Thyroid Foundation of Canada

thyrobulletin

La Fondation canadienne de la Thyroïde

Volume 21, No. 3 **Autumn 2000**

Natural radiation and thyroid disease

by
Nicolas Petrini-Woolley

Nicolas Petrini-Woolley is a 13-year old grade eight student at Eganville District Public School, in Eganville, Ontario. Nicolas was a participant in the National Science Fair in London, Ontario, May 2000, and he returned home sporting a gold medal and $2,900 in awards and scholarships. His project, Natural radiation and thyroid disease, earned top honours in the junior division of the Earth and Environmental studies category.

With the first-place finish came a gold medal and a $400 prize. His project also earned him a $500 Special Energy Award, for an outstanding project on the environment, as well as a $2,000 scholarship to the University of Western Ontario in London, Ontario.

So what is next for this young researcher? He intends to apply for entry into the 2001 International Science Fair to be held in San Jose, California. Nicolas wants to add a new stage to his already completed work: the study of radon gas in homes, well-water and the environment.

Extract reprinted with permission from the Eganville Leader, Eganville, Ontario.

Background and purpose

My science project, *Natural radiation and thyroid disease,* was started several years ago on the basis of two critical items. One was fact and one was local folk lore. The fact was that my community has abundant uranium and other radioactive material in the natural environment. The folk lore was that my community has higher rates of certain diseases. I began considering that even though the radioactive deposits in Renfrew county are small and not of commercial significance, perhaps they were of public health significance. If you were unfortunate enough to build your home on a uranium/thorium source and were not aware of the potential problem for radon gas, your health could be at risk. I became more concerned when my best friend learned that his mother had developed thyroid disease and that he had radon gas in his basement. So, in Part I of my Radiation Project I looked at the environment of individuals with thyroid disease and breast cancer. I found a higher level of radioactivity in the environment of individuals with thyroid disease. Now, in Part II, I have increased the number of cases investigated and I am looking solely at individuals with low thyroid disease. The thyroid gland produces critical chemicals that control our bodies' functioning. Under very controlled circumstances, Iodine 131 is used medically to slow down an overactive thyroid gland. Iodine 131 does this mainly by beta particles and gamma rays. This raises the possibility that beta particles and gamma rays produced by natural radiation could cause a person with a normal thyroid to become hypothyroid (low thyroid function) after exposure to natural radiation for a long period of time. Therefore, I only chose individuals who had lived in their homes for at least ten years before developing thyroid disease. This was an investigative field experiment.

Hypothesis

There is a connection between natural radiation and thyroid disease.

Field work, method and materials

The two instruments I used to do my research are a Radiation Detector and a Reconnaissance Scintillometer**.** The Radiation Detector is calibrated with Cesium 137 and is sensitive to alpha, beta, and gamma radiation. The Reconnaissance Scintillometer was useful for rapid scans to detect gamma rays from uranium and thorium. In this investigative experiment I have examined the environment of 20 people with low thyroid function who have lived in their homes for at least ten years prior to developing thyroid disease. I have also tested 5 control cases for comparison. In each location, four ten-minute beta and gamma radiation counts were taken, two with the Radiation Detector and two with

con't page 2

Natural radiation . . . con't from page 1

the Reconnaissance Scintillometer. A normal background count was taken on each day. Geological Radioactivity Maps from the Ministry of Northen Mines and Development were utilized.

Discussion of experiment

A) Experimental results

My data shows twice the level of natural radiation in the environment of people with hypothyroidism as compared to control cases. Background radiation was accounted for and numerous variables were minimized. I only investigated people who had lived in their homes for at least ten years before developing thyroid disease. I also only chose individual cases with low thyroid function. Low thyroid function would be a more likely result of natural radiation exposure. This year I used a Reconnaissance Scintillometer to help scan an area prior to doing a count with the Radiation Detector. The nature of 'in situ' testing makes for more variables due to lack of control of the source. The results of these 20 cases continue to imply an association between thyroid disease and natural radiation worth investigating further.

B) New Discovery

An unexpected result of my field work has become very important. I have discovered a potential uranium/thorium source not previously identified. Pam Sangster, the Resident Geologist for the Ministry of Northern Development and Mines, is very interested in my results. A geologist will be coming to take rock from the Eganville samples for this possible uranium/thorium source. The reason this is important is that where there is thorium or uranium, there is a higher likelihood of finding radon gas. Radon gas is known to be a problem in the home of case #13 which is also where the uranium/thorium source was found.

Radon gas is a potent alpha particle emitter and when inhaled in known to cause lung cancer. Case #13 is directly across the Bonnechere River from a known highly radioactive area. New in-depth airborne gamma ray studies will be done this summer focusing on my study area. I hope to obtain research funding to purchase 50 radon gas detectors. Then in Part III of my radiation project I plan to focus on radon gas, in Sebastopol, Grattan, and Wilberforce Townships. With the help of Public Health I hope to correlate known lung cancer in these townships with known areas of radioactivity. Dr. Robert Shives, the Head of the Geophysics Section of Natural Resources Canada and a radon gas expert felt this would be a very worthwhile project. He is interested and supportive of this project.

C) Experiment Summary

This experiment has helped me to learn how to form a hypothesis**,** examine the facts, devise an experiment, do experimental field work, use scientific method to arrive at a conclusion. I also learned the physics of the atom, radioactive decay and what a Periodic Table is. I have become aware of the potential health hazards of natural radiation and the relationship between exposure to increased levels of natural radiation for prolonged periods of time and thyroid disease. The discovery of a uranium/thorium source near homes with known radon gas has lead to understanding radon gas and its significance. Radiation Part III will be a Radon Gas Project and has the potential to be of significant importance to public health**.**

Conclusion

My hypothesis that there is a connection between natural radiation and thyroid disease is supported by my experimental results.

Future project Radiation Part III

1. I plan to gather information on radon testing in homes, well-water, and the environment.
2. Then I will write letters to the specific townships involved, the Eganville Rotary club, Natural Resources Canada, Environment Canada, and the Ministry of Northern Development and Mines to obtain funding for 50 radon gas testers.
3. I will start the radon gas project in December, 2000, because winter is the best time to test homes for radon gas.
4. Geologists will be coming in the next month to do rock sampling on my new discovery. They will also be doing more detailed airborne maps over our area this summer. Pam Sangster, the resident geologist will be coming specifically to my test area and wants to meet with me.
5. I intend to overlap locations of people with known possible health problems from radon gas, with areas of known radioactivity. Public Health has offered me their support and help in this matter. I am very excited about this project and I think it has marked public health significance.

Acknowledgments

I want to thank the following for their support

1. Dr. M. Corriveau, who is the Medical Officer of Health for the Renfrew County and District Health Unit.
2. Pam Sangster, who is the Regional Geologist for the Ministry of Northern Development and Mines.
3. Robert Shives, who is the Head of Radiation Geophysics Section, for the Mineral Resources Division of Natural Resources Canada.
4. Ken Ford, a geologist in airborne section of Geological Survey of Canada.
5. Last I want to thank my father, a rural Family Physician in Renfrew County for 20 years. He was always ready to discuss thyroid disease and natural radiation with me. He also helped me identify the cases to be studied.

National Office Christmas hours

The office will be closed from

Thursday

December 21st, 2000

at 4:30 pm

to

Tuesday

January 2nd, 2001

9:00 am

President's message

On behalf of the Thyroid Foundation of Canada, I would like to extend our congratulations to Nicholas Petrini-Woolley on his outstanding achievement. Nicholas is an extraordinary young student who researched the possible correlation between natural radiation and thyroid disease and won a gold medal at the National Science Fair. We wish him well on his next project. We are very proud to help promote the fact that our young people are indeed making our world a better one.

As we approach the holiday season and the third millennium, I would like to take this opportunity to wish each and every one of you our very best wishes for good health, happiness and prosperity.

Remember your Foundation during this gift-giving season! While looking for the perfect gift for a friend or a loved one, think of a gift membership and/or a donation in their name to TFC to help further our Education & Services Programs.

Give the gift that helps!

Irene Britton/Irène Britton
National President/Présidente nationale

Message de la présidente

De la part de La Fondation canadienne de la Thyroïde, félicitation à Nicholas Petrini-Woolley pour sa realization exceptionnelle. Nicholas est un jeune étudiant extraordinaire, qui a reçu une médaille d'or à la foire nationale des sciences, pour ses recherches sur la possibilité d'une corrélation entre les radiations naturelles et les maladies thyroïdiennes. Nous lui souhaitons bonne chance pour son prochain projet. Nous sommes très fier de promouvoir le fait que nos jeunes gens aident en effet, à améliorer notre monde entier.

A l'approche du temps des fêtes et du troisième millénaire, je souhaite à tous et à toutes mes meilleurs voeux de bonne santé, de bonheur et de prospérité.

N'oubliez pas votre fondation durant cette période d'abondance! Pendant vos recherches du cadeau idéal pour un ami ou un proche, pensez donc d'offrir une adhésion et/ou un don à la FCT en leur nom; cela nous aidera grandement à faire progresser nos programmes d'éducation et de services.

Donnez le don qui aide!

My story

by
Gloria Davis

For many months I was feeling very tired, aching joints, bowel problems, dry skin and hair. Over the next year I was seen by two specialists and one family doctor in my area. The one specialist did bowel and throat scopes and then removed my gall bladder. I continued to feel worse. Blood tests were done (for what I am not sure) but I do know I was now being looked upon as if my problem was 'mental'. None of the doctors felt my throat area.

Finally I was sent to a specialist outside my area who immediately felt my throat and told me I had a large growth on my thyroid gland. The letter of introduction that I took to this doctor from my area specialist said in part: "this is a 62-year old woman who claims to be sick but does not look sick!!" Next I was referred to another specialist who ordered a needle biopsy. The report came back that I had a large cancerous tumour on the thyroid gland. What followed was a nightmare.

I entered the hospital and had a 'very aggressive total thyroidectomy'. After two weeks in the hospital I was discharged. On the way home on the freeway, in heavy traffic, I suffered a tetany attack from low blood calcium and had to be rushed to Emergency as my body was twisting up into a pretzel state. Next on the list were many scans and more cancer clinic appointments. I then had an iodine drink and more scans. I was put into isolation for three days for radioactive iodine. My cancer had spread and I had to have 20 radiation treatments for my throat area. I lost my voice for six weeks. Radiation left me weak and dizzy. A CT scan was ordered and it was now revealed I had a brain aneurysm. I survived brain aneurysm surgery while also dealing with cancer. My ear drum collapsed and I am still left with an impaired sense of balance. My voice is still limited, I can no longer sing as it is a monotone. I am now 68-years old and entering my sixth year of cancer check-ups and testings for my Synthroid medication.

What I have learned from all this is: educate yourself about your bodies, especially, if you are a middle-aged woman as so many doctors write us off as a 'mental problem'. They do not really listen to what we are saying. Go with a list and be firm until the problem is found.

If my sharing this can help one person avoid thyroid cancer, then it will be worth it. From the Foundation's literature and what I bring up on the Internet, my cancer was advanced when finally found. Hopefully I will not be in the 5% that do not survive the 5-10 year span. I have been told that I am a survivor, seeing all the above happened to me in less than a two year period.

Gloria Davis lives in Chilliwack, BC

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Please note:

The information in *thyrobulletin* is for educational purposes only. It should not be relied upon for personal diagnosis, treatment, or any other medical purpose. For questions about individual treatment consult your personal physician.

Notez bien:

Les renseignements contenus dans le ***thyrobulletin*** sont pour fins éducationelles seulement. On ne doit pas s'y fier pour des diagnostics personnels, traitements ou tout autre raison médicale. Pour questions touchant les traitements individuels, veuillez consulter votre médecin.

The objectives of the Foundation are:

- to awaken public interest in, and awareness of, thyroid disease;
- to lend moral support to thyroid patients and their families;
- to assist in fund raising for thyroid disease research.

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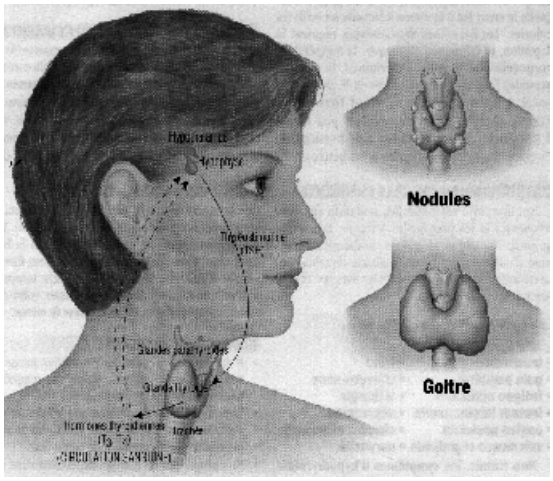
Les buts de la Fondation sont:

- éveiller l'intérêt du public et l'éclairer au sujet des maladies thyroïdiennes;
- fournir un soutien moral aux malades et à leur proches;
- aider à remasser les fonds pour la recherche sur les maladies thyroïdiennes.

La glande thyroïde – le fonctionnement de la glande thyroïde



Trois étapes contrôlent le fonctionnement de la glande thyroïde.

D'ABORD, une hormone libérée par l'hypothalamus se rend à l'hypophyse (voir diagramme). Cette hormone signale à l'hypophyse de libérer une autre hormone, la thyréostimuline (TSH).

ENSUITE, la TSH se déplace de l'hypophyse à la glande thyroïde. La TSH stimule la glande thyroïde à produire les hormones thyroxines (T4) et triiodothyronines (T3).

ENFIN, les hormones thyroïdiennes T4 et T3 sont libérées de la glande thyroïde dans la circulation sanguine. La T4 et T3 touchent à tous les points de l'organisme et régularisent la vitesse à laquelle divers systèmes organiques fonctionnent.

L'hypothyroïdie est le résultat d'une sous-activité de la glande thyroïde, qui ne produit pas assez d'hormones thyroïdiennes pour permettre à l'organisme de fonctionner normalement. Certains symptômes de l'hypothyroïdie sont la fatigue, la prise de poids inexpliquée et l'intolérance au froid. Le traitement de l'hypothyroïdie est simple. Un médicament peut remplacer les hormones thyroïdiennes qui manquent à l'organisme.

L'importance de la glande thyroïde

La glande thyroïde pèse à peine 30 grammes, mais cette minuscule glande en forme de papillon située de chaque côté de la trachée à un impact énorme sur la santé. Elle produit et sécrète les hormones thyroïdiennes qui ont une influence profonde sur chaque système organique, de la fréquence à laquelle le coeur bat à la vitesse à laquelle on brûle les calories. Les hormones thyroïdiennes régularisent la digestion, la fréquence cardiaque, la température corporelle, les glandes sudoripares, le système nerveux, l'appareil reproducteur et le poids corporel. **L'hypothyroïdie survient lorsque la glande thyroïdienne ne produit pas assez d'hormones pour répondre aux besoins de l'organisme (glande thyroïde sous-active**).

L'hypothyroïdie est-elle fréquente?

L'hypothyroïdie est l'une des maladies les plus fréquentes et les plus faciles à traiter. On estime qu'entre 700 000 et un million de Canadiens souffrent d'une sous-activité de la glande thyroïdienne. La maladie affecte les hommes et les femmes, et plus souvent après 40 ans.

Les signes et symptômes de l'hypothyroïdie

- lassitude
- prise de poids inexpliquée
- fatigue chronique
- lenteur intellectuelle
- ongles cassants
- voix rauque et profonde
- froid
- cheveux secs
- léthargie
- dépression
- cheveux clairsemés
- nervosité

Non traités, les symptômes d'hypothyroïdie seront de plus en plus perceptibles et s'aggraveront. La glande thyroïde peut s'hypertrophier (goitre). Le patient devient distrait et son processus mental peut ralentir. Avec le temps, des symptômes cardiovasculaires peuvent apparaître et les taux de cholestérol peuvent s'élever.

Le retour à la normale – le traitement

Le traitement de la sous-activité de la glande thyroïde est simple et repose sur un médicament d'ordonnance appelé lévothyroxine sodique. La lévothyroxine sodique, le nom générique du médicament untilisé pour traiter l'hypothyroïdie est l'un des médicaments d'ordonnance les plus prescrits au Canada. Le médicament est sans danger et ne provoque practiquement pas d'effets secondaires si le patient prend la dose qui lui convient. La lévothyroxine sodique est offerte dans une vaste gamme de doses pour répondre aux besoins de chaque patient. Diverses marques du médicament sont fabriquées par différentes compagnies.

Quelle est la dose qui me convient?

Il est essentiel de déterminer la dose appropriée afin d'éviter le sur-traitement ou le sous-traitement. Le médecin vous fera subir des tests pour déterminer la dose qui vous convient le mieux. Lorsque vous aurez pris le médicament pendant quatre à huit semaines, votre médecin pourra vous faire passer une nouvelle épreuve sanguine pour confirmer que vous prenez la bonne dose.

Quand me sentirai-je mieux?

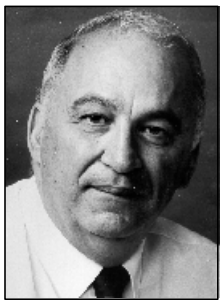
Quelques semaines après le début du traitement, les symptômes devraient commencer à disparaître. Vous remarquerez peut-être une différence dans la façon dont vous vous sentez.... vous aurez peut-être un regain d'énergie. Pendant un certain temps, le médecin continuera peut-être à ajuster votre dose afin de trouver celle qui vous convient le mieux.

Choses à se rappeler

- N'arrêtez pas de prendre vos pilules parce que vous vous sentez mieux... sinon, vos symptômes pourraient revenir graduellement.
- Vous avez oublié de prendre une pilule? Ne vous en faites pas. Prenez tout simplement votre prochaine pilule comme si de rien n'était.
- Ne changez pas de marque de lévothyroxine sans en parler au préalable à votre médecin. Il y a des différences entre les marques fabriquées par différentes compagnies.
- Si vous changez de marque, votre médecin peut refaire vos tests sanguins pour s'assurer que vous recevez la même dose de médicament.

Voyez votre médecin dans les cas suivants:

- Vous êtes allergique à des aliments ou à des médicaments.
- Vous êtes enceinte ou vous avez l'intention de le devenir.
- Vous allaitez.
- Vous prenez d'autres médicaments d'ordonnance.



Letters to the doctor

Robert Volpé, MD, FRCPC, MACP, Medical Adviser to the Foundation

Each summer, starting in July, I take groups on extended canoe trips. I add an iodine-compound tablet to the water we use to ensure that it is safe for drinking and cooking. Will this additional iodine in the diet cause a problem with one's thyroid, and is it contributing to the increased incidence of thyroid disease? I have recently been diagnosed with hypothyroidism.

Certainly the level of iodine in the diet plays a role in the incidence of thyroid disease, particularly autoimmune thyroid disease. Whether this patient took a sufficient amount of iodine while on her canoe trips is difficult to know. If she has been taking thyroxine over those intervals, then it simply does not matter. If she was not on thyroxine at the time, then it is at least possible that it played some role in aggravating her autoimmune thyroid disease.

* * * * *

In the Spring 1999 issue of *thyrobulletin*, in answer to questions from Hamilton, Testing # 7, you state that you treat once the TSH values have risen above 8 milliunits per litre. I have been given a copy of *Recommended approach to Thyroid Function Testing*, issued by the Ontario Ministry of Health (MOH) in 1992. It indicates that treatment does not start until the TSH is greater than 15. Please explain the different approach.

The recommended approach to thyroid function testing issued by the Ontario Ministry of Health in 1992 is quite reasonable, with the exception that I do not wait until the TSH has reached 15 before treating with thyroxine. In my view, that is set too high, and I do not wait for the free thyroxine to become low, another difference I feel about treatment. When the TSH is above 8, and in the presence of autoantibodies, I invariably treat with thyroxine, and so do most of my colleagues. With that caveat, the rest of the schema is quite acceptable

* * * * *

My mother-in-law has recently been diagnosed with 'lazy thyroid' (la tiroide vaga). I was wondering why would her doctor use such a phrase? Is it the same as hypothyroid? Her symptoms are itchy skin and tiredness.

A 'lazy thyroid' should be construed as hypothyroidism.

* * * * *

I am a member of the Foundation and I have some very interesting information to share with you. I had a discussion with about 10 people in my office about hypothyroidism. As it turns out, six of us have hypothyroidism. Also, all six of us have blood type O negative. The fact that all six of us are O negative (when only 7% of the population are O negative) is amazing in itself, but the fact that all six of us are also hypothyroid! Coincidence?

There may be a slight statistical relationship between O red cells and the presence of autoimmune disease. However, there is a much greater link between other genes found in the blood cells, namely the HLA system found in white blood cells. After all, these diseases are genetic.

* * * * *

Has anyone heard about the attached quote? Should I be asking my doctor to test me for celiac disease? I have Hashimoto's.

"There has been a major research breakthrough in the area of autoimmune disease. Researchers have found that a significant number of patients with autoimmune thyroid disease also have celiac disease, an intestinal disorder. They've even found that in those who have both celiac and thyroid disease, autoantibodies (i.e. thyroid antibodies) will disappear after three months of a gluten-free diet. Is there a cure for some forms of autoimmune hypothyroidism?"

It has been known for a long time that celiac disease, which is an intestinal disorder causing lack of absorption of many foods, is an autoimmune disorder which is related genetically to autoimmune thyroid disease. There is no direct connection between the two disorders, as one does not cause the other. However, there is an increased incidence of each disease with the other because of a genetic overlap.

* * * * *

I have great trouble knowing what are normal values regarding the thyroid. In *thyrobulletin*, Spring 1999 you explained about this. Some numbers were the following: 60-150 nmol/L; 10-23 pmol/L and 0.7-2.1 nmol/L. In an article in the Autumn *thyrobulletin,* Larry Wood said the numbers were 0.5 to 5.0. One of my test papers says 0.2025 and another 0.20 - 6.10 mu/l. You see my confusion. Can it be explained to me?

I have had a very hard time with this illness and easily get confused. I feel that this thing about the numbers doesn't help at all, maybe that is why my doctor is reluctant to talk to me.

Another big problem is my inability to sleep without medication. For years I have had some quite good help by taking Elavil. My doctor is reluctant to continue prescribing it as it has caused an addiction. I worry about not being able to keep on getting it.

For total serum thyroxine the normal range is 60-150 nmol/l. For the free thyroxine it is approximately 10-13 pmol/l. For total serum T3 (triiodothyronine) the range is between 0.7 and 2.1 nmol/l. The free T3 ranges between 2 and 5 pmol/l. The Thyroid Stimulating Hormone (TSH) values (which is what Larry Wood was referring to, and the TSH is the standard thyroid test) vary between 0.4 and 5.0 mu/l.

All of these values vary a little bit from laboratory to laboratory, but in essence fall within the ranges mentioned.

As for the inability to sleep, this is unlikely to have any relationship to the thyroid status.

* * * * *

Chapter coming events

Free admission – everyone welcome

Burlington-Hamilton

Location: Joseph Brant Memorial Hospital, Bodkin Auditorium. Free Parking

- Tuesday November 21, 7:30 pm. **Dr. Allan Hebb**, Internist. Topic: *Thyroid disease and the body*. Displays 7:00 pm

For information call (905) 637-8387

Kingston

Location: Ongwanada Resource Centre, 191 Portsmouth Avenue, Kingston

- Tuesday November 21, 7:30 pm. **Alan Smith**, Pharmacist, Kingston General Hospital. Topic: *Drug interaction in thyroid disease.*

For information call (613) 389-3691

Kitchener-Waterloo

Location: The Community Room, Albert McCormack Arena, 500 Parkside Drive, Waterloo

- Tuesday, November 21, 2000, 7:30 pm., **Dr. Ruth McManus**, Endocrinologist, London Health Centre. Topic: *Thyroid reaction and other medical conditions.*
- Saturday, February 10, 2001, 2:00 pm. **David Rainham, MD, CCFP**, Kitchener. Topic: *Stress, health and happiness, managing thyroid condition.* Thyroid information table: Michele Donnelly. Knoll Pharma Inc. representative.
- Tuesday, March 20, 2001, 7:30 pm. **Dr. John Booth**, Endocrinologist, McMaster Medical Clinic, Hamilton. Topic: TBA.

For information call (519) 884-6423

London

Location: London Public Library Auditorium, 305 Queens Avenue, London

- Tuesday November 21, 7:30 pm. **Dr. Merrill Edmonds**, Endocrinologist. Topic: *Hypothyroidism*
- Tuesday March 20, 2001, 7:30 pm. **Dr. Ruth McManus**, Endocrinologist. Topic: *Thyroid and other diseases*: *Thyroid and pregnancy/ adrenal/diabetes...*

For information call (519) 649-5478

Montreal

Plans are underway for future meetings and pharmacy awareness days. For information about times and dates, or if we can help you, call (514) 482-5266

Ottawa

Location: Auditorium, Ottawa Hospital, Civic Campus, Carling Avenue

- Tuesday, November 21, 2000, 7:30 pm. **Dr. Robert Dent,** Endocrinologist, Weight Management Clinic, Ottawa Hospital, Civic Campus. Topic: *Thyroid disease and weight management.*
- Tuesday January 16, 2001, 7:30 pm. **Dr. Ron Sigal,** Endocrinologist, Loeb Research Institute and Ottawa Hospital. Topic: *The role of combination T3/T4 treatment in hypothyroidism.*

For information call (613) 729-9089

Saint John

The Greater Saint John Chapter will be holding a public education meeting in late March 2001. Watch your local papers, listen to your radio station, watch the cable channel for actual date, time and location.

La section de Saint John se rencontre après la mi-mars, 2001, pour une réunion éducative. Le publique est le très bienvenu. Les journaux, la radio et la station cable télévision vous avertiront la date, l'heure et la location de cette réunion.

NOTICE TO ALL MEMBERS

Your membership in the Foundation expires on the date that is printed on the address label on your *thyrobulletin.*

Please use the **Membership/Donation Form** on page 15.

You may renew early – and for one or two years! You will be credited with renewal on the date that you are due to renew.

. . . Donations are always welcome.

Monthly Draw

Renew your Membership now and become eligible for our Monthly Draw

Every month one lucky Renewing Member will receive a book on thyroid disease.

Our June 2000 winner was:
Geraldine Wright
Mississauga, Ontario
who chose
"Your Thyroid: A Home Reference"
Wood, Cooper and Ridgway

Our July 2000 winner was:
Mr. & Mrs. L'Heureux
Gloucester, Ontario
who chose
"Your Thyroid: A Home Reference"
Wood, Cooper and Ridgway

Our August 2000 winner was:
Marilyn Wilson
White Rock, British Columbia
who chose
"Your Thyroid: A Home Reference"
Wood, Cooper and Ridgway

Facts about Hyperparathyroidism

by
Irving B. Rosen, MD and
Robert Volpé, MD

The parathyroid glands are usually four minute glands measuring about ½ cm. in diameter, loosely adherent to the four poles of the *thyroid gland,* which control the level of calcium in the body. The major disease that affects these glands is their enlargement and hormonal overactivity of one or more of these glands resulting in a condition called hyperparathyroidism (HPT).

This disease state was first described in 1925 by Dr. Felix Mandl of Vienna whose patient showed the evidence of terminal advanced HPT characterized by multiple bone fractures, loss of height, kidney stones and kidney failure. Recent improvements in our ability to accurately diagnose HPT has permitted us to appreciate how people may have longstanding undiagnosed chronic illness due to HPT that can be cured with simple effective surgical treatment. If uncorrected, HPT may lead to increased mortality or the rare severe acute parathyroid crisis or progressive ill health.

Etiology or cause

HPT is usually due (85%) to a solitary benign tumour or *adenoma* frequently affecting the right lower gland. An overgrowth of all four glands called hyperplasia also causes HPT (10-15%) as well as a very rare (½-2%) cancer of these glands.

Exposure to radiation or a congenital familial disorder associated at times with other endocrine disturbances may be a cause, but in the majority of people, the cause is unknown. In HPT there is an excess of parathyroid hormone (PTH) which acts to break down bone and draw out calcium from bone which increases the level of calcium in blood and urine, all of which leads to a wide variety of problems. The diagnosis of HPT lies in the detection of an elevated serum calcium and parathyroid hormone although there are many other biochemical evidences of HPT. Also helpful in localization of the affected gland is the use of a Sestamibi nuclear scan. Other radiological tests can be done in HPT but are not as useful as the nuclear scan.

Symptoms and signs

Symptoms of HPT include:

- fatigue (marked)
- high blood pressure
- "arthritis" or joint pain
- depression and weakness
- memory loss and confusion
- kidney stones and apparent bladder infection
- frequency of urination, undue thirst
- poor appetite and constipation
- apparent gout
- peptic ulcer or heartburn
- inflammation of the pancreas
- bone demineralization (osteoporosis) and bone fracture.

Coincidental thyroid conditions can occur in more than 25% of patients with HPT. Patients can occasionally manifest abnormal involuntary movement or abdominal pain. Routine blood chemistries may show early diagnosis before symptoms have occurred. This is an advantage for patients since treatment can prevent disturbance in body function. Most associated conditions are improved or cured by the treatment of HPT. Some patients with HPT may be asymptomatic for many years.

There is usually little to find on physical examination, and when one can infrequently feel a lump in the neck, this may signify an underlying malignancy of the thyroid or parathyroid glands which still have a good outcome with treatment.

Surgical treatment

Curative treatment usually requires a small surgical procedure by an experienced parathyroid surgeon following which the patient can usually be discharged after one night in hospital. Where a patient has become infirm, operative treatment, minimal as it is, may not be possible.

In the surgical treatment, a relatively short incision is made transversely in the lower midline neck, and the parathyroid glands are then demonstrated. Usually, a parathyroid adenoma is removed and the other parathyroid glands are observed and checked. Where all four glands are enlarged or abnormal, a subtotal parathyroidectomy is classically done in which half of an enlarged gland is left behind and three-and-a-half glands are removed. In hyperplasia, currently the

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Hyperparathyroidism . . . con't from page 8

enlargements are not quite as severe as they once were permitting an even more conservative preservation of parathyroid tissue. Occasionally, with persistence, recurrence or familial disorder, or hyperplasia associated with kidney disease, a surgeon will do a total parathyroidectomy and implant portions of a parathyroid gland into a muscle.

There are certain current variations occurring in surgical treatment. One consists of doing the procedure under a local anaesthetic and using a nuclear probe to remove the enlarged glands. Another is to use a video-assisted endoscope only requiring a small incision in the neck area. These are interesting but are still in the process of evaluation.

Surgical success should be about 95 to 98%. Failure is usually seen in hyperplasia since adenomas are usually 100% successfully treated. Where a persistent or recurring case occurs and requires surgery, then further investigation in the way of localization by the use of sophisticated x-rays (MRI, CT scan) and venous x-rays as well as Sestamibi scans may be required preoperatively for localization.

The *side effects* for surgical treatment are small. The patient postoperatively usually requires a calcium supplement to satisfy the bone's hunger for calcium which can now be satisfied. In females in the post-menopausal time of life, calcium feeding may be continued and become part of a program for the management of post-menopausal osteoporosis as well. Other than this, there is usually, initially, swelling of the neck, discomfort on swallowing which does not interfere with eating, discomfort in the back of the neck, and these symptoms wear off by about 4 to 6 weeks time. There is usually less than 1% possibility of a change in the sound of the voice, and if this were to occur, it is usually temporary and corrects itself spontaneously with the restoration of normal voice in about 1 to 2 months time.

Medical management of hyperparathyroidism

It is clear that the most appropriate way to deal therapeutically with hyperparathyroidism is surgical removal of the offending parathyroid gland(s). However, there is evidence that when the hypercalcemia is mild, and the patient is completely asymptomatic, that many patients can continue without any therapy and without any apparent ill effects, such as renal calculi or bone demineralization. Many physicians will thus opt for watchful expectancy in such patients.

However, when calcium levels are unduly high, therapeutic intervention is essential, and unless there is some specific contraindication for surgery, then surgical parathyroid exploration is the appropriate mode of treatment. However, even prior to surgery, if the calcium levels are extremely high, they can be brought under control by hydration, by potent loop diuretics such as Furosemide, and by bisphosphonates. Pamidronate is one of the new generation of amino bisphosphonates that are extremely potent in bringing down serum calcium. Between 60 and 90 mg. of Pamidronate given as a single intravenous infusion has been shown to normalize serum calcium in 80 to 100% of patients for weeks or months.

If patients are unsuitable for surgery, or in those rare instances where surgery has been unsuccessful, the same mode of treatment can be applied.

Where the parathyroid lesion has been identified by imaging techniques, it is possible in some instances to inject a bolus of alcohol directly into the parathyroid tumour, for the purpose of ablating it. This is not generally recommended, but has been employed in a few instances.

Other ancillary medications include estrogen, which may reduce bone turnover. Since vitamin D deficiency may aggravate skeletal disease, it should be corrected wherever detected.

Conclusion

HPT is a subtle disease process that can be responsible for severe derangements in health. It can be easily cured by a relatively simple undemanding surgical procedure requiring only a short stay in hospital. Patients with mild hypercalcemia or who are unfit may be treated medically. Unnecessary delay or procrastination of definitive treatment may result in serious illness or fixed abnormalities that will not reverse themselves following an eventual parathyroidectomy. As a rule, patients profit by definitive treatment of this condition by marked improvement or maintenance of good health.

Irving B. Rosen, MD, FRCS(C), FACS, Professor of Surgery, University of Toronto; Department of Surgery, Mount Sinai Hospital; Co-Director Head and Neck Oncology Program, Mount Sinai Hospital; Emeritus Consultant in Surgery, Princess Margaret Hospital, Ontario Cancer Institute; Director, Head and Neck Cancer Foundation.

Robert Volpé. MD, FRCP(C), MACP, FRCP (Edin. & Lon.), Professor Emeritus Department of Medicine, University of Toronto; Director (ret'd) Endocrine Research Laboratory, Wellesley Hospital, Toronto; Founding President Canadian Society of Endocrinology and Metabolism; Past President American Thyroid Association; recipient of many awards including the Distinguished Scientist Award of the American Thyroid Association, and Gold Medal of the Japan Endocrine Society; Medical Adviser to Thyroid Foundation of Canada.

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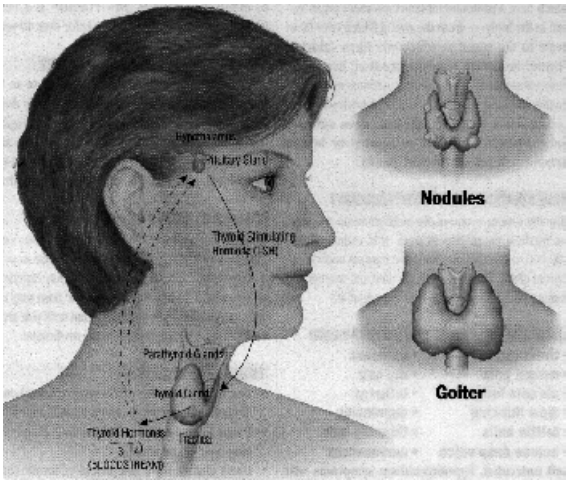
The thyroid gland – how your thyroid gland works



Three steps control the way your thyroid gland functions.

FIRST, hormone released from your hypothalamus travels to your pituitary gland (see diagram). This hormone signals the pituitary gland to release another hormone, Thyroid Stimulating Hormone (TSH).

SECOND, TSH travels from your pituitary gland to your thyroid gland. TSH triggers your thyroid gland to make the hormones thyroxine (T4) and triiodothyronine (T3).

THIRD, thyroid hormones T4 and T3 are released from your thyroid gland into your bloodstream. T4 and T3 travel throughout your body and regulate the rate at which many different organ systems work.

Hypothyroidism results when your thyroid gland is underactive – it does not produce enough thyroid hormones for your body to function at the right level. Some of the symptoms of hypothyroidism include fatigue, weight gain and intolerance to cold. Treating hypothyroidism is simple. Medication can replace the thyroid hormones your body is missing.

The importance of your thyroid gland

Your thyroid gland may only weigh an ounce, but this tiny butterfly-shaped gland located on either side of your windpipe has a huge effect on your health. This gland produces and secretes thyroid hormones which have a profound influence on every organ system in the body — from the rate at which your heart beats to the speed at which you burn calories. Thyroid hormones regulate digestion, heart rate, body temperature, sweat glands, nervous and reproductive systems and body weight. *Hypothyroidism results when your thyroid gland does not produce enough hormones to meet your body's needs (underactive thyroid gland).*

How common is hypothyroidism?

Hypothyroidism is one of he most common and easiest medical condition to treat. It is estimated that 700,000 to one million Canadians have an underactive thyroid gland. The disease affects men and women and is more common in people over the age of 40.

Signs and symptoms of hypothyroidism

- tiredness
- weight gain
- chronic fatigue
- slow thinking
- brittle nails
- hoarse deep voice
- coldness
- dry hair
- lethargy
- depression
- thinning hair
- nervousness

Left untreated, hypothyroidism symptoms will become more noticeable and severe. An enlargement of the thyroid gland in your neck may develop (thyroid goitre). You may become forgetful and your thought processes may slow down. Over time, cardiovascular symptoms and elevated cholesterol levels may develop.

Getting back to normal: your treatment

Treatment for an underactive thyroid gland is straightforward with the prescription medication levothyroxine sodium. Levothyroxine sodium, the generic name of the medication used to treat hypothyroidism, is one of the most commonly dispensed prescription drugs in Canada. The medication is safe with virtually no side effects when patients are on the correct dose. Levothyroxine sodium comes in a range of doses to meet the needs of each patient. Different brands of the medication are manufactured by different companies.

What is the right dose for me?

It is essential to determine the correct dose so that you are not overtreated or undertreated. Your doctor will conduct tests to determine the most appropriate dose for you. After you have been on the medication for four to eight weeks, your physician may retest your blood levels to confirm that you are on the right dose.

When will I feel better?

Within a few weeks of beginning therapy, your symptoms should begin to subside. You may begin to notice a difference in how you feel...you may experience an increase in energy. Over time, your dose may continue to be adjusted by your physician until you are on the most appropriate strength of the medication.

Things to remember

- Don't stop taking your pills because you feel better - if you do, your symptoms may gradually return.
- Forget to take a pill? Don't worry. Simply take your next pill as normal.
- Don't change from one brand of levothyroxine to another without first discussing the change with your doctor. There are difference between brands manufactured by different companies.
- If you do change, your doctor may repeat your blood test to make sure that you are receiving the same dose of medication.

Talk to your doctor if any of the following apply

- You are allergic to any foods or medicines
- You are pregnant or intend to become pregnant
- You are breast-feeding
- You are taking any other prescription medications

Research Report of Natalie Kotowycz

Natalie Kotowycz

I am one of the students who was fortunate enough to receive a summer research scholarship from the Thyroid Foundation of Canada. This scholarship gave me the wonderful opportunity of spending my summer working on a thyroid research project at Sunnybrook and Women's College Health Sciences Center in Toronto. As part of the scholarship I was asked to write a summary about my summer work for publication in ***thyrobulletin****.*

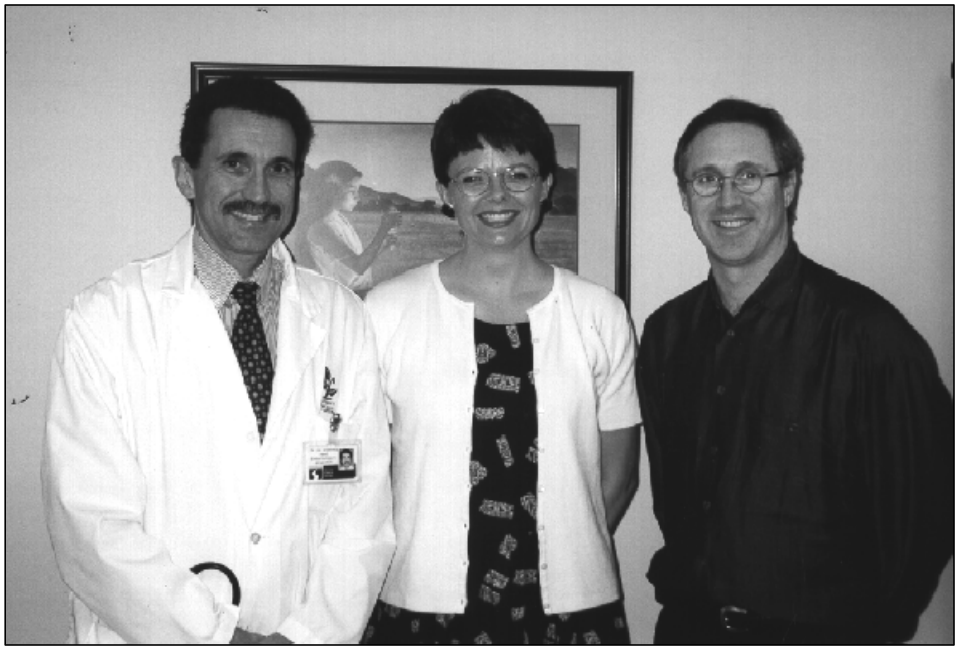
I would like to thank the Thyroid Foundation of Canada for giving me the wonderful opportunity of spending my summer working on a thyroid research project. I have recently completed a 12 week studentship at Toronto's Sunnybrook and Women's College Health Sciences Center where I was involved with a study that is being conducted by Dr. Silverberg and Dr. Levitt. The objective of our study is to evaluate the most effective treatment for hypothyroidism, a condition that occurs when the body fails to produce adequate levels of thyroid hormones. Since thyroid hormones play a pivotal role in many bodily functions including growth, energy metabolism as well as mood regulation, a deficit results in a wide array of symptoms. The characteristic features of hypothyroidism consist of cold intolerance, weight gain, depression and fatigue.

A "healthy" thyroid gland produces two hormones, of which 80% is T4 (thyroxine or tetraiodothyronine) and the other 20% is the active hormone called T3 (triiodothyronine). Customarily the treatment for hypothyroidism has been supplementation with T4 alone (i.e. Synthroid or Eltroxin). It has generally been believed that treatment with T4 alone is adequate as 70-90% of the body's T3 is derived from the monodeiodination (a specific type of conversion) of T4. However, it has recently been shown that not all symptoms of hypothyroidism are completely alleviated with T4 treatment. Patients treated with T4 may have normal thyroid blood test results and yet some continue to exhibit the classic hypothyroid symptoms. It was the persistence of these symptoms that led to the suggestion that perhaps patients should be treated with both T4 and T3. The purpose of our study is to compare the effectiveness of T4 treatment alone to two different combinations of T4 with T3 by analyzing data from biochemical tests, and physical exams along with various cognitive tests that look at memory recall and attention.

I spent most of the summer recruiting and screening potential subjects for the study. This included analyzing blood work and interviewing patients. I also assisted with the cognitive testing and had an opportunity to sit in for some of the physical exams as well as the physician assessments. This study will yield very significant results – results that may improve the overall health status of millions of people. By comparing and monitoring changes in the three different treatment groups, the study will help determine whether there is a more suitable treatment for people suffering the long-term effects of hypothyroidism.

I sincerely thank the Thyroid Foundation for providing me with this enriching experience and for their assistance and support with the study. Not only did it serve as a wonderful stepping stone towards my future goal of becoming an endocrinologist but the study may also improve the health and well being of the many people that, like myself, are afflicted with hypothyroidism.

If you are interested in participating in our study and are between 20-70 years old, have had a blood test in the past that proved you have low thyroid activity, live in the Greater Toronto area and have been taking Synthroid or Eltroxin for at least 2 months, please call the study line at (416) 480-4444.



Left to right: Dr. Jay Silverberg, Eleanor King (Research Coordinator) and Dr. Anthony Levitt

Final word about dieting

The British Thyroid Foundation (BTF) contacted the British Nutrition Foundation (BNF) last December (1999) to ask if anyone would be interested in writing articles about nutrition for BTF News. I accepted the invitation on behalf of the nutrition scientists at BNF. I was very interested to read the articles in the BTF News last year written by Dr. Kreitzman and the subsequent correspondence. Since this area is a particular interest of mine, I thought I would carry on with this theme as my contribution.

by
Dr. Gail Goldberg

Energy intake = energy expenditure + change in body stores

The equation above is a variation of one of the basic laws of thermodynamics. You may think it rather odd to include it in an article in the BTF News. However, the energy balance equation just restates the fundamental fact that energy cannot be made or destroyed, only converted from one form to another. This is just as true for energy used by humans (i.e. from food) as it is for power stations which convert energy in solid fuel or nuclear reactions into electricity and then heat, light and sound, and for the energy in petrol which powers our cars.

The simple fact is that if we eat more energy than we use up, that extra energy has to go somewhere (stored in our bodies, mainly as fat). If we use up more energy than we eat, the extra energy has to come from somewhere (from our body's stores, mainly as fat). In his articles, Dr. Kreitzman outlined the ways in which our bodies use energy, went through some of the mathematics to explain where the figures behind rates of loss come from, and dispelled some of the myths about dieting.

He also discussed some of the problems about knowing exactly how much energy is in the food we eat. He focussed on the *energy in* and *body stores* parts of the energy balance equation. He explained very clearly how even small changes in energy intake can affect changes in body stores – the amount and rate of the weight (fat) that is lost by someone when they go on a diet. The calculations of weight loss, and the changes in metabolic rate were based on energy intake. In this article I want to complete the picture by looking a bit more at how energy expenditure affects energy balance.

Even if a dieter eats the same amount of energy every day, this will not necessarily predict how much weight they will lose. We also have to consider how much energy they are using up. In real life, just as with our food intake, we can vary enormously from day-to-day in how much energy we use up. Just think of how you, your friends and family spend a typical month. Think about the different days of the week, activities during the day, whether at work (and depending on the sort of job), at home, or out and about; different activities in the evening depending on family circumstances, hobbies etc; different again at weekends and on holiday.

As Dr. Kreitzman explained Basal Metabolic Rate (BMR) and Resting Metabolic Rate (RMR) depend mainly on body weight (also on sex and age, but we can't alter that!). The amount of energy we expend on processing and digesting food is about 10% of energy content of that food. So if someone is eating 1500 calories per day, they will be using up about 150 calories on 'diet induced thermogenesis'. That leaves energy expended on physical activity as the component of energy expenditure that we *can* change.

So how can those who need to lose weight widen the gap between energy in and energy out? There are three ways: by reducing energy intake (i.e. dieting only); by increasing energy expended on physical activity (by exercise and other activities); by a combination of the two. It is really only in strictly controlled metabolic studies that both energy intake and energy expenditure can be very precisely controlled and measured. Because the energy used on physical activity is so variable, it helps to explain why apparently identical people, even if sticking religiously to a diet, lose weight at different rates.

It also, of course, helps to explain why it appears that some people can eat what they like and never gain weight while others can't. We don't necessarily see everything they eat and we may not be aware of everything they do. What seems like too much for us may be just right for them to keep them in energy balance and their weight stable.

One way of expressing total energy expenditure to give an indication of physical activity is to express everything as a multiple of BMR - a physical activity level (PAL). That way differences between people due to weight, height, sex and age can be accounted for. PAL values reflect the amount of activity that people

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Please note!

New Mailing address:
Thyroid Foundation of Canada
La Fondation canadienne de la Thyroïde
PO BOX/CP 1919 STN MAIN
KINGSTON ON K7L 5J7

New Website address:
www.thyroid.ca
The previous website will continue to be operational for some time.

Final word about dieting . . con't from page 12

carry out – depending on their jobs, leisure activities, and other aspects of their lifestyle and behaviour. Values allow us to compare different groups of people, or the same people under different circumstances. Recent analyses of very large data-sets have shown that sedentary people have PALs of about 1.4-1.5. In contrast, moderately active people have PALs of about 1.6-1.8. The rare people who are *habitually* very active use about 2xBMR. You can estimate roughly how much energy you use by calculating your predicted BMR using the equations in Dr. Kreitzman's article. Then multiple this by an appropriate factor depending on whether you regard yourself as sedentary, moderately active or very active. To illustrate the real extremes of these measurements, PALs in bed-bound people are about 1.2 while the highest PALs ever measured were 4.5-4.7. These measurements were made in Tour de France cyclists (while they were actually competing), and in Dr. Mike Stroud and Sir Ranulph Fiennes when they walked across the Antarctic. Their energy expenditure averaged more than 8000 calories per day for weeks. They could not possibly eat or carry enough food to meet those needs. It's no wonder they lost so much weight – virtually all their body fat and a considerable amount of lean tissue too.

Finally, what about the ever-increasing problem of overweight and obesity? In the UK, throughout Europe, the USA and even in developing countries, obesity is a growing and a serious public health problem. The number of people classified as overweight or obese in the UK has more than doubled in the last 15 years. The most recent data shows that more than 40% of men and women are overweight, while 20% are obese. Why is this? Relatively few people have a problem with their metabolism. The problem does not lie in our genes either. They cannot have altered so radically in less than a generation. Is it what we eat, can the problem be blamed on too many highly palatable foods which contain lots of fat and carbohydrate? Partly, yes, although the actual percentage of fat and carbohydrate in our diets has been pretty constant for some time. Furthermore, trend data from dietary surveys show we are actually eating less energy than previously. What does this mean? Well, if the population is getting heavier and fatter, despite eating less energy, then the amount of energy used up on physical activity must be declining even faster. Think of all the labour-saving devices we have at home and at work; remote controls, mobile and cordless phones, how much we use our cars, even for very short journeys, how often we use elevators and escalators rather than the stairs, and how much time we spend sitting watching TV, videos, and working or playing with computers!

All the big studies and surveys have now come to the conclusion that physical activity, or more correctly, inactivity, plays a very large part in the development of overweight and obesity. It also plays an important part in weight loss, and in the maintenance of weight.

As a species, humans are very good at recognizing excesses. This makes sense from an evolutionary and biological point of view, but when faced with conditions of plenty, we struggle against that biology. The myriad of factors that affect and regulate appetite, and the interactions between food intake, energy, expenditure, and body composition, are currently keeping many physiologists, nutritionists, and clinicians very busy, but that's another story.

Dr. Gail Goldberg is a Senior Nutritionist at the British Nutrition Foundation (BNF). Prior to joining the BNF in 1999 she was at the Medical Research Council's Dunn Nutrition Unit in Cambridge, UK, for more than 16 years.

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Tribute to TFC's website and its coordinator, Ellen Garfield

August 16, 2000

I just spent some time reviewing various articles on your website, and I am amazed and happy at the information and quality that you provide.

I developed thyroiditis about three years ago, due to subacute viral infection, and I have been astounded at the impact that becoming hypothyroid has made on my life (I am also a pharmacist). I went from a very active person to, let's say, a less active overweight person. I am still struggling with the weight issue. The several months after being diagnosed with hypothyroidism were very difficult. I was seeing an endocrinologist and getting tested and dosages checked – but no one did tell me what an impact it would have on my life.

The information you have on your website is helping me now to sort some things out and I am going to my family physician with some of that information.

Once again truly grateful in Windsor.

Marika Gaspic Piskovic

If you have not made your will yet, will you do it now? Will you remember the Thyroid Foundation of Canada?

If you plan to update your will, will you do it now? Will you help the Thyroid Foundation of Canada?

If we have helped you, will you help us help others? A bequest, an insurance policy, a tax exempt donation – will you think about it? Will you do it now?

Chapter news

TAQ June 9, 2000 in Montreal. Left to right: Donna Cruckshank, Marvin Goodman and Corine Schiller

Edmonton

The Edmonton chapter has presented three information programs at the Northgate Lions Senior Centre, in February, June and October. We showed the videos, Hypothyroidism and Hyperthyroidism and "The Woman Behind the Foundation", with discussion afterwards. These presentations were very well received. We look forward to increased chapter activity.

Kingston

Christmas tree ornaments are once again being sold by Kingston chapter, coordinated by Phyllis Mackey. The box of 3 *Year 2000 Spun Glass Ornament Gift Set* sells for $11.50 ($10 plus $1.50 tax), making a profit of $5 for the chapter from each box sold. The ornaments consist of a deer, a Santa, and a wreath with 2000 in 22 karat gold. These delightful gifts can be purchased at the chapter office, every Wednesday or telephone for an appointment: 613-389-3691.

Kingston chapter hopes to double its fund-raising capacity as it now has two monthly dates for sponsoring bingo.

Please save your A & P Gardiner Centre grocery store tapes for the chapter's "A & P Save-A-Tape Program". We receive $1 for every $450 of tapes. Elizabeth Mitton totals the tapes and packages them into bundles of $1000. She is always looking for more tapes to swell our total.

The *Pablo Paddlers*, a team in the second annual Dragon Boat races held September 9 was again sponsored by Kingston chapter. We thank Heidi Langen, organizer of the Pablo Paddlers crew, and all her hardworking paddlers for this joint community effort. The chapter receives publicity and money is raised for Hospice Kingston.

Montreal

The board members met several times during the summer. We answered questions from people who received the results of the blood tests done at the June 9 TAQ clinic.

Bob Black retired from the board this past year. I want to express our thanks for all the work he put into the Montreal chapter. We wish Bob and his wife, Sally, good luck in their future endeavours.

Saint John

We urgently need volunteers! We need YOU. We will show you what to do and when to do it.

If you have a few hours or a few minutes four times a year: we need 1 volunteer to contact speakers for education meetings; 1 volunteer to contact the media on our behalf. And we need 1 or 2 volunteers to contact members by mail, e-mail or phone.

If you have a few hours each week: we need 1 or more volunteers to return calls from our Help-Line (if we have more than 1 volunteer, we can rotate turns).

If you have a few hours now and then: we need 4 volunteers to distribute educational materials and brochures to pharmacies, doctors' offices, libraries, hospitals.

Help us keep your chapter alive!! Call Irene 506-696-2247 and leave a message. I await your call.

* * * * *

Nous avons un besoin pressant de bénévoles! Nous vous montrerons quoi faire et quand le faire.

Avez-vous quelques heures ou quelques minutes – 4 fois l'an? Nous avons besoin de 1 bénévole pour contacter les conférenciers pour les réunions éducatives; 1 bénévole pour avertir les média de nos réunions; 1 ou 2 bénévoles pour contacter nos membres par poste, courriel or téléphone.

Avez-vous quelques heures chaque semaine: nous avons besoin de: 1 (ou plus) bénévoles pour retourner les appels téléphoniques à notre ligne-soutien (le plus de bénévoles, le moins de temps et de travail).

Avez-vous quelques heures de temps en temps: nous avons besoin de 4 bénévoles pour distribuer nos dépliants et nos matériaux éducatifs aux pharmacies, bureaux de médecins, bibliothèques et hôpitaux.

Aidez-nous à préserver notre section!! Appelez-moi, Irène, au 506-696-2247 et laissez le message – je vous attend!

Rejoice in the Holiday Spirit,
May the New Year bring with it
Health, the Foundation of all Happiness
The National Board and Staff

Nous souhaitons à tous nos meilleurs voeux
pour la saison des fêtes et la bonne santé qui
est sûrement la fondation du bonheur
L'équipe nationale

Please Help!

Our educational material and programs are made possible by donations and memberships from caring people.

Nous comptons sur votre appui!

Nos programmes et matériaux éducatifs sont possibles grâce à la générosité des gens comme vous.

Membership/Donation Form

Awareness ♥ Support ♥ Research

New memberships run for one or two years from the receipt of this membership application.
All members receive *thyrobulletin*, the Foundation's quarterly publication.

Yes!
I will support the Thyroid Foundation of Canada!

Membership Level	One Year	Two Year	
❑ Regular	$20.00	$35.00	$ _____
❑ Senior 65+	$15.00	$25.00	$ _____
❑ Student	$15.00	$25.00	$ _____
❑ Family	$25.00	$45.00	$ _____

Donations (Circle Your Choice)

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Total: $ _____

I will be paying my membership/donation by:

❑ Personal Cheque (enclosed and payable to Thyroid Foundation of Canada) or,

❑ Visa or ❑ MC #: _____ Expiry Date: _____

Signature: _____

Name: _____

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City: _____ Province: _____ Postal Code: _____

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We accept your membership fees and/or donations by mail or fax.
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Tel: (613) 544-8364 or (800) 267-8822 • Fax: (613) 544-9731 • Website: www.thyroid.ca

Please Continue Your Support—We Need You!

National Office/Bureau national

Staff/équipe

Katherine Keen, National Office Coordinator/Coordinatrice du bureau national
Helen Smith, Membership Services Coordinator/Coordinateur des services aux membres

Office Hours/ Heures du bureau

Tues.- Fri., 9:00 am - 12:00 pm/1:00 pm - 4:30 pm • Mardi à vendredi, 9h00 à 12h00/13h00 à 16h30

Tel: (613) 544-8364 / (800) 267-8822 • **Fax:** (613) 544-9731 • **Website:** www.thyroid.ca

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Victoria	Lilias Wilson*	(250) 592-1848

ALBERTA

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MANITOBA

Winnipeg	Enid Whalley	(204) 489-8749

QUEBEC/QUÉBEC

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