevent progression of arthritis.

References:


Wooltorton E. What’s all the fuss? Safety concerns about COX-2 inhibitors rofecoxib (Vioxx) and celecoxib (Celebrex). CMAJ • JUNE 25, 2002; 166 (13).
PAIN -
THE FIFTH VITAL SIGN

RRICE (replacement therapy, rest, ice, compression and elevation), biofeedback and Tai Chi are just a few of the concepts addressed by Jenny Aikenhead, Bleeding Disorder Clinic physiotherapist, as she outlines the ways in which a physiotherapist is essential as you develop a comprehensive approach to serious pain. In this article, she looks at measures that will relieve pain as well as how regular activity can be used to prevent or decrease the frequency of pain episodes. The end result is a plan, including a range of activities in the clinic and/or in the community, which are tailored to each person’s situation.

On behalf of CHS and the committee which has been addressing the need for appropriate pain management in our community, I am pleased to announce that the CHS resource, Pain, the Fifth Vital Sign, will be available in early 2005. Watch the website for details.

Jenny Aikenhead
Physiotherapist, Alberta Children’s Hospital, Calgary, Alberta

When is acute and chronic pain?

ACUTE PAIN…
• is usually the result of an acute bleed or injury and then requires replacement factor.
• responds well to R&R.I.C.E. (Replacement therapy & Rest, Ice, Compression, Elevation).
• can benefit from rest from activity, use of a splint, sling, walking aid or wheelchair.
• can benefit from ice to decrease swelling and muscle spasm.

CHRONIC PAIN…
• results from recurrent inflammation of a joint that causes destructive changes to the synovium (lining), cartilage and bone.
• affects different people to different degrees. This depends on many factors: the individual himself, his expectations, the situation, his cultural background, the intensity of the stimulus, stress, fatigue and the duration of the pain.

Why is an exercise or fitness program an essential part of your pain control regime?

IT IMPROVES…
Muscle strength
Stronger muscles tire less easily, which results in extra support and protection for the joint and reduces the stress and strain that can cause pain.

Joint range of motion
Improved mobility of the joint will result in better alignment of the joint and decreased stress on its surrounding structures. Exercises will help reduce stiffness and by improving movement may alleviate pain.

Flexibility
Joint contractures and/or muscle shortening may result in pain and respond well to stretching exercises. Improved flexibility will also decrease the chance of muscle bleeds.

Coordination and balance
The development of these skills results in a quicker response to a sudden movement and a decreased chance of further injury to the joint.

Confidence and peer acceptance
Exercising allows sharing with friends. Improved ability to participate, and success, will improve confidence.

Feeling of well being and decreased anxiety
Mental stress and anxiety is known to influence sleep patterns, muscle spasm, the frequency of bleeds and increase the sensitivity to pain. Exercise can decrease feelings of stress.

Release of endorphins which decrease pain
Endorphins are natural chemicals produced by the body and act as a damper to the sensation of pain. The production of endorphins is thought to be influenced by exercise, heat, cold, positive attitude, some physiotherapy electrical modalities, relaxation and medications.

Endurance and possible weight loss
Cardio-vascular exercises will increase endurance and strength and therefore reduce stress on the joints. Weight loss may occur which also decreases pressure on the joint surface.

What should you do before starting an exercise or fitness program?

Consult with a physiotherapist at the HTC who will…
Assess the pain
It is important to have a physiotherapist assess the history of the past and present pain, and its nature and intensity of the pain so as to find out its probable cause. Is it caused by an acute joint bleed? A soft tissue strain/bleed? Synovitis? Chronic synovitis? Arthritic pain?
Provide an exercise program
A specific exercise program can be developed to address the root of the pain; for example, weakness causing instability. The physiotherapist can give guidelines for the progression of exercises and recommend a suitable fitness program in the community. Often exercise programs are not continued because of changes in the intensity or type of pain and worsening of the arthritis. It is therefore important to keep your physiotherapist informed of the changes in or worsening of pain so that exercises can be adapted or modified to meet new criteria. It may be necessary to use replacement factor prior to exercise activity. This may be required each time or may only be necessary initially. Splints or supports may be required to protect the joint during exercise.
Assist choosing a exercise or activity program
It is essential to look at the chosen activity to see if it can benefit you individually. It may be necessary to provide an exercise program to develop the skills needed to participate, or adapt part of the program to suit you better.

continued on page 10
Weight training programs should be carefully reviewed to avoid injury. Progress should be gradual. These programs are not usually recommended for children under 14 years of age because lifting excess weight may affect the development of growth plates. Weight training can be done by children provided that maximum weights are not lifted. Weight machines are preferred to body building and free weights because there is less likelihood of injury.

**What else besides exercise has physiotherapy to offer you for pain relief?**

**Non Electrical Treatments**

**Hot packs or heating pads** - Apply for 15 to 20 minutes for maximum effect.

**Ice** - Apply for 5 to 10 minutes to decrease pain and muscle spasm by slowing down the rate that the nerves can conduct the pain signals.

**Whirlpool, hydrotherapy, swimming and aquacize** - Exercise, especially in warm water, will decrease pain and muscle spasm as well as provide an excellent medium for strengthening exercises without causing stress on the joints.

**Splinting or supports** - These may help to decrease the pain by resting the joint. They can also be used to support the joint while participating in an activity or exercise program.

**Mobilizations or tractions** - These techniques may reduce pain by increasing movement. They should be performed by a physiotherapist who is familiar with hemophilia. High-velocity manipulations such as those performed by chiropractors, osteopaths or some physiotherapists are not recommended for anyone with a bleeding disorder.

**Massage** - Massage can be used for stress relief. It induces relaxation and decreases muscle spasm. Deep tissue massage and soft tissue release is not recommended.

**Shoe inserts or foot orthotics** - Shock absorber and supportive shoe insoles can reduce pain by cushioning the pressure on the foot and by accommodating foot deformities.

**Crutches, cane or wheelchair** - These may reduce the stress and pain on the ankle, knee or hip.

**Acupuncture** - Acupuncture is not contraindicated in hemophilia, although it is recommended that replacement therapy be used prior to the first treatment. Chronic pain and muscle spasm respond well to this type of treatment.

**Electrical Modalities**

These are used only as an adjunct to an exercise treatment.

**Transcutaneous Electrical Nerve Stimulation (T.E.N.S.)** - This is a low frequency electrical current that is used to reduce acute and chronic pain. The electrical stimulus is thought to block the pain sensation caused by the nerve fibres. The electrical current is delivered by a small portable unit using two to four electrodes and can be used at home or work several times a day.

**Codetrin** - This is another form of T.E.N.S. using several sets of electrodes. Each pair of electrodes is set to fire in random pattern to confuse the pain message.

**Interferential therapy** - A low frequency electrical current used to reduce pain or swelling depending on the type of current used.

**Muscle stimulation** - This technique involves an electrical stimulus that causes contraction of a muscle. It should be used as an adjunct to exercise to assist with retraining a weak muscle. The pain in the joint may be decreased by increasing the muscle strength and support of the joint.

**Electrical biofeedback** - Biofeedback can be used in retraining a muscle to contract by using visual or auditory cueing or to teach a muscle to relax and result in a decrease in muscle spasm.

**Ultra-sound** - This is a high frequency current used to decrease swelling and promote absorption of a hematoma and is usually used in acute pain.

**Acustim** - This is a low frequency electrical stimulation used over acupressure points to try to reduce pain caused by muscle spasm.

Pulsed short wave diathermy - Used more commonly in Europe, this is a form of electromagnetic energy which helps reduce swelling, pain and promote tissue healing.

**Laser therapy** - This has been used in arthritis to reduce pain and increase healing but has limited use in hemophilia.

Some of the equipment needed for the therapies above is available in the hospital where the HTC is located. In addition, some patients rent certain pieces of equipment.

**What activities can you participate in when you have arthritis?**

Recommended activities are those that are low impact on the joint but allow mobility, strengthening and cardio-vascular exercise and that will not cause bleeding or aggravate the synovitis (the inflammation of the lining of the joint).

**Swimming and aquacize**

These are highly recommended because the buoyancy of the water allows exercising without stress on the joints. They can also allow you to take part in strengthening exercises by using weights or floats. Warm water will provide the extra benefit of relief of pain and stiffness.

**Tai Chi**

This is an excellent exercise program that allows slow controlled movement and gentle stretching of the joints along with coordination and trunk (core stability) exercises.

**Yoga**

This is also a stretching and strengthening exercise but be careful that the classes are appropriate for someone with arthritis and not too advanced for your fitness level and ability.

**Bicycling**

This can be started on a stationary bicycle and later progress to a road bike. The height of the bike seat can be adjusted to accommodate joint range. Risers can be put on pedals for leg length discrepancies. Remember your BIKE HELMET and PROTECTIVE PADS.

**Walking, dancing, bowling and hiking**

These are low impact activities on the joint.

For more information, see Passport to Well-being: Destination: Fitness.
CHS RESEARCH GRANTS REVIEW COMMITTEE

Dr. Patricia McCusker, Chair

The year 2004 has been interesting from the research point of view. Three new projects were given funding for two years. The first is from a newcomer, Dr. Alex Levine, who is interested in the effect Vitamin C may have on the presentation of bleeding. Dr. David Lillicrap is looking at better recognition of VWD in the primary care setting and Dr. Jerome Teitel is questioning the role of the fibrinolytic system as a factor affecting the amount of bleeding experienced by those with severe hemophilia. Ongoing funding for Dr. Mary-Frances Scully’s project has been provided as well as for Dr. Mark Blostein. There is a preponderance of projects that are addressing the bleeding manifestations and what other factors may be contributing to the bleeding from a biochemical viewpoint. Refining the investigation of bleeding in the primary care setting as well as in women with menorrhagia constitute important clinical questions being addressed.

I would like to take this opportunity to thank Dr. Growse for his hard work as the Chair of the CHS Grants Review Committee. He has provided excellent leadership and worked hard to review and fund many important research projects over the past several years. His contribution has been invaluable and will be missed. As always, the other members of the committee and the CHS staff deserve thanks as this could not be accomplished without their hard work and commitment of time and expertise.

Dr. Patricia McCusker is a hematologist who has been actively involved in hemophilia care since 1994 when she began working as a pediatric hematologist/oncologist at the University of Western Ontario, London. There she was quickly recruited by Dr. Martin Inwood and Liz Clegg, RN, to join them at the hemophilia clinic. Participation with Dr. Inwood and the patients in the London region was very rewarding and since that time, Dr. McCusker has been actively involved in hemophilia care. She is a member of the Association of Hemophilia Clinic Directors of Canada and has served on its Board of Directors. She has been involved in hemophilia research, especially with respect to the development of the Canadian Hemophilia Outcomes - Kids Life Assessment Tool (CHO-KLAT), a project which was funded by the CHS. She has been a member of the CHS Research Grants Review Committee for five years and is currently part of the Manitoba hemophilia treatment team.

Twenty years of research endowment (1984-2004)

Frank Bott, Chair, on behalf of the Trustee-Administrators

The Hemophilia Research Million Dollar Club celebrates its twentieth anniversary this year. Started by a group of members from Alberta, Manitoba, and Quebec (our founders, Ken Poyser, Ed Kubin, and Richard O’Shaughnessy) it represents the largest “grassroots” fundraising project on behalf of the national organization in the history of the Canadian Hemophilia Society. The early organizers had a “dream” of an endowment of one million dollars that would generate research funding for bleeding disorders research “in perpetuity”, no mean feat in terms of 1984 dollars and resources! From 1984 to 1991 the endowment in the Million Dollar Club grew to $1,000,000. In this anniversary year the endowment is projected to reach a new plateau of $1,600,000. The ground rules of the Million Dollar Club fund provide that the capital of the endowment fund cannot be touched; the only spending permitted is out of investment income or non-capital donations (specified for current research rather than endowment). The Million Dollar Club has virtually no administration costs, and the three Trustee-Administrators elected by the Voting Members are strictly limited to 1% of Club funds for administrative costs, for example, investment management fees and other professional fees. The national office of the Canadian Hemophilia Society provides all necessary administration at no cost to the Million Dollar Club.

Over the twenty years of its existence the Million Dollar Club has funded over $1,600,000 in research grants (slightly more than the endowment at this year-end). Please refer to the chart showing endowment growth and cumulative research funding to the end of the year. In addition, the Canadian Hemophilia Society has, in recent years, provided supplementary funding of $700,000 for a total of $2,300,000 in research support. Decisions as to grant recipients are made by the CHS Research Grants Committee chaired until recently by Dr. Gershon Growse, Professor of Pathology and Medicine at the University of British Columbia, and former Medical Director of the British Columbia Hemophilia Clinic, and as of June 2004, Dr. Patricia McCusker, Clinical Director, Pediatric Hematology/Oncology at CancerCare Manitoba.

The Hemophilia Research Million Dollar Club produced an anniversary edition of In Gratitude and Commemoration (which recognizes the supporters of the Club over the years and the persons they have honoured). As is our custom and a requirement of the Hemophilia Research Million Dollar Club, we acknowledge in Hemophilia Today our members and donors who have generously supported research over these past twenty years. (See list on next page.) We express our heartfelt thanks to those who made that first million dollars of endowment a reality, and those who have supported us in our current campaign with magnificent generosity!

![Endowment Chart]
**VOTING MEMBERSHIPS**

<table>
<thead>
<tr>
<th>Art &amp; Leona Olson</th>
<th>Northern Alberta Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mrs. W.K. Badger</td>
<td>Northern Alberta Region</td>
</tr>
<tr>
<td>Mr. &amp; Mrs. Pat Laidlaw</td>
<td>Northern Alberta Region</td>
</tr>
<tr>
<td>Alex, Ken Little &amp; Lisa Sorrenti-Little</td>
<td>Northern Alberta Region</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>North Eastern Ontario Region</td>
</tr>
<tr>
<td>Randy &amp; Douglas Page</td>
<td>North Western Ontario Region</td>
</tr>
<tr>
<td>Poyser, Schultz &amp; Glass</td>
<td>Quebec Chapter</td>
</tr>
<tr>
<td>Sydney Schacht</td>
<td>Quebec Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Toronto &amp; Central Ontario Region</td>
</tr>
<tr>
<td>O'Shaugnessy &amp; CHS</td>
<td>Toronto &amp; Central Ontario Region</td>
</tr>
<tr>
<td>Nancy Anderson</td>
<td>Toronto &amp; Central Ontario Region</td>
</tr>
<tr>
<td>Glenys &amp; Ed Gurney</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Claire &amp; Eric Roussin</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Donat &amp; M-Paule Gendron</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Estate of Janet Rudd</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Aurore Mercure Fournier</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Estate of Mary Ann Olson</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>John Fulton</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. &amp; Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Marguerite Bourgoin and Norman Lampliff</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Steve Beach</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Lindsay Pears</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Lynne Kubin &amp; Family</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Terry Douglas</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Candace Terpstra</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Jo-Ann Kubin</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. &amp; Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Frank Bott and Family</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Blanche Summers</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Valerie Alexander and Grant Rumpel</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. and Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Nathan Kobrinsky</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Marie Jutras</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Ms. and Mr. Pat Laidlaw</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Alex, Ken Little &amp; Lisa Sorrenti-Little</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Randy &amp; Douglas Page</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Poyser, Schultz &amp; Glass</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Sydney Schacht</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. &amp; Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Frank Bott and Family</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Blanche Summers</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Valerie Alexander and Grant Rumpel</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. and Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Nathan Kobrinsky</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Marie Jutras</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Ms. and Mr. Pat Laidlaw</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Alex, Ken Little &amp; Lisa Sorrenti-Little</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Randy &amp; Douglas Page</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Poyser, Schultz &amp; Glass</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Sydney Schacht</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. &amp; Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Frank Bott and Family</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Blanche Summers</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Valerie Alexander and Grant Rumpel</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. and Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Nathan Kobrinsky</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Marie Jutras</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Ms. and Mr. Pat Laidlaw</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Alex, Ken Little &amp; Lisa Sorrenti-Little</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Randy &amp; Douglas Page</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Poyser, Schultz &amp; Glass</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Sydney Schacht</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. &amp; Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Frank Bott and Family</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Blanche Summers</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Valerie Alexander and Grant Rumpel</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. and Mrs. Ron George</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Nathan Kobrinsky</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Marie Jutras</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Ms. and Mr. Pat Laidlaw</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Alex, Ken Little &amp; Lisa Sorrenti-Little</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Dr. Martin Inwood</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Randy &amp; Douglas Page</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Poyser, Schultz &amp; Glass</td>
<td>Nova Scotia Chapter</td>
</tr>
<tr>
<td>Sydney Schacht</td>
<td>Nova Scotia Chapter</td>
</tr>
</tbody>
</table>

**HONOREES**

- Dr. Agathe Barry
- Castella Belanger and her Team
- Lorraine Bernier and her Team
- Helen and Hunter Bishop
- In Memory of Martin Bott
- Dr. Robert Card, Carol Bell and Elena Kanigan
- Comprehensive Care Team of Southern Alberta
- Kathy Goldfine
- In Memory of Clifford Roy Crook
- Ray and Pat Daniel
- In Memory of Dr. Barry Isaac
- Dr. Barry L. DeVerhe
- Bill Featherstone
- In Memory of Raymond Joseph Fontaine
- For Persons with Hemophilia who have Died from AIDS
- So We Never Forget
- Pierre Fournier
- In Memory of Robert Gilson
- Mertel Gerard and her Team
- Dr. Gerry Gowse
- In Memory of Frank Hardam
- Ann Harrison
- In Memory of Dr. Charles Joseph (C.J.) Kubin
- In Memory of Barry Waines Kubin
- Normand Landry Family
- In Memory of Pierre Lazure
- Family of金色
- In Memory of Dr. Barry Isaac
- Dr. John King and Dr. Alainhutu
- Dr. Nathan Kobrinsky
- Dr. Barry Laferriere
- In Memory of Charles Joseph (C.J.) Kubin
- In Memory of Barry Waines Kubin
- Normand Landry Family
- In Memory of Pierre Lazure
- Family of金色
- In Memory of Jo-Ann Kubin
- Ken Poyser
- Gary N. Petrick
- Pauline Peters and Duncan Conrad
- Bay & Jan Mitchell
- Neuropsychologist
- Dr. Barry Isaac
- Dr. and Mrs. Ron George
- Dr. Nathan Kobrinsky
- Marie Jutras
- Jo-Ann Kubin
- Glen Webster

**DONORS**

- The following represent general donations, and those made in honor of Mary MacLeod, and Marjory Calderwood, and in memory of Ray Ahn, Norman Babinec, Martin Bott, Jacqueline Helbert, Reverend Stephen Hill, Dr. Barry Isaac, Hazel MacDonald and Art Olson.

- Valerie Alexander and Greg Rumpel
- James Joseph Barrette
- Frank Bott
- Helen Bourgoign and Norman Lampliff
- Catherine Calderwood
- Margaret Cracknell
- CV Labs – FMC University of Calgary
- Margaret Dunne
- Joan Fulton
- Dr. Ron & Leni George
- Jacqueline and Peter Gilbert
- Joyce Arjap Gouin
- Jeannine Helbert
- Chris Grant and Judy Patterson
- Mike and Joanne Harren
- Hemophilia Manitoba
- Hemophilia Ontario/Ian Deshure
- Dr. A. James and Helen Black
- Grace Jasper
- Daniel Langlois
- Linda Laval
- Patricia Laval
- Dr. David Lincicrep
- Erna Chapman and James Love
- Lorne Macdonald
- Jacqueline V. MacIntyre
- Shirley and John Mackilip
- Lawy MacLeod and Family
- Friends and Family of Mary MacLeod
- Lorraine J. Markotic
- Eldene Miller
- William Middell
- Judith A. Morgan
- Newfoundland and Labrador Chapter
- Northern Alberta Region
- Daniela & John O’Rea
- Ottawa & Eastern Ontario Region
- Douglas Page
- Lorraine Calderwood-Parrson
- Faith and Kip Panesar
- Lola Pellerin
- Marlene Perman
- Mary-Lou and Garnet Pante
- Darlene & Ken Poyser
- Prince Edward Island Chapter
- Quebec Chapter
- Joan Roberts
- Ruth Rushion
- Apollonia Steele
- Henry Toller
- Toronto & Central Ontario Region
- Janice Young

The following represent contributions made to the Marjory Calderwood Memorial Fund:

- Dr. & Mrs. Fred Brine
- Eva Diasquale
- Mary Alice Finch
- Florence Gilbert
- Margaret Godacre
- Mary Goodacre
- Jean & Reynald Heal
- Jeanette Luise
- Adrian Mewlopsen
- Jean & Ed Maskiewich
- Ruth Mesich
- Everet Person
- Louise Watson
- Carole & Dan Young

* These donors represent contributions made during our current campaign (2000-2004).
Supporting research towards improving the quality of life for persons with hemophilia and finding a cure have been goals of the Canadian Hemophilia Society (CHS) since it was founded in 1953. Since 1989, through funds provided by the Hemophilia Research Million Dollar Club and the CHS, the Society provides basic scientific research grants and studentships aimed at developing treatments for hemophilia and finding a cure. The following reports describe the projects funded in 2004.

**CHS RESEARCH PROGRAM**

**Fibrinolytic Variables in Severe Hemophilic A Patients**

Dr. Jerome Teitel,  
St. Michael’s Hospital,  
Toronto  
1st year funding

The bleeding tendency of people with severe hemophilia varies considerably. This can be explained by differences in levels of their deficient proteins (clotting factor VIII or IX) which are too small to be easily measurable. We think that an additional source of variability could lie in fibrinolysis, the process by which blood clots dissolve. Severe hemophilia patients who have rapid fibrinolysis (clots that dissolve quickly) might tend to bleed more severely than others. In this project, we propose to conduct a thorough and systematic study to test the hypothesis that the bleeding tendency in severe hemophilia is correlated with increased fibrinolytic activity. We will measure the levels of four key blood proteins which contribute to fibrinolysis in 100 severe hemophilia patients. We will also monitor the number of bleeding episodes as well as the amount of factor VIII or IX concentrate that these patients have needed over the preceding 2 years. We will statistically determine whether increased values of the fibrinolytic proteins correlate with increased bleeding tendency, and vice versa. At the end of this project, we hope to better our understanding of why bleeding tendencies in severe hemophilia patients are variable. If our hypothesis is confirmed, we will be able to provide a novel rationale for individualized management approaches. These may include selecting target amounts of factor VIII or IX for treatment or prevention of bleeding in hemophilia patients. It may also include selecting patients for prophylaxis with clotting factor concurrently with factor VIII or IX replacement therapy, after surgery and other interventions. We may also be able to predict the risk of clotting of central venous catheters, a serious complication of prophylactic factor VIII or IX treatment in young children.

**Role of Gamma-Carboxyglutamic in Blood Coagulation**

Dr. Mark Blostein,  
McGill University, Montreal  
2nd year funding

Hemophilia is a commonly inherited disorder that results in an inability to form a blood clot required to stop bleeding. Patients afflicted with this disorder often suffer spontaneous, debilitating and life threatening episodes of haemorrhage. The fundamental defect leading to this inability to stop bleeding is a deficiency in proteins that are important in blood clot formation. In Haemophilia A, the defective protein is factor VIII, whereas in haemophilia B, the defective protein is factor IX. The goal of my research funded by the Canadian Hemophilia Society is to explore the biochemistry of factor VIII and factor IX with the goal of improving our understanding of these disorders at a biochemical level in order to develop novel therapies.

There are two goals in my research project. The first goal will utilize biochemical techniques to understand better how factor IX is activated to its active and functional form, factor IXa. Normally, upon activation of the blood clotting cascade, factor IX is converted to factor IXa by a protein complex known as the factor Vlla-tissue factor complex. There are multiple interactive sites between factor IX and the factor Vlla-tissue factor complex and the goal of the research outlined in this section will be to identify, at an atomic level, novel sites of interaction between these two proteins.

A second goal of my research will be to further characterize the biochemical properties of peptides that can accelerate blood clotting. These peptides have previously been published by myself to accelerate factor IX function and can potentially be used as blood coagulation enhancers in situations in which standard therapies for hemophilia are not useful, namely hemophilic patients that develop antibodies or inhibitors to infused blood products. Understanding the biochemical properties of these peptides will aid us in the design of peptides that can be used therapeutically to treat the hemophiliacs.
Care Until Cure

The Care Until Cure Research Program was established in the year 2000 in collaboration with Wyeth Canada. Wyeth Canada is engaged in the discovery, development, and commercialization of human pharmaceuticals through recombinant DNA and other technologies.

This program allows Canadian investigators to conduct research on various medical and psychosocial aspects of bleeding disorders. Grants are given for clinical research, including outcome evaluation, in fields relevant to improving the quality of life of persons with hemophilia, persons with von Willebrand Disease or other inherited bleeding disorders, persons with related conditions such as HIV or hepatitis C as well as carriers of an inherited bleeding disorder. The following reports describe projects funded in 2004.

CARE UNTIL CURE
Von Willebrand Disease in the Primary Care Setting

Dr. David Lillicrap,
Queen’s University, Kingston, Ontario
1st year funding

It is now generally accepted that the autosomal dominant trait, von Willebrand disease (VWD), is the most common inherited bleeding disorder in humans. The frequently quoted population prevalence of VWD of 1% derives from two epidemiologic studies performed in Italy and the USA. In marked contrast to this disease frequency in prospectively investigated populations, the prevalence of symptomatic VWD presenting to hematologists in tertiary care hospitals has been estimated to be approximately 1 in 10,000. Given the marked discrepancy between these prevalence figures, and the impact of the original epidemiologic studies, we are proposing to perform a prospective assessment of the prevalence of symptomatic VWD presenting to primary care physicians, the context in which most medical problems initially come to light.

Both of the frequently quoted epidemiologic studies concerning VWD prevalence, involved pediatric populations, ranging in age from 2 to 18 years of age. In the original study from Northern Italy, 1,281 children aged 11 to 14 years were enrolled, while the 600 children enrolled at three hospital clinics in the USA were aged 2 to 18 years. In the Italian study, bleeding questionnaires were distributed to healthy high school children, and in the US study, the children enrolled were undergoing well-child or school physical examinations. In the US study, children referred to these investigators with a bleeding history were specifically excluded from the study.

In summary, the 1% prevalence figures that are now widely accepted in the literature for VWD are based on the epidemiologic investigation of 1,800 children without bleeding symptoms that had necessitated medical intervention.

The objective of this newly funded research project is to evaluate the impact of VWD in the context of primary care. We will be assessing the prevalence of symptomatic VWD presenting to family physicians at 50 Kingston area primary care clinics. We will also assess the frequency of VWD presentation at the Queen’s University Student Health Centre. These two study sites will give us access to a general population of approximately 50,000 people, and approximately 30,000 annual student patient visits. After an initial 3 months of study organization, the frequency of patients presenting with symptomatic VWD to primary care physicians in these clinics will be evaluated over an 18-month period. All potential VWD patients will complete a detailed standardized bleeding questionnaire and have laboratory studies for VWD completed on two separate occasions.

In conclusion, this study will assess, for the first time, the prevalence of symptomatic VWD in the primary care setting. We believe that the results from this study will significantly assist future planning for the care of this patient group.

CARE UNTIL CURE
Development of a Clinical/Laboratory Screening Tool for Women Presenting with Menorrhagia

Dr. Mary Frances Scully,
Health Sciences Centre,
St. John’s, Newfoundland
2nd year funding

This study will include 100 women seen by gynecologists in the Health Care Corporation of St. John’s, Newfoundland because of menstrual periods that are heavy and/or last a long time. Those women who wish to participate in the study will be referred by their gynecologist to a hematologist for investigation of the possibility of an underlying, undiagnosed hereditary bleeding disorder.

Hereditary bleeding disorders are responsible for problems with blood clotting and can be very serious, even life-threatening. Hereditary bleeding disorders occur in up to 1% of the population. In women with menstrual periods that are heavy and/or prolonged, however, hereditary bleeding disorders may be found in up to 20%. Currently, testing for hereditary bleeding disorders is costly and time consuming. For these reasons, women with heavy/prolonged menstrual periods are not routinely investigated for hereditary bleeding disorders. Because of the high prevalence of hereditary bleeding disorders in women with heavy or long periods it will be useful to develop an easier way to test those women for hereditary bleeding disorders.

Women who are part of the study will undergo routine screening for hereditary bleeding disorders, which involves obtaining a detailed medical and family history as well as laboratory testing. Based on the results of the history and testing it will be determined what aspects of the patient’s history and what laboratory tests are most useful in diagnosing a hereditary bleeding disorder associated with menstrual problems. These results will be compiled into a single diagnostic tool that can be used by gynecologists to investigate their patients presenting with heavy and/or prolonged periods for hereditary bleeding disorders. Such a tool will result in a more rapid and cost effective diagnosis. It will also help identify women with a hereditary bleeding disorder who might not otherwise be identified and thereby allowing them to get proper treatment.
CARE UNTIL CURE

The Role of Vitamin C in Bleeding Disorders

Dr. Alex Levin, The Hospital for Sick Children, Toronto, Ontario 1st year funding

Vitamin C plays a critical role in preventing bleeding by keeping blood vessel walls sturdy. There are currently no normal values for children. Establishing normal ranges is important to serve as a basis for future research trying to understand why some children bleed more than others especially if they have other bleeding tendencies. Perhaps low vitamin C levels play a role. Prior attempts to measure vitamin C levels have been unreliable due to testing methods which were affected by diet, time of day and other factors. We will measure vitamin C levels from a type of blood cell called lymphocytes. Lymphocyte levels of vitamin C are more accurate and less subject to daily fluctuation.

We have developed a High Performance Liquid Chromatography (HPLC) method for measuring lymphocyte vitamin C levels. Pilot testing using 50 samples showed that the test works very well. We will get specimens of blood from patients who are already getting a blood count test for other reasons. No extra blood or needle sticks need to be taken. Patients will be identified from Departments and Divisions at The Hospital for Sick Children who have patients who are likely not to suffer from conditions that influence vitamin C levels and who do not have a bleeding disorder. Parents will answer a brief questionnaire designed to identify dietary habits which might be affecting vitamin C levels.

After establishing normal age and gender related values for vitamin C (ascorbic acid) in healthy children, we will apply to begin researching the possible role of unrecognized vitamin C deficiency in bleeding disorders and eye (retina) hemorrhage. We will measure vitamin C levels in children with bleeding disorders such as hemophilia, von Willebrand disease, and idiopathic thrombocytopenic purpura, comparing those children who have prominent bleeding problems to those who do not. Likewise, we will examine vitamin C levels in victims of Shaken Baby syndrome and accidental head injury with and without retinal hemorrhages. Lastly we will examine the effects of routine childhood immunization on vitamin C lymphocyte levels.

Novo Nordisk Canada Inc. – CHS – AHCDC Fellowship in Congenital and Acquired Bleeding Disorders

The Novo Nordisk Canada Inc. – Canadian Hemophilia Society – Association of Hemophilia Clinic Directors of Canada Fellowship in Congenital and Acquired Bleeding Disorders is a fellowship program established in the fall of 2001. Novo Nordisk has a leading position within areas such as coagulation disorders, and manufactures and markets pharmaceutical products and services that make a significant difference to patients, the medical profession and society.

The goal of this fellowship program is to provide fellows in hematology or other relevant fields the opportunity to acquire clinical or research skills necessary to improve the care and quality of lives of patients with hemophilia and other congenital or acquired bleeding disorders. The following report describes the project funded in 2004.

NOVO NORDISK FELLOWSHIP

Gene Therapy-Mediated Immune Tolerance in Hemophilia A

Dr. Maha Ahmed Othman, Queen’s University, Kingston, Ontario

Hemophilia A is the most common severe inherited bleeding disorder in humans with an incidence of approximately 1 in 5,000 live male births. About 30% of hemophiliacs exhibit severe clinical symptoms and in ~25% of patients treated with exogenous factor VIII concentrates, anti-factor VIII antibodies develop. In ~70% of these “inhibitor” patients, extended immune tolerance protocols can eventually extinguish the host anti-factor VIII response.

Since the initiation of gene therapy studies, in the mid 1980s, hemophilia A has been an excellent candidate disorder for the application of this therapeutic strategy. The disease is caused by defects in a single gene and extensive basic knowledge is now available for the disorder.

Many pre-clinical studies of hemophilia A gene therapy have now been reported, most of which have utilized viral vector-mediated transgene delivery approaches in hemophilic mice or dogs. In these trials the normal factor VIII gene is delivered in a “disabled” viral vector which can infect suitable host cells.

The adverse host immune response remains a major challenge to all gene therapy protocols. These responses include the development of antibodies to the viral vector that prevent re-administration of the treatment; rapid clearance of the “infected” cells by cellular immune responses, resulting in cessation of factor VIII gene expression over time, and finally, the development of antibodies (inhibitors) to the newly produced factor VIII protein.

In our project, we propose to investigate the potential of inducing immune tolerance (unresponsiveness) in the host to the viral vector and transgene-derived protein. We believe that this may result in an effective and safe approach to the long-term delivery of factor VIII. The experimental plan will be focused on disabling one or more of the effector pathways of the immune response in the hemophilic mice. This will initially involve delivery of the therapeutic viral vector to “tolerogenic” cells within the blood cell population. It is hoped that the “infection” of these cells with the gene therapy vector will result in host immunologic tolerance to both the viral vector and its newly synthesized factor VIII protein. These studies have the potential to significantly improve our management of one of the remaining obstacles to successful gene therapy for hemophilia.
World Federation of Hemophilia Congress 2004 in Bangkok, Thailand:

**RECORD PARTICIPATION**

The XXVI International Congress of the World Federation of Hemophilia took place in Bangkok, Thailand from October 17 to 21, 2004. More than 3800 people participated in the Congress, making this the largest hemophilia conference ever held.

The Congress was officially opened by Her Royal Highness Princess Sirindhorn. Under the Presidency of Dr. Parttraporn Isarangkura of Thailand, the Congress offered a varied program of eight plenaries and 77 symposia on medical, musculoskeletal, laboratory science, multi-disciplinary and dental topics. Over 300 oral presentations were heard over the four days of the conference. More than 600 poster presentations were available for viewing in the exhibit hall.

During the WFH General Assembly, held on October 22, a new Executive Committee was elected. It is comprised of:

- Mark Skinner, President, USA
- Paul Giangrande, Vice President Medical, UK
- Rob Christie, Vice President Finance, AUSTRALIA
- Paula Bolton-Maggs, UK
- Mammen Chandy, INDIA
- Gordon Clarke, UK
- Bruce Evatt, USA
- Cesar Garrido, VENEZUELA
- David Page, CANADA
- Alison Street, AUSTRALIA
- Ali Akbar Tchupan, IRAN

The semi-annual event will move to Vancouver, British Columbia, May 21-25, 2006. Istanbul, Turkey was chosen as the site of the Congress in 2008.

**WFH Congress: Two conferences in one... and sharp dressers**

Bill Mindell, member of the CHS Blood Safety Committee and of the WFH Blood Product Safety, Supply and Availability Committee

The WFH Conference is really two conferences. The first is about the cutting edge technologies now available, or that may someday be available, for hemophilia care. This is the conference for the developing world where we learn about gene therapy, plasma-free products, inhibitor risks and therapies, transgenesis experiments with factor IX, and updates on the latest scourge (vCJD), to name a few.

The other conference is about the developing world where 75% of the world’s people with hemophilia have inadequate or no treatment at all. Data presented by outgoing WFH President Brian O’Mahony showed that, collectively, nations that had more than US $10,000 per capita income also had 46 times more factor VIII per capita than nations with a per capita income of less than US $2000. This difference is stunning in its impact, and many presentations described WFH programs and local initiatives to try to close this gap.

There has been much progress in many developing nations. Rachanee O’Charoen from Thailand described their method of locally making freeze-dried, heat-treated cryoprecipitates (lyophilized cryo) where each 50-ml bottle contained the cryo from three donations. Since they began the production in 1995 only one patient has seroconverted to hepatitis C and none to HIV. Other national success stories were also described, but this session was emotionally wrenching by a story from one of the caregivers in the audience who worked just across the border in Cambodia. The week before she had to send a boy with a badly swollen leg, from the aid station to which his parents had brought him from a great distance, back to his village because no treatments were available.

One of the most controversial and animated sessions was on the vCJD risk assessment recently released in the U.K. All clotting factor concentrates manufactured from U.K. plasma from 1980 to 1998 (2001 including the last expiry date) are considered at theoretical risk of transmitting vCJD. Many of these products were exported to other countries. Not everyone supported this risk assessment and the public health measures which fall out from it. Indeed, Health Canada had just issued a preliminary opinion that, regarding the small amount of UK plasma-derived factor XI product imported into Canada, the theoretical risk did not justify the public health precautions the U.K. was recommending. Thus a controversy is born as there is not agreement yet on the level of risk or what should be done about it. This was quite evident at the session with presentations by Drs. James Ironside (U.K.), Bruce Evatt (U.S.A.), Paul Giangrande (U.K.) and Albert Farrugia (Australia). Whatever the risk associated with the U.K. products, it was made very clear by Dr. Farrugia that animal models demonstrate that fresh plasma products because no treatments were available.

During this vCJD session I was thinking back to something I wrote in Hemophilia Today in 1991. We were on the doorstep of the recombinant age for hemophilia products and I was advocating for their early introduction to Canada. I wrote something like: (sic) “Doubtless there will be things to worry about from the production of a large bioengineered molecule, but we won’t have to worry any more about the blood borne viruses that have been so detrimental to hemophilia treatment – because there is no blood!” Initially recombinant products were stabilized with albumin made from plasma (considered safe at the time), but as recombinant development has progressed there has been less and less presence of any human or animal proteins in their production. I was thinking that we in Canada are so much better off with these products as we watch with serious interest, but no real concern, as West Nile Virus, SARS and vCJD all threaten the blood system to some extent, but not FVIII and IX recombinant hemophilia products. The vCJD case is the most illustrative of the benefits of adopting new treatment modalities at the earliest opportunity. While recombinant products have been available...
to all Canadians since 1993, and second generation products since 2000, the U.K. is only now introducing them universally. I was thinking how many fewer people the British might have had to notify as being at risk of vCJD if they had only followed Canada’s lead at that time.

Finally, Bangkok is full of tailors. Custom-made suits and other clothes are very inexpensive compared to Canada. So many CHS participants, including those who are not usually remembered for their wardrobes, went through a significant transformation. Watch for those sharp dressers at future hemophilia meetings in Canada. (This is in addition to those who took turns modeling the red Mountie uniform at the booth promoting the 2006 WFH Congress in Vancouver.) As I was leaving Bangkok, one well-known Board member who hadn’t yet bought any custom-made suits was beginning to muse about at least getting a new custom-made sweatshirt...

Accessing emergency care
Clare Cecchini, CHS Program Coordinator

Canada was one of four countries invited to participate in a Multi-Disciplinary Session to share information and experiences on programs aimed at improving access to hemophilia emergency care. Cathie Morris, who played a key role on the CHS ER Program Advisory Group in helping develop material for the Factor First Program was invited by the WFH to present the CHS experience. She described the various tools developed by CHS to raise awareness of ER personnel including the Factor First patient wallet cards, posters for Emergency Departments, an insert in Medical Post and a CD-ROM presentation on the Emergency Management of Hemophilia and von Willebrand Disease. Patient tools include Prepare to Succeed, a patient guide to the ER, as well as consumer workshops aimed at increasing knowledge and skills in advocating for effective emergency care. A Resource Table, coordinated by Sherry Purcell, Hemophilia Nurse Coordinator from the Kingston Regional Clotting Disorder Program and also a key member of the CHS ER Program Advisory Group; and Clare Cecchini, CHS Program Coordinator.

You can’t win ’em all.
Dr. Man-Chiu Poon, of Calgary, unsuccessful in his bid to be elected to the Executive Committee of the WFH; and David Page, who finished second to Mark Skinner of the U.S. for the position of WFH President. (David was elected to the Executive Committee for a second term.)
Two Canadians win prestigious Inga Marie Nilsson Award.

Dr. Brian Luke (left), Director of the Hemophilia Centre at the Children’s Hospital of Eastern Ontario in Ottawa, and Dr. Man-Chiu Poon (centre), Director of the Southern Alberta Hemophilia Program at the Alberta Children’s Hospital in Calgary, received the Inga Marie Nilsson Award in recognition of their exceptional work in helping to develop hemophilia care in China. The Inga Marie Nilsson Award is named after the Swedish physician who initiated the first prophylactic therapy protocols in the 1960s. Also present in the photo are David Page (second from left), Vice-President of the WFH; Brian O’Mahony (second from right), outgoing President of the WFH; and Inger Antonsson of Octapharma, sponsor of the award.

WFH Congress musings

Eric Stolte, CHS President

This is my third World Federation of Hemophilia (WFH) Congress and the second time I’ve been privileged to be a part of the pre-Congress National Member Organization (NMO) training. I particularly appreciate the NMO training since you get to work more closely with fewer people and thus get to know some people better.

Each time I’m in this environment certain themes emerge, the primary one being just how fortunate we are in Canada for the level of hemophilia care we have. It takes deep commitment and heartfelt devotion to achieve advances, or in our case, to safeguard advances, in hemophilia care. Volunteer effort, more than money, staff or technology, is the difference between effective or ineffective work.

But another experience this time was just how much we have in common with other people around the world. Anu, an Estonian hemophilia nurse has teenage children for whom she has deep concern. Subhajit, an Indian hemophiliaic, full of pride (and rightly so) gives me a copy of an article in Hemalog featuring his journey from having virtually no care to helping in the establishment of a comprehensive care centre in Calcutta. And so many others with whom we share a common sense of life journey, struggle and accomplishment.

Then, at the congress, I was struck by just how much so few people can accomplish with courage and devotion. Brian O’Mahony outlined the accomplishments of the WFH over the past ten years of his presidency. From a rather small and insignificant player on the world health scene to now being a cant player on the world health scene to now being a significant player in the prevention of hemophilia, one has to wonder if we are treating the disease of the person as a whole. Stress and depression have been shown time and time again to have adverse effects in many other aspects of life. Are we focusing on the right things?

Sue Feere, Central Western Ontario Region

It was a hemophilia “think tank.” The diversity and wealth of information with respect to hemophilia were breathtaking. Doctors, people with hemophilia (PWH), family and society representatives were gathered in Bangkok to share experiences and knowledge.

One particularly interesting idea was the suggestion that bleeds are influenced by non-medical interventions. A workshop entitled “Promoting Emotional Health” suggested that a holistic approach with emotional and spiritual components may have an influence on bleeding episodes. Specifically, the frequency and severity of bleeds can diminish if a healthy holistic approach is adopted.

What does this mean? Something different for each individual. It involves knowing oneself and determining how to stay healthy and positive. Spiritual health may include formal religion—attending a church or synagogue, temple or mosque—or casual worship. It may mean hiking on trails and taking the opportunity to appreciate nature. Emotional health includes hobbies, lifestyle choices and meaningful pursuits. The resources to discover and practice these activities need to be supported.

These principles were reinforced at another session in which a Buddhist monk led the audience in meditation, believed by the Thais to promote healing and relaxation. Tai Chi was also presented as an activity from which PWH may derive emotional well-being.

Indeed, these two examples are only the highlights of my list. When I learned that as many as 80 percent of PWH suffer from depression, much of the information from these sessions began to take on a fresh perspective. Although we have made many scientific and medical advances in the treatment of hemophilia, one has to wonder if we are treating the disease of the person as a whole. Stress and depression have been shown time and time again to have adverse effects in many other diseases, so why not hemophilia?

Promoting positive emotional and spiritual health within our community may strengthen well-being on many levels. It may be worthwhile to consider the benefits of encouraging our members to lead productive, fulfilling lives, through employment or volunteering, recreation or hobbies. One of the side benefits might be the diminished need for medication. At the very least, shifting our focus to promote positive holistic health will promote a better quality of life. This may be the future of hemophilia societies around the globe.
Canada to host the XXVII Congress of the WFH in 2006

Hélène Bourgaize,
CHS Administrative Coordinator

Canada will be hosting the XXVII Congress of the World Federation of Hemophilia (WFH) in Vancouver from May 21 to 25, 2006. As part of its promotional activities, the CHS and Tourism Vancouver shared a booth at the WFH Congress in Bangkok in October. Several staff and volunteers present in Bangkok (members and health care providers) accepted to be part of the volunteer team promoting Canada to the rest of the world. Every day, hundreds of participants visited the Canadian booth to obtain information on Vancouver and to participate in daily draws to win stuffed moose in Mountie get-up. What a success! Participants from all over the world came back, several times a day, to put their names in the box for the draw. But the real highlights of the week were our three CHS Canadian Mounties. We were able to convince three of our volunteers, each in turn, to dress up as a Canadian Mountie. This initiative was a huge success. Congress participants were so excited that they lined up to have their pictures taken with a "Canadian Mountie". If the enthusiasm and interest demonstrated by the Congress participants are any indication, we can be assured that the WFH Congress 2006 will be a great success. To conclude, I would like to thank all volunteers who participated in this promotional endeavour. Special thanks go to our three famous Canadian Mounties, John Plater and Brock Wilton, both from Ontario and Dr. John K. Wu from British Columbia.

For further information regarding registration to Congress 2006, please visit the Congress web site at: www.wfh.org

Full circle

Solange Sakr El Hage (Lebanon), Patricia Stewart (Canada) and Latifa Namhene (Algeria) at the pre-Congress National Member Organization Training.

Patricia Stewart

Attending the pre-congress training sessions at the World Federation of Hemophilia Congress in Bangkok was a very special privilege. I was able to meet people from around the world that I’d met in Spain in 2002. Both times, I’ve experienced the magic of being in a room talking to people of all races, religions, cultures and languages, sharing their experiences of hemophilia care and family life. Many of the stories are heartbreaking, but others are encouraging since they’ve begun to enjoy improved health care, thanks to the efforts of their volunteers and the WFH. But I was especially touched this time by a personal incident that covers a number of years.

In early 2002, I was checking the CHS website forum. A woman in North Africa was sending out a call for help on the forum. She had hemophilia but no one would believe her or treat her. She didn’t know where to turn. I sent her the address of the doctor listed for her country in the WFH directory. A few months later, I met this doctor in Spain. I told her what I’d done and hoped she didn’t mind. She actually had scheduled an appointment with this woman when she returned home. A few months later, I received another e-mail from this woman when she returned home. A few months later, I received another e-mail from the same young woman. She couldn’t thank me enough for helping her find someone who knew about hemophilia. Now she finally had hope that she could live a normal life.

Then, in October 2004 in Bangkok, a young woman put out her hand in greeting and I introduced myself. Her eyes lit up and she could hardly speak. “That’s you, Patricia Stewart! That’s you!!” Here was the young woman who was now representing her country at the conference. It was an incredibly emotional moment for both of us to actually meet and talk together. Knowing I’d made a difference in this one person’s life made all the years of volunteer work worth it. We had a very special connection. We had come full circle to meet on the other side of the world.
**Chapter Spotlight**

**Summer in South Western Ontario**

**Pizza Party**

Families from Windsor gathered at Boppers on Sunday, May 16th, for a Pizza Party hosted by Hemophilia Ontario – South Western Ontario Region. The families shared an afternoon of good food, fun games and great company.

*Josh enjoying a good bang at the Pizza Party, Windsor.*

**Annual Summer BBQ**

On Saturday, June 12th, the South Western Region of Hemophilia Ontario held its annual summer BBQ at Springbank Park & Storybook Gardens in London. Over 20 families came out to enjoy the great food and great company that the BBQ always provides. And of course, there were great games, too!

*The Reid Brothers enjoying the BBQ at Springbank Park.*

**Manitoba Chapter Family Camp 2004**

“My favorite thing about camp this summer was fishing on Dogtooth Lake with Ed. Everett and Chad usually came fishing, too. We were out on the lake for a few hours. I caught a fish the first time, but it got away before I could get it in the boat. I got to go fishing 4 or 5 times that week. One time I went by myself with Ed and we hit a sand bar! The rest of the water was like 50 feet deep. Fishing with Ed and the other boys is what I like about family camp!”

*Gavin Kroeker, age 9*

“At camp I met lots of new friends from all over Manitoba and Ontario. You can do lots of fun things like swimming, tubing, canoeing, archery, hiking, water-skiing, camp fire songs and lots more fun things with your friends. The food there is delicious! The Hemophilia Society helps us out a lot. It helps us by supporting us to go to the doctors, clinics and camps. It also gives us free ice packs and lots of other cool stuff. Thanks for helping my family.”

*Drake Bodie, age 9*

**Pinecrest Adventures Camp**

Pinecrest Adventures Camp was held August 25th to 29th at Camp Kenesserie, near Chatham. Our theme this year was “Pinecrest Quest” and despite the soggy weather all 38 campers still had a wonderful adventure. Tales, myths and legends took us on medieval quests, sent us on super-hero missions and had us in pursuit of pirate’s treasure.

*A special thank you to the counsellors who volunteer at Pinecrest. (Even if they were caught lying down on the job!)*
**Chapter Spotlight**

**Inhibitor Family Weekend Organized by the Quebec Chapter**

Ten Quebec families concerned by the problems of clotting factor inhibitors attended the family weekend organized by the Quebec Chapter which took place from October 1 to 3 at the Hôtel du Manoir des Sables, near Magog, in the Eastern Townships. This activity helped parents meet each other and participate in workshops designed to meet their needs, facilitated by experts in the care of children with inhibitors and other health professionals. Meanwhile, their children had a good time in the safe care of nurses and other volunteers.

The success of this meeting was the fruit of teamwork: nurses, volunteers, representatives of the pharmaceutical industry and speakers. Through their respective contributions, they all helped the families present to enjoy a very special time and gain skills to increase their, and their children’s, well-being.

Sincere thanks to all those who contributed without whom this activity could not have happened.

---

**What’s Happening in The Central West Region**

Helen Adams

The summer has been full of activity and adventure at the Central Western Region, in Ontario. First, we kicked the season off with a Boat Cruise along the Grand River (one hour from Niagara Falls). This was a combined social and fundraising event and it was very successful. During the summer, our Region became officially twinned with Serbia. During the Assessment visit in July, Mary Pedersen (Programs) and Susan Feere (Chairperson) attended the first camp for hemophiliacs in Serbia. Our annual BBQ was held on August 28 and thirty-five people attended. The Just for Guys Weekend was successful (see article) and eight people from our region attended Hemophilia Ontario’s Camp Wanakita. The Just for Guys Weekend was fully sponsored by an unrestricted grant from Bayer.

---

**Newfoundland and Labrador Annual Family Weekend and AGM**

Another incredible family weekend! Approximately 80 members gathered from July 8 to 11 at the Lion Max Simms Memorial Camp in Bishop’s Falls, making it one of our largest in recent years. Registration on Thursday was followed by a guest speaker, bingo, a campfire and then rain! Throughout the weekend, camp staff entertained the kids while members enjoyed informative presentations from guest speakers, members, clinic staff and pharmaceutical representatives. For the first time, we had a town hall style meeting with members sharing their concerns. All were excellent opportunities to learn more about topics relevant to our society.

Saturday’s steak dinner followed by the annual talent-no talent show was a highlight of the weekend. The rain finally let up on Sunday after our memorial service and we enjoyed a fabulous turkey dinner before saying goodbye for another year.

---

**Inhibitor Family Weekend Organized by the Quebec Chapter**

Ten Quebec families concerned by the problems of clotting factor inhibitors attended the family weekend organized by the Quebec Chapter which took place from October 1 to 3 at the Hôtel du Manoir des Sables, near Magog, in the Eastern Townships. This activity helped parents meet each other and participate in workshops designed to meet their needs, facilitated by experts in the care of children with inhibitors and other health professionals. Meanwhile, their children had a good time in the safe care of nurses and other volunteers.

The success of this meeting was the fruit of teamwork: nurses, volunteers, representatives of the pharmaceutical industry and speakers. Through their respective contributions, they all helped the families present to enjoy a very special time and gain skills to increase their, and their children’s, well-being.

Sincere thanks to all those who contributed without whom this activity could not have happened.
You may wonder what the difference is between the CHS National and your provincial CHS chapter or region. This column will try and clarify the roles of each of these organizations, including their responsibilities and relationship.

But first, a quick history. The CHS officially began in 1953 under the leadership of Frank Schnabel, a young man with hemophilia, and Dr. Cecil Harris. Based in Montreal, the purpose of this group was to help families across the country living with hemophilia have access to better care. Others had the same idea in other provinces, but worked on a more provincial/local level. In 1959, the CHS officially became a cross-country organization (thus the term the “National”) with representatives from a number of provinces sitting on the Board of Directors. By 1968, a provincial chapter existed in every province in Canada.

With the creation of the national organization, each provincial chapter created its own charter and by-laws, independent of the CHS-National, with an independent Board of Directors which had financial and decision-making responsibilities.

Today, the national Board of Directors is made up of 23 delegates. Eighteen are nominated by the provincial boards, on a pro rata basis (5 from Ontario, 3 from Quebec, 2 each from Alberta and British Columbia and 1 from each of the other provinces). There are also up to 4 directors-at-large, usually chosen for their particular knowledge or expertise. The Chair of the Medical and Scientific Advisory Committee is also a member of the Board. The responsibility of the National Board members is to make decisions that will benefit all Canadians living with a bleeding disorder, not only those in their individual provinces.

Right from the start, the national organization worked to develop standards for the care and treatment of hemophilia, including a national conference on comprehensive care organized in Winnipeg in 1978. Representatives from each province included people with hemophilia as well as medical personnel. Over the years, the CHS has also developed a multitude of educational materials for families living with bleeding disorders. It has also been involved in advocacy efforts, lobbying not only for comprehensive care and the safety and availability of clotting factor therapies but also compensation for people infected through the blood system.

By sitting as a member of a CHS national committee, members communicate the needs of the hemophilia community from across the country to the National staff and offer ideas to help respond to these needs. The National staff is responsible for the overall planning, organization and implementation of ideas brought forward by various committees and the Board of Directors.

Provincial chapters generally deal with more specific, direct services to members, such as summer camps, family weekends, peer support and newsletters with information on provincial items and local activities. National staff helps chapters without staff to organize specific projects.

Future articles will deal in greater detail with programs, advocacy efforts, comprehensive care and fundraising conducted by the CHS over the years. They will also explain the role that the national organization and provincial chapters play in each of these areas.

### Canadian Hemophilia Society Organisational Structure

<table>
<thead>
<tr>
<th>BC</th>
<th>ALB</th>
<th>GASK</th>
<th>NAN</th>
<th>ONT</th>
<th>QUE</th>
<th>NS</th>
<th>N8</th>
<th>PEI</th>
<th>NFLD</th>
<th>Up to 4 Directors At Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>2*</td>
<td>2*</td>
<td>1*</td>
<td>1*</td>
<td>5*</td>
<td>1*</td>
<td>1*</td>
<td>1*</td>
<td>1*</td>
<td>1*</td>
<td>Up to 5 Vice-Presidents</td>
</tr>
</tbody>
</table>
Bayer Signs Development Deal for Longer-Acting Kogenate®

TRIANGLE PARK, NORTH CAROLINA, November 22, 2004 - Bayer HealthCare, LLC., Biological Products (BP) division, announced it has signed an exclusive, global technology license with Zilip-Pharma for the development and commercialization of a new, longer-acting Kogenate® product.

According to Bayer, this product has the potential to shift current treatment paradigms in hemophilia and simplify the lives of thousands of patients around the world. The deal between Bayer and Zilip-Pharma involves the application of patented liposome technology developed by Zilip-Pharma. Phase II clinical results obtained by Zilip-Pharma suggest that a prolonged interval between bleeding episodes - one week or more - occurs when factor VIII attached to liposomes is administered to individuals with hemophilia A.

“A product allowing injections once weekly, or even less frequently, definitely represents a new treatment paradigm in hemophilia, and could offer very significant improvements in patients’ lifestyles. Importantly, it also could help prevent the placement of long-term intravenous catheters for vascular access in heavily treated young boys with hemophilia,” said Victor Blanchette, MA, MB, B Chir, FRCP, Chief, Division of Haematology/Oncology, Professor of Paediatrics, University of Toronto, The Hospital for Sick Children. “If successful, this next-generation Kogenate® product will be a very highly anticipated breakthrough for improving the lives of people living with hemophilia.”

Based on initial timelines for the project, Bayer and Zilip-Pharma hope that the next-generation Kogenate® could be launched in five years, pending continued positive clinical results, required regulatory reviews, and necessary license approvals.

National standards for blood safety announced

TORONTO, September 22 - Canada has its first national standards for the quality and safety of its blood system, designed to cover the handling of blood from “vein to vein,” the Canadian Standards Association (CSA) announced.

The standards were developed by the CSA’s Technical Committee on Blood and Blood Components, which included experts from the Canadian Blood Services, Héma-Québec, Health Canada, the American Association of Blood Banks, the Canadian Hematology Society, the Canadian Society for Transfusion Medicine, the Provincial/Territorial Liaison Committee, the Quebec Blood Secretariat and consumer groups including the Canadian Hemophilia Society.

The standards will be referenced in Health Canada regulations. This process allows more rapid updating.

Factor VII from fish

SOUTHAMPTON, ENGLAND, September 11 - Researchers have already made factor VII from genetically modified tilapia, a freshwater fish farmed for food. The research is being carried out by the University of Southampton in the U.K. and US experts, the New Scientist reports. Factor VII is already produced using hamster cells but the cost of a single injection can be as high as $6,000 (approximately $13,500). It is used to treat a rare form of hemophilia, sometimes known as Alexander’s disease, and for people with the more common hemophilia A and B who reject traditional forms of treatment. Professor Norman Maclean of the University of Southampton, who led the research, told BBC News Online he was hoping to produce the protein for about a tenth of the current price. (Source: WFH Safety & Supply News, Volume 3, Number 3 (September 2004) http://www.wfh.org/ShowDoc.asp?Rubrique=30&Document=319&IndLangue=2)

Canadian Blood Services to introduce second screening test for hepatitis B

TORONTO, September 9 - Canada’s blood supply will undergo an additional screening test for hepatitis B, the most prevalent strain of the hepatitis virus, by next spring, the Canadian Blood Services announced.

“The anti hepatitis B core test is an additional test to screen out a very small number of people who might still be infected and get missed by the existing test,” said Dr. Margaret Fearon, an executive medical director at the agency.

Héma-Québec introduced the test in April, 2003.
**Letters**

Dear Ms. Stewart,

I read with great interest the article by Claudine Amesse, R.N., on “What if you’re a carrier?” in the Spring 2004 Hemophilia Today Newsletter. She makes some excellent points – ones I speak to every time we have a Bleeding Disorders Clinic. However I had some concern about one particular statement – the second line of the fifth paragraph where she states: “Ideally, all blood specimens from the family should be sent at the same time”. As a medical genetics professional I do not advocate sending all blood specimens at the same time for two reasons:

1) There is no guarantee that the lab will identify a mutation. For example, for the 50% of males with severe hemophilia A who do not have the inversion mutation, the current testing will only detect mutations in about 85-90% of those individuals. Therefore sending blood on everyone in the family may result in an unnecessary cost to the health care system for drawing and transporting the blood - and may set up expectations that a mutation will be found.

2) I am not certain of what was meant by “all”, but as medical genetics professionals we do not advocate genetic testing for minors. We believe that a young woman should have the right to decide for herself whether she wants to know her carrier status once she has been fully informed of the pros and cons of genetic testing. This does not preclude the parents from requesting factor VIII levels and other appropriate coagulation studies for a young girl who is having bleeding problems, or who may require surgery and the parents wish to know whether there could be any potential problems. It is important to keep in mind that knowing a person’s genetic status will not tell us whether or not she will have bleeding problems.

Again this article was a great summary of the availability of genetic testing and some of the reasons for offering such testing to families. Thank you for your time.

Sincerely,

Janet Lucas, MS, CCGC, CGC
Genetic Counsellor, Division of Medical Genetics
Room 515, Ellis Hall
Royal University Hospital
103 Hospital Drive
Saskatoon, SK
S7N 0W8

---

**Lower incidence of heart attack in carriers of hemophilia**

An abstract presented by F. Rosendal and A. Sramek, from Leiden University Medical Centre in The Netherlands, and presented at the XXVI Congress of the World Federation of Hemophilia in October, reported that hemophiliacs have an 80% reduction in ischemic heart disease (also known as coronary heart disease or hardening of the arteries). Complete blockage of the blood vessel leads to a heart attack (myocardial infarction). These researchers investigated the overall mortality and death from cardiovascular causes in carriers of hemophilia, most of whom have a mildly decreased coagulability without clinical symptoms. One thousand and twelve (1012) mothers of known Dutch hemophilia patients were included in the study and follow-up data was collected (41,984 birth years). Data on their vital status, causes of death if deceased, and cause-specific mortality rates were compared to the general Dutch female population. Deaths from ischemic heart disease were reduced by 36% (39 observed versus 60.53 expected). No evident decreased rate of death from cerebral stroke was found. There was an increased risk of death from extracranial hemorrhage (5 deaths versus 0.18 expected). This was offset by the much larger reduction of deaths from ischemic heart disease. These results show that a mild decrease in coagulability, such as in carriers of hemophilia, has a protective effect against fatal ischemic heart disease.

---

**Do carriers have more bleeding problems than other women?**

1 Plug et al, Leiden University Medical Centre, The Netherlands

(Editor’s note: This article is adapted from a poster presented at the WFH Congress in Bangkok.)

The factor VIII or IX level in most carriers of hemophilia is about 50% of normal, which is generally sufficient for normal hemostasis. The wide variety of clotting levels possible is likely due to lyonization, the process of random inactivation of the X-chromosome in females. The object of this study was to see if carriers experienced more hemorrhages compared to non-carriers and if so, what the extent of the bleeding was as well as important risk situations. Only women carriers in whom DNA diagnosis had been performed were included in the study.

Questionnaires were sent to all women (766) in the country who had had carrier testing done between 1985 and 2001 in two Dutch clinical Genetic Centres. Of the 546 women who replied to the questionnaire, 310 reported having DNA carrier testing done and 163 were carriers of hemophilia.

<table>
<thead>
<tr>
<th>Characteristics:</th>
<th>Carriers</th>
<th>Non-carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=165</td>
<td>N=118</td>
<td></td>
</tr>
<tr>
<td>Median age</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Familial hemophilia</td>
<td>80%</td>
<td>96%</td>
</tr>
<tr>
<td>Severe in family</td>
<td>55%</td>
<td>50%</td>
</tr>
<tr>
<td>Factor level known</td>
<td>54%</td>
<td>13%</td>
</tr>
<tr>
<td>Median FVIII activity</td>
<td>51(18-194)</td>
<td>100 (3-237)</td>
</tr>
</tbody>
</table>

**Results for prolonged bleeding:**

<table>
<thead>
<tr>
<th></th>
<th>Carriers</th>
<th>Non-carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=165</td>
<td>N=118</td>
<td></td>
</tr>
<tr>
<td>Bruising</td>
<td>75%</td>
<td>39%</td>
</tr>
<tr>
<td>Epistaxis (nosebleeds)</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>Tooth extractions</td>
<td>25%</td>
<td>7%</td>
</tr>
<tr>
<td>Tonsillectomy</td>
<td>25%</td>
<td>8%</td>
</tr>
<tr>
<td>Joint bleeds</td>
<td>9%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Conclusions: Tooth extraction and tonsillectomy are important risk situations for prolonged bleeding in carriers of hemophilia. Bleeding in joints, as often observed in patients with hemophilia, was also higher in women who are carriers of the disease. Only 50% of carriers were aware of their clotting factor levels and were able to interact with physicians before risk situations occurred. More carriers should be informed about their factor levels.