



*Thyroid Foundation of Canada*

# thyrobulletin

*La Fondation canadienne de la Thyroïde*

Volume 22, No. 1

Spring 2001

Summer scholarship research report

## Congenital hypothyroidism and intellectual functioning in children



Soon-IL Song, Second year medical student  
Queen's University, Kingston, Ontario

by  
**Soon-IL Song**

**I**n the summer of 2000, I was involved with a twelve-week project at the Hospital for Sick Children in Toronto, supervised by Dr. Joanne Rovet and Dr. Denis Daneman in the division of endocrinology. Our study concerned congenital hypothyroidism (CH), in which children are born with missing or inadequately functioning thyroid glands. Maintenance of normal thyroid function is essential for the body, especially in growth, mental function and energy metabolism.

For children in particular, adequate levels of thyroid hormone are critical for normal brain development early in life - left untreated CH leads to profound mental retardation. This severe outcome has been prevented in recent times by

early diagnosis and treatment due to newborn screening for CH in Ontario. Still, these children often exhibit more subtle intellectual impairments later in life that may adversely affect their school performance. CH is divided into three categories or etiologies: athyreosis (missing gland), dysgenesis (improperly developed or located gland) and dysmorphogenesis (properly developed and located but inadequately functioning gland.) The purpose of our study was to examine how intellectual outcome is influenced by factors such as etiology of CH, the time it took to normalize thyroid hormone levels by treatment and thyroid hormone levels at the time when an intellectual assessment was conducted at ages 7 to 12.

We studied 65 children in the 7 to 12 year age range who were identified by the Province of Ontario newborn CH screening between 1986 and 1992 and referred to the Hospital for Sick Children in Toronto for confirmatory diagnosis and follow-up. Working with two separate databases on these children, we showed that etiology, length of time to achieving normal hormone levels by treatment and hormone levels on the day of intellectual assessment do indeed affect later intellectual performance.

In the analysis by etiology, children with athyreosis generally exhibited the poorest outcome especially in nonverbal abilities, attention and arithmetic skills. This suggests the value of paying closer attention to the particular etiology of CH when considering a child's treatment needs. Achieving normal hormone levels earlier by treatment was associated with better outcome in memory and learning tasks including visual memory, attention and arithmetic. We concluded that treating a child with CH so as to normalize hormone levels as early as possible is important to later intellectual ability. Finally, hormone levels taken when the children were much older (i.e. 7 to 12, when they were intellectually assessed) also affected outcome. Higher thyroid hormone levels at that time (as long as they were still within the normal range) correlated with better scores in sensorimotor, spatial and language abilities. Such a result suggests that continual follow-up to maintain normal hormone levels even into later childhood is also important to intellectual outcome.

In summary, our study showed that etiology, thyroid hormone normalization patterns and thyroid hormone levels in later childhood, influence intellectual performance in children with CH. Such findings could have significant implications for children's academic functioning. These results indicate a need to determine an etiology for each child with CH, to treat adequately and normalize hormone levels as early as

# Thyroid surgery

*How much of the thyroid is removed with a lobectomy, subtotal thyroidectomy, and total thyroidectomy, and what are the circumstances under which each is performed?*

**T**he thyroid gland has a right and left lobe connected by an isthmus. It overlies and partly surrounds the windpipe (trachea). Next to it on either side are the carotid arteries and jugular veins. The nerves that supply the vocal cords (recurrent laryngeal nerves) come up from the chest along the trachea and behind the thyroid on their way to the voice box (larynx). The parathyroid glands are four pea-sized glands that lie just behind the lateral borders of the thyroid, two on each side. Because of its location in the neck adjacent to these and other structures, considerable skill is needed for thyroid surgery.

A **lobectomy** is removal of one of the thyroid lobes; the thyroid gland is divided at the isthmus.

A **subtotal thyroidectomy** removes either one entire lobe and a portion of the other lobes, or a portion of both lobes.

by  
**Douglas S. Ross, MD**

A **near-total thyroidectomy** removes all of the thyroid tissue except for a small remnant guarding one of the parathyroids.

The extent of surgery depends on both the underlying disorder and the skill of the surgeon. The two common complications from thyroid surgery are damage to the recurrent laryngeal nerve, or damage to all four parathyroid glands (causing hypoparathyroidism). If one recurrent laryngeal nerve is unintentionally cut, the patient will have a permanent hoarse voice. If both nerves are cut, the vocal cords obstruct the airway, and it is necessary to perform a tracheostomy, a hole cut in the trachea below the larynx, in order to allow the patient to breathe.

If all four parathyroid glands are damaged, the blood level of calcium will fall. Low calcium must be treated with calcium supplements, and potent Vitamin D supplements, to prevent tetany, a potentially life-threatening spasm of muscles throughout the body. This

condition may be temporary if the parathyroids are underactive due to a reduced blood supply which ultimately returns to normal. Sometimes the condition is permanent, and lifelong calcium supplements are needed.

Lobectomies are done for unilateral nodular disease which is felt to be benign at the time of surgery. Subtotal thyroidectomies are done for bilateral benign nodular disease, and Graves' disease. Near-total thyroidectomies are usually done in patients with thyroid cancer in order to remove the cancer and facilitate radioiodine scanning and thyroglobulin measurement (see article on thyroglobulin). However, if the cancer is a small nodule confined to the thyroid, or if the operation is technically difficult, the surgeon may opt to do a subtotal thyroidectomy or a lobectomy to avoid surgical complications.

*Douglas S. Ross, MD, is Co-Director, Thyroid Associates, Massachusetts General Hospital, Boston. Reprinted with kind permission from The Bridge, publication of The Thyroid Foundation of America Inc. from its column 'Ask the Doctor'.*

Summer scholarship . . . con't from page 1

possible and to monitor the child closely and frequently throughout childhood. At present, these aims are not yet universally recognized in treatment procedures.

I would like to express my sincere appreciation to the Thyroid Foundation of Canada for making this study possible through a generous summer student grant. I also gratefully acknowledge Dr. Rovet for her wonderful guidance and encouragement throughout this project, and Dr. Daneman for allowing me the invaluable opportunity to attend his endocrine clinic during my summer experience.

**Congratulations** to Soon-IL Song, Dr. Joanne Rovet and Dr. Denis Daneman whose article, *The influence of etiology and treatment factors on intellectual outcome in congenital hypothyroidism*, has been accepted for publication in the Journal of Development and Behavioral Pediatrics, March 2001.

## Robert T. Mactavish 1922 - 2001

It is with sadness that we announce the death of Robert (Bob) T. Mactavish, on Wednesday, March 21, at Kingston General Hospital. Bob was Editor of *thyrobulletin* for six years, 1991 - 1997 and fulfilled admirably his goal of making each issue better than the preceding one, which greatly enhanced the reputation of the foundation nationally and internationally.

Born in England, Bob served during WW2 in the Royal Corps of Signals, attaining the rank of Captain. After the war he moved to Montréal, Québec. He was a professional engineer (electrical) and then entered the banking profession. Following retirement Bob and his wife, Shirley, moved to Kingston where Bob became an active volunteer in many organizations in the Kingston area.

He was predeceased by his parents, Alexander and Cissy of Cumberland,



England and his brother Alex of Montréal.

We extend sincere sympathy to Shirley, his wife of 48 years, niece Anne Honeywell of Ottawa, nephew Stuart Mactavish of England and their families.

## President's message

This is a first for TFC- we are seeking your support during our current fundraising campaign. **IT WON'T COST YOU A CENT** and perhaps we can save you some! **READ ON!**

**A**s you know the Foundation has in the past, with your support, raised funds for thyroid research. With increasing costs and reduced funding by Health Canada, we are in need of operating funds to continue our work in supplying education materials and to support our national office in assisting those who come to us for help.

In order to achieve our goals, we require the necessary funds to pay our national staff and to print and distribute educational literature, track our membership files and donations to education and research and to provide for other necessary costs associated with running a national office.

There is an understandable reluctance by the general public to fund operating costs, however we cannot continue supplying the services that you, our members and the public require, without it.

We will be contacting our members to ask for assistance in what will be our **very first national "Operations" fundraiser and we thank you for your support in reaching our goal of \$30,000 in the first full year.**

You will **not** be asked for a cash outlay but just to help out by giving a percentage of what you are already spending on long-distance. You expend these funds already!

**Will you allow us to direct you to a national long distance provider who will donate a percentage of what you spend on long distance service to the Thyroid Foundation of Canada and at the same time, possibly cut your long-distance costs?**

Just say, "Yes, please" when the Foundation's representative calls for your support. Thank you.

## Message de la présidente

**Du nouveau pour la FCT – Nous demandons votre appui dans notre campagne de collecte de fonds courante. ÇA NE VOUS COÛTERA PAS UN SOUS et peut-être nous vous en sauverons. LISEZ le reste!**

**V**ous êtes sans doute conscients que la Fondation, avec votre soutien, a par le passé, collecté des fonds pour la recherche thyroïdienne. Avec l'augmentation des coûts et la diminution de financement par Santé Canada, nous avons besoin de fonds pour continuer à fournir les matériaux d'éducation et de garder la porte ouverte au bureau national pour soutenir ceux et celles qui ont besoin de nous.

Afin d'accomplir nos buts, nous avons besoin des fonds nécessaires pour payer notre personnel et pour faire imprimer et distribuer la littérature éducative, pour acheminer nos listes de membres et leurs dons vers l'éducation et la recherche et pour bien d'autres coûts associés à l'administration d'un bureau national.

Il y a un certain manque d'enthousiasme de la part du public à faire un don pour l'administration de bureau et je comprends bien cette attitude. Cependant, nous ne pouvons pas continuer de fournir les services que vous, nos membres et que le public requiert, sans fonds.

Ainsi-dit, nous allons contacter nos membres pour demander leur assistance pour ce qui sera notre **première collecte nationale pour 'L'Administration' et nous vous remercions de votre support pour collecter le 30 000\$ qui est notre but durant la première année.**

**Nous ne vous demandons pas** d'un débours comptant, mais seulement de nous aider en donnant un pourcentage de ce que vous dépensez déjà en service interurbain. Vous dépensez déjà ces fonds; **est-ce que vous permettez que l'on vous dirige vers un fournisseur de service interurbain qui donnera une part de vos dépenses à la Fondation, en même temps qu'il réduira peut-être vos coûts de service interurbain?**

Dites, **'OUI, s'il vous plait'** à l'appelle du représentant de la Fondation!

Irene Britton/Irène Britton, National President/Présidente nationale



<b>ESTATE PLANNING</b> Will You Do It Now?	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?

**Thyroid Foundation of Canada  
La Fondation canadienne de la Thyroïde**

Founded in/Fondée à Kingston, Ontario, in 1980

**Founder**

*Diana Meltzer Abramsky, CM, BA*

**Board of Directors**

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**President** – Irene Britton (NB)

**Secretary** – Shirley Penny (NF)

**Treasurer** – Terry Brady (ON)

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**Annual Appointments**

**International Liaison** –

**Legal Adviser** – Corinne A. Godbout, BBA, LLB

**Medical Adviser** – Robert Volpé, MD, FRCPC, MACP

Thyroid Foundation of Canada thanks Health Canada for its financial support.

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number 11926 4422 RR0001.

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**thyrobulletin**

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**La date limite pour les articles pour le prochain numéro: le 15 juin, 2001**

**Contributions to/à – Editor/Rédacteur: Ed Antosz**

**973 Chilver Road, Windsor ON N8Y 2K6**

**Fax: (519) 971-3694**

**E-mail: eantosz@uwindsor.ca**

**Please note:**

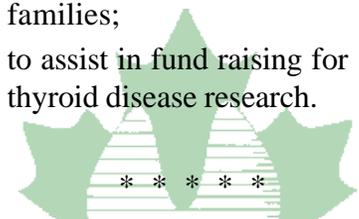
The information in *thyrobulletin* is for educational purposes only. It should not be relied upon for personal diagnosis, treatment, or any other medical purpose. For questions about individual treatment consult your personal physician.

**Notez bien:**

Les renseignements contenus dans le *thyrobulletin* sont pour fins éducationnelles 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.

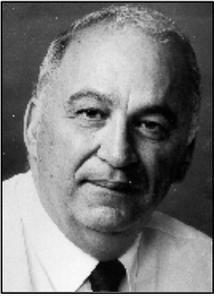
**The objectives of the  
Foundation are:**

- 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.



**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.



## Letters to the doctor

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

The following questions were submitted by a group of thyroid cancer patients.

**W**hat is the best follow-up screening procedure to detect recurrence following diagnosis and treatment of thyroid cancer? CT scan, ultrasound of the neck, I131 scanning of body, blood work, etc.

*The best follow-up for screening to detect recurrences following diagnosis and treatment of thyroid cancer is actually the serum thyroglobulin, which is a blood test. If it is very low, below the level of detection, occurrences are very rare. All of the other procedures mentioned in this question, including CT scan, ultrasound, or I131 scanning are all for gross lesions and will not pick up microscopic spread, whereas serum thyroglobulin levels would generally do so.*

\*\*\*\*\*

**I**f a body scan is the preferred method of screening, how often should it be done?

*A total body scan is generally performed at the time of radioactive iodine treatment. It is not the preferred method of screening, particularly since patients have to have their thyroxine stopped each time. In any event, the serum thyroglobulin is usually more sensitive.*

\*\*\*\*\*

**I**f a person has a 'suspicious reading' on a fine needle aspiration biopsy, should she undergo a total thyroidectomy, on the assumption that it is probably malignant, as I understand a total thyroidectomy is necessary before radio iodine treatment can be done. Or should the surgeon remove only the affected lobe, hoping it will be benign, thus enabling the patient to keep one lobe of the thyroid and hopefully avoid thyroid replacement medication for the rest of her life.

*A suspicious reading on a fine needle aspiration biopsy is not actual proof of a malignancy. Whether a total thyroidectomy should be performed on the basis of this depends on the circumstances. Generally if there is considerable suspicion that there is a malignancy, based on clinical features of the lump and other factors, then a total thyroidectomy would be performed. On the other hand, if it is much more likely that the lesion is benign, only a hemithyroidectomy would be performed. In that situation, if it proved to be malignant, then a complete thyroidectomy would be carried out later. Since there is no major disadvantage to being on thyroid replacement medication, we are not overly concerned whether patients will have to take levothyroxine or not.*

\*\*\*\*\*

**W**hat are the links between thyroid cancer and other cancers? Does having thyroid cancer mean that I am more likely to get other cancers, such as breast or uterine cancer?

*With the exception of medullary carcinoma of the thyroid, a fairly rare form of thyroid cancer, there are no links between thyroid cancer and other cancers. The fact that a person has thyroid cancer does not mean that they are likely to have other cancers.*

\*\*\*\*\*

**I** have been told that kosher salt can be used when one is following a low iodine diet. Is this correct?

*Kosher salt is not any better than other kinds of salt.*

\*\*\*\*\*

**I**s there a genetic link for thyroid cancer? Now that I have thyroid cancer some of my family members are concerned they also will have it. This is especially worrying as both my parents died of cancer, although not this type. Should my family members do anything to protect themselves.

*There are certain genes that are found within the thyroid lesions of thyroid cancer, but these genes are not transmissible. For papillary carcinoma of the thyroid, which is the most common form of thyroid cancer, there is no need for other members to be concerned that*

*they will ultimately suffer from thyroid cancer.*

\*\*\*\*\*

**W**hat are the long-term effects of the treatment procedures for thyroid cancer?

*Generally, there are very few long term effects of the treatment procedures for thyroid cancer. If radioactive iodine is used too often, it can cause scarring around the lesions in the lungs or elsewhere. However, this is somewhat unusual. Long term treatment with thyroxine is also generally harmless, unless the dosage is sufficient to suppress TSH for a long period of time, which may lead ultimately to abnormal rhythms of the heart, or demineralization of bone. However, if the dosage is set appropriately this does not happen.*

\*\*\*\*\*

**W**ill I feel the same on thyroid medication? Does going hypothyroid in preparation for radioactive iodine treatment and scanning have any side effects, permanent or otherwise?

*Most cancer treatments, such as chemotherapy, have negative side effects. Are there any drugs to alleviate some of the unpleasant side effects? I understand many patients have a difficult time when hypothyroid. What can be done to make the treatment process less unpleasant and life more livable?*

*Patients should feel normal on thyroid medication. Going hypothyroid in preparation for radioactive iodine treatment is very uncomfortable, but does not lead to long term side effects. Chemotherapy, which is rarely used for thyroid cancer certainly does have negative side effects and there are drugs which can alleviate some of these. However, as mentioned, chemotherapy is almost never used for papillary carcinoma of the thyroid. Patients do indeed feel very uncomfortable if hypothyroid for any length of time. However, thyroxine therapy should make up for that completely and patients should feel perfectly normal. One of the problems, however, is that there are many psychological side effects of having thyroid cancer that most, if not all, patients feel and these produce many somatic side effects.*

con't page 6

**W**hy do some doctors, but not others, prescribe the low iodine diet in preparation for radioactive iodine treatment? What are the advantages and disadvantages of following this diet?

*A low iodine diet is used by some physicians so that more radioactive iodine actually gets into the tissues. How crucial this is to the success of the treatment remains to be proven.*

\*\*\*\*\*

**W**hat causes thyroid cancer and why do some people get it and not others?

*The cause of thyroid cancer is basically due to mutation of cells in the thyroid. Such conditions are exceedingly common, but most mutations die and thus do not produce thyroid cancer. It seems to be a matter of chance when the mutation actually survives and grows and causes thyroid cancer. Factors which may lead to this would be recent infections, treatment with chemotherapy, radiation, etc..*

\*\*\*\*\*

**W**hy are the number of cases of thyroid cancer increasing, and why is the incidence higher in Toronto than in the rest of Ontario?

*There does indeed appear to be an increased incidence of thyroid cancer in at least parts of Ontario. The reasons for this have not been determined.*

\*\*\*\*\*

**D**o you recommend that all thyroid cancer patients should have a treatment dose of radioactive iodine. If so, how much and when?

*Not all thyroid cancer patients require radioactive iodine. Only those who have a lesion greater than 2 cm in size, or whose lesion has spread elsewhere in the thyroid or outside the thyroid. The usual first dose is 100 millicuries, but larger doses are used when there are definite distant metastases.*

\*\*\*\*\*

## CancerConnection

### An Ontario-wide telephone support program for thyroid cancer patients

CancerConnection is an Ontario-wide telephone support program for thyroid cancer patients. Cancer patients call 1-800-263-6750 and their information enters a confidential database for matching the patient's cancer and treatment with a volunteer. The volunteer telephones the patient within 48 hours, using a calling card billed to the Cancer Society. Patient and volunteer know only first names. The volunteer may place follow-up calls, if the patient wishes. Volunteers are selected, trained and supported by the Cancer Society and have access to expert resources.

To request help from this volunteer phone service, to sign up as a volunteer, or to learn more about the CancerConnection program, call 1-800-263-6750

## Low iodine recipes and helpful suggestions

*by Margaret Wallace,  
thyroid cancer patient*

The four pages of recipes and suggestions from Margaret Wallace are available at no charge from the National Office. If you would like to receive them, please send your name and address to:

Thyroid Foundation of Canada  
PO Box 1919 Stn Main  
Kingston ON K7L 5J7

## Letter to the editor

**I**n the last issue of thyrobulletin the cover story was on thyroid information websites. One of the best Canadian sites was not mentioned – Dr. Daniel Drucker's [www.mythyroid.com](http://www.mythyroid.com). This site is maintained by Dr. Daniel J. Drucker, Division of Endocrinology, University of Toronto, University Health Network Toronto General Hospital. It has extensive and current information on many types of thyroid disease, treatment and management. Headings include: disease associations, drugs, eye disease, heart disease, hot off the press and numerous other topics.

*Patricia Sharkey*

## 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 December 2000 winner was:  
**Ms. Teena Procee**  
Waterloo, Ontario  
who chose  
"Your Thyroid: A Home Reference"  
Wood, Cooper and Ridgeway

Our January 2001 winner was:  
**Mrs. Claudette Boucher**  
Iroquois Falls, Ontario  
who chose  
"Thyroid Disease: the facts"  
Bayliss & Tunbridge

Our February 2001 winner was  
**Ms. Linda Bennett**  
St. George, Newfoundland  
who chose  
"Thyroid Disease: the facts"  
Bayliss & Tunbridge

# Tributes to Diana

**A**lthough the news of Diana's death brought a tear, it is accompanied by a feeling of thankfulness that she is no longer suffering. Perhaps she is 'flapping her wings' and helping others as she did on earth. Also I am very thankful to her for bringing the thyroid illnesses to the attention of so many patients, medical staff and others. Since my history was similar to hers, I am doubly thankful. Thanks for all the work the members of the Foundation are doing on behalf of people with thyroid disorders.

*Hilda M. Thompson, Belleville, ON*

\* \* \*

**F**irstly I would like to comment on your most recent bulletin, the commemorative Edition of Diana Hains Meltzer Abramsky. This is the first time I have seen a bulletin commemorating the founder and I was very pleased. As a new member of the Foundation we don't usually take the time to think about the person or people who are the driving force behind such organizations but through the special edition I discovered that special person. What a remarkable person. Thanks for sharing!

*Susan Hogland, Winnipeg, Manitoba*

\* \* \*

**T**hank you for sending me the *thyrobulletin* about Diana Abramsky. I was very interested to read how she started the Thyroid Foundation. You did a great job of putting this together.

*Elaine Juby, Kingston, ON*

\* \* \*

**W**ith great sorrow I received your news of Diana's passing. She was such an exceptional type of person and impacted greatly on whoever she met in her long life. What a sad thing that her long illness side-lined her for so many of her last years. What a wonderful lass she was. I feel greatly privileged to have known her.

*Jeanne Bicheno*

*New Milton, Hampshire, UK*

\* \* \*

**T**hank you for the Commemorative Edition on Diana Hains Meltzer Abramsky. I graduated

from the same high school in Saint John, NB, that she graduated from, only ten years later. Rhoda Boyce, mentioned on the *Memories* page, is married to a first cousin of my deceased husband. We are lucky to have had people like Diana.

*Glennis Boyce, Deep River ON*

\* \* \*

**W**e enjoyed the *thyrobulletin* on Diana and feel her death as a tremendous loss to our community. She was certainly a woman of tremendous courage and a great inspiration to us all.

*Katherine Manley, Kingston ON*

\* \* \*

**W**e learned recently of the death of Diana Abramsky, at the age of 85, and convey our sincere condolences to Diana's family and all who knew her. Diana founded the Thyroid Foundation of Canada in 1980 due to her own long-misdiagnosed hyperthyroidism. She was 65, an age when most people are perhaps thinking of retirement, yet she set herself the goal of helping people with thyroid disorders, and eventually saw her local support group become a national organization which now has 23 active support groups throughout Canada.

Diana was a fighter, having battled with tuberculosis, kidney cancer, Graves' disease and pancreatic cancer in 1991. That the Thyroid Foundation of Canada is a big success there is no doubt, and this is due to Diana's great determination. Those who have set up support groups modelled on the Thyroid Foundation of Canada are very grateful to Diana for starting it off.

*Editorial: BTF News*

*The British Thyroid Foundation*

\* \* \*

In memory of Diana Abramsky, the Foundation has set up the **Diana Abramsky Memorial Research Fund**. Those wishing to make a donation to the fund please forward your gift to:

Diana Abramsky  
Memorial Research Fund  
PO Box 1919 Stn Main  
Kingston ON K7L 5J7  
Canada

*thyrobulletin* is published four times a year: the first week of May (Spring), August (Summer), November (Autumn) and February (Winter).

Deadline for contributions are:

March 15, 2001 (Spring)  
**June 15, 2001 (Summer)**  
September 15, 2001 (Autumn)  
December 15, 2001 (Winter)

Contributions to:

**Ed Antosz, Editor**  
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Windsor, ON N8Y 2K6

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E-mail: [ellantosz@uwindsor.ca](mailto:ellantosz@uwindsor.ca)



## 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.**

# Drug interactions in thyroid disease

## Interactions

### • What is an interaction?

An *interaction* is when the effect of a drug is altered by the presence of another drug or food or a disease state. Some *interactions* are beneficial, e.g. antihypertensives and diuretics.

### • Incidence of interactions:

7% if taking 6 - 10 drugs

40% if taking 16 - 20 drugs

Basically, the greater the number of medications you take, the greater the risk of experiencing an *interaction*.

## How do medications interact?

### 1. Drug absorption:

Most drugs are absorbed in the stomach and the first part of the small intestine. If changes are made in the pH, absorption may be altered. Aspirin is better absorbed at a low pH (pH is the measure of acidity or alkalinity of a solution/blood/urine; pH 7 is neutral, below 7 acidic, above 7 alkaline). Chelation (chemical bonding) also affects absorption e.g. tetracycline & calcium. Calcium affects absorption adversely.

### 2. Drug displacement:

Warfarin and aspirin – aspirin increases the effect of warfarin by displacing warfarin from protein in the blood.

### 3. Drug metabolism:

Drugs can induct or inhibit metabolism by altering the effects of liver enzymes.

### 4. Drug excretion:

Drugs that affect urinary pH or blood flow to the kidneys can change excretion rate.

## Levothyroxine drug interactions

(reference: *Drug Interaction Facts*)

### Number of drug interactions:

Level 1 interactions ..... 3

Level 2 interactions ..... 13

Level 3 interactions ..... 0

Level 4 interactions ..... 8

Level 5 interactions ..... 11

Total ..... 35

## Classification of interactions

• **Level 1:** Potentially severe and life threatening (noted in well controlled studies).

by  
**Alan F. Smith** B.Sc.Pharm

• **Level 2:** May cause deterioration in patient's clinical status (noted in well controlled studies).

• **Level 3:** Causes minor effects (noted in well controlled studies).

• **Level 4:** Limited data (may cause moderate to major effects).

• **Level 5:** Minor to major effects (unlikely occurrence or no good clinical evidence of altered clinical effect).

• **Onset:** May be rapid or delayed.

• **Severity:** May be major/moderate/minor.

• **Documentation:** Established/probable/suspected/possible/unlikely.

## Cardiac medications

• **Warfarin: Level 1; delayed onset; major severity; probable.**

Dose of warfarin may require reduction by 40-50% (anticoagulation effects enhanced).

**Management:** Observe for signs of bleeding and adjust dose of warfarin as required.

In hypothyroid patients taking levothyroxine, higher doses of warfarin may be needed.

• **Digoxin: Level 2; delayed onset; moderate severity; established.**

Digitalis effect is reduced and mechanism is unknown. Levothyroxine reduces the therapeutic effect of digoxin.

**Management:** If euthyroid (maintained by levothyroxine) and digoxin is started, no special management is required. Hypothyroid patients on digoxin who are started on levothyroxine may require a dose increase in digoxin.

• **Beta blockers: Level 4; delayed onset; moderate severity; possible.**

e.g. metoprolol/propranolol. The beta blocker effect may be altered. **Hypothyroid** patients on beta blockers who are started on levothyroxine may experience impairment of beta blocker function. If **hyperthyroid** patients become euthyroid, dose reduction of beta blockers may be needed as

hyperthyroidism causes increased clearance of beta blockers.

## Antilipemics medications (anti-cholesterol)

• **Cholestyramine: Level 2; delayed onset; moderate severity; suspected.**

Binds and decreases absorption of levothyroxine. Separate administration by eight hours.

• **Lovastatin: Level 4; delayed onset; moderate severity; possible.**

May increase or decrease effects of levothyroxine. Mechanism is unknown. Monitor response to levothyroxine when lovastatin is started or stopped.

## Tricyclic antidepressants

**Level 5; delayed onset; moderate severity; possible.**

e.g. amitriptyline/clomipramine/desipramine/nortriptyline. Tricyclic antidepressants can take three weeks to reach desired clinical outcome. Addition of thyroid hormone accelerates onset of action. The combination of levothyroxine and a tricyclic may increase the adverse effects of either drug.

## Miscellaneous

• **Theophylline: Level 2.**

Theophylline clearance is reduced in hypothyroidism, increased in hyperthyroidism, which may result in toxic theophylline levels in hypothyroid patients and inadequate control in hyperthyroid patients.

• **Iron Salts: Level 2.**

Probable complex formation leads to decreased absorption. Separate administration of medications as far as possible - at least two hours. A dose adjustment of levothyroxine may be required.

• **Sucralfate: Level 2.**

Interferes with absorption. Separate administration by eight hours or increase dose of levothyroxine.

• **Aluminum Hydroxide: Level 4.**

Interferes with absorption. Switch to an antacid that does not contain aluminum hydroxide.

# Thyroglobulin

by  
**Douglas S Ross, MD**

*What is considered a high thyroglobulin number for a patient with thyroid cancer; a number above which a doctor would recommend a scan and possible radioiodine treatment? Does this number vary according to the individual case, or is there a general rule of thumb for all patients?*

**T**hyroglobulin is a protein involved in the biosynthesis of thyroid hormone. Some of it is secreted from thyroid tissue, and levels of this protein can be measured in the blood. Its principal use is as a tumour marker for differentiated (papillary and follicular) thyroid cancer. After a near-total thyroidectomy, thyroglobulin levels should be very low. Following radioiodine ablation of any remaining surgical remnants, thyroglobulin should be undetectable. The presence of persistent thyroglobulin levels (after a near-total thyroidectomy and radioiodine) indicates either persistent cancer or persistent thyroid remnants.

Thyroglobulin levels are considerably less useful if the entire thyroid has not been removed, since thyroid remnants will produce thyroglobulin. Interpretation of thyroglobulin levels in this setting can be difficult and unreliable.

The production of thyroglobulin from thyroid cancer tissue can be suppressed by administering thyroid hormone. When thyroid hormone is withdrawn and serum TSH is allowed to rise, the high level of serum TSH stimulates thyroglobulin production. Thyroglobulin can also be stimulated by administering recombinant TSH (Thyrogen) by an intramuscular injection. The stimulated thyroglobulin levels correlate best with the amount of remaining thyroid cancer tissue. When comparing thyroglobulin values taken at different times it is essential to know what the TSH value was at the time the thyroglobulin was measured to ascertain

whether it is a stimulated or suppressed thyroglobulin level.

While ideally the thyroglobulin should be undetectable (frequently the lowest value that can be measured is 1 ng/ml, so the result is reported as 'less than 1 ng/ml'), thyroglobulin values under 2 ng/ml are rarely associated with recurrent or persistent disease. It is not unusual for patients to have slightly elevated thyroglobulin levels at the same time that no apparent disease is shown by neck ultrasound, radioiodine scan, chest CT, or bone scan. Occasionally disease may become evident years later or it may never become evident. Higher levels of thyroglobulin are more likely to be associated with persistent or recurrent cancer, and careful assessment is required to locate the source of thyroglobulin production.

*Douglas S Ross, MD, is Co-Director, Thyroid Associates, Massachusetts General Hospital, Boston. Reprinted with kind permission from The Bridge.*

**Drug interactions** . . . con't from page 8

• **Phenytoin: Level 5.**

Unknown mechanism; possible enhanced metabolism; not well documented. Effects of thyroid medication may be decreased. Patients using amiodarone or lithium should be assessed for development of hypothyroidism as these drugs can precipitate hypothyroidism.

**Disease states**

- **Diabetes:** 10% of diabetic patients may develop thyroid problems during their lifetime. Addition of levothyroxine raises blood sugar levels. Patients should follow blood glucose levels closely if levothyroxine is started.
- **Hormone replacement:** Estrogens may increase requirements for levothyroxine.

**Dietary supplements**

- **Calcium:** Calcium carbonate decreases absorption of levothyroxine. Separate dosage by at least four hours.

**Herbal products**

- **Bladderwrack:** contains iodine, may cause hyperthyroidism.
- **Bugleweed:** used in treatment of mild hyperthyroidism, PMS, nosebleeds.
- **Cabbage:** large quantity may elevate TSH levels, worsen goitre and hypothyroidism.
- **Country Mallow:** stimulates the thyroid, therefore causing hyperthyroid state.
- **Dolomite:** rich in calcium.
- **Horseradish:** in theory may interfere with treatment of both hypothyroidism and hyperthyroidism.
- **Lemon Balm:** contraindicated in hypothyroidism, blocks TSH stimulation of the thyroid gland.
- **Red Yeast:** contains lovastatin.
- **Soy:** may raise TSH levels and possibly cause goitre.
- **Tiratricol:** has additive effects with thyroid hormone.
- **Some cough medications:** may contain ephedrine which stimulates the thyroid causing hyperthyroidism.

**Taking thyroid medication – for best absorption**

- Take it the same time each day.
- Take it on an empty stomach.
- Take it with a glass of water.
- Do not change brand names without a good reason.
- Inform your physician of **all** medications you take: prescription, over-the-counter drugs **and** herbal products.
- **Levothyroxine has a narrow therapeutic index:** Small differences in absorption can result in hypo/hyperthyroidism.
- **TSH test:** TSH levels should be monitored at least annually.

*Alan F. Smith, B.Sc.Pharm. is a pharmacist at Kingston General Hospital, Kingston, Ontario*

# Chapter coming events

Free admission – everyone welcome

## Burlington/Hamilton

**Location:** 178 Craigroyston Road, Hamilton

- **Spring Plant Sale** Saturday May 26, 2001. 8:00 am to 2:00 pm

For information call (905) 549-1464

**Location:** Royal Botanical Gardens, 680 Plains Road West, Burlington.

- Thursday June 7, 2001, 7:00 pm. Guest speaker: **M. Sara Rosenthal**, author of *The Thyroid Sourcebook for Women*. Topic: *Thyroid disease in the new millennium*. Guest speaker: Pharmacist from Dell Pharmacies. Topic: *Prescription and over the counter medications. What you should know*. Co-sponsored by Dell Pharmacies and Knoll Pharma Inc.

**Location:** Hamilton, Ontario

- September 2001. TBA Co-hosted with St. Joseph Healthcare, Hamilton

**Location:** Joseph Brant Memorial Hospital, Bodkin Auditorium.

- Tuesday November 6, 7:30 pm. Guest speaker: **Dr. B. Hunter**, Obstetrician/Gynaecologist. Topic: *Thyroid disease: childbearing years through menopause*.

For information call (905) 637-8387

## Kingston

**Location:** Ongwanada Resource Centre, 191 Portsmouth Avenue, Kingston

- Tuesday May 15, 7:30 pm. **Dr. E. R. Yendt**, Endocrinologist. Topic: *Osteoporosis*
- Tuesday October 16, 7:30 pm. **Dr. Frank Cheesman**, Imaging Services KGH. Topic: *The role of radioactive iodine in the treatment of thyroid disease*
- Tuesday November 20, 7:30 pm **Dr. Robyn L. Houlden**, Endocrinologist. Topic: *What's new with thyroid disease research?*

For information call (613) 389-3691

## Kingston (con't)

**Monthly thyroid discussion group**

**Location:** Loblaws Market, Upstairs, Kingston Centre

- Fourth Sunday of each month, 3:00 - 4:00 pm

Discussion led by pharmacists, Douglas Clarke and Bozica Popovic. Sponsored by Loblaws Pharmacy. Elevator, thyroid literature, coffee.

For information call (613) 530-3414



Pharmacists, Bozica Popovic and Douglas Clarke, Loblaws Pharmacy, Kingston

## London

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

- Tuesday May 15, 7:30 pm. **Pharmacist:** Shoppers Drug Mart. Topic: *Medication interaction - thyroid medication interacting with other prescription and over the counter drugs*.
- Tuesday September 18, 2001. **Dr Merrill Edmonds**, Endocrinologist, London Health Sciences Centre. Topic: *Hypothyroidism*.
- Tuesday November 20, 2001. TBA

For information call (519) 649-5478

## London (con't)

**Barbeque Fund Raiser**

**Location:** Loblaws, 635 Southdale Road East, London (just west of Wellington Road)

- Saturday, June 2, 2001. 10:00 am to 4:00 pm

## Marystown, NF

**Location:** Burin Campus, Eastern College, Burin.

- Tuesday May 22, 8:00 pm. Guest speaker: Dietitian. Check local news outlets for info.

For information call: 1-709-279-2499

## Montréal

The Montreal chapter is looking forward to hosting the 2001 AGM, May 25, 26, 27. Preparation is underway for a great weekend with informative meetings, speakers and entertainment. Members wanting information on any events, call (514) 482-5266

## Toronto

**Location:** 4900 Yonge Street, Toronto

- Tuesday May 1, 2001. 8:30 am - 3:30 pm. Health and Wellness Fair for approximately 2,400 government employees and the public. This event is sponsored by Public Works and Government Services Canada and other government departments including Industry Canada and Transport Canada. The event will include lectures, demonstrations and exhibits on a wide range of health topics. Visit the Toronto chapter education table.

**Location:** Sunnybrook Health Sciences Centre, 2075 Bayview Avenue, Toronto

- Date, time, speaker TBA

For information call: (416) 398-6184

# Chapter news

## Burlington/Hamilton

The Burlington/Hamilton Area chapter has just had its first birthday in March. It has been only with the support and dedication of our members, volunteers and community that this tremendous milestone has been achieved. A special thank you for all the support we received from the national organization. Our chapter now has 167 members. We are continuing to build on the foundation established by this wonderful effort. Upcoming events include a June special public education meeting, a giant geranium fundraising sale, the first ever public education meeting in Hamilton and much more. So to all who made this possible, congratulations and thank you for your continuing support.

## Kingston

**Need thyroid information?** Visit the chapter office Wednesdays, or phone 613-389-3691 and leave a message. Attend the monthly thyroid discussion group at Loblaws Market, Kingston Centre, held the fourth Sunday of each month 3:00 - 4:00 pm. For info or to make an appointment call 613-530-3414.

Please save your A & P Gardiner Centre grocery store tapes for the chapter's "A & P Save-A-Tape Program". We receive \$1 for chapter programs for every \$450 of tapes.

The chapter staffed a thyroid literature and information booth at the Kingston Centre Charity Fair, the Queen Esther Hadassah-WIZO Women's Wellness Workshop 2001 and the City of Kingston's Leisure & Recreation Spring Showcase.

## Montréal

On February 20, 2001, Dr. François Gilbert was the guest speaker. His topic was *hypothyroidism*, which he delivered in French, followed by a bilingual question and answer period. A most informative evening for all.

## Toronto

On January 19-20, 2001 the chapter participated at the Women's Health Matters Forum & Expo 2001 at the Metro Toronto Convention Centre. Please see below for special report on *Women's Health Matters: Forum & Expo 2001* on page

## Women's Health Matters: Forum & Expo 2001

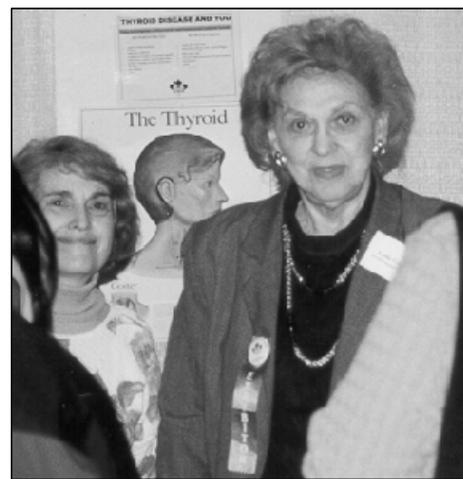
**A** record number of 12,000 attended the fifth annual Women's Health Matters: Forum and Expo 2001, at the Metro Toronto Convention Centre held January 19 and 20, 2001. One of the sponsors was Sunnybrook and Women's Hospital. Highlights included more than 100 exhibits and 40 lectures on a range of health care issues, including a thyroid disease lecture.

Opening ceremonies included presentations by Dr. Roberta Bondar, physician, researcher and astronaut, Jean Kilbourne, author of *Can't Buy My Love* and Dr. Florence Manguyu, Kenyan pediatrician who spoke on *Life Chances for Women in Africa*.

When first approached by the program coordinator for the Women's Health Forum about including a lecture on thyroid disease I was enthused. Indeed, a disease that affects 1 in 20 Canadians and is 5-7 times more common in women seemed a very appropriate program for a

large forum on women's health. When considering a presenter I felt that Dr. Jay Silverberg, Head of Endocrinology at Sunnybrook and Women's Hospital and a leader in his field, would be an excellent choice. He has over the years addressed many Thyroid Foundation public education meetings. His presentation: *Your Chance to Ask an Expert All of Your Thyroid Questions* was very well attended. After a short presentation on thyroid disease the audience had the opportunity to ask the many thyroid questions that concerned them.

Our exhibit which we estimated attracted approximately 1,500 visitors over two days was indeed successful. I am grateful to the Toronto volunteers who were most cooperative and made our endeavours possible. Thanks to Laura Mandryk, Education and Helpline, Ellen Garfield, Website Coordinator, Marilyn Roy, Marlene Jelski and Natalie Kotowycz. All in all it was a worthwhile and exciting undertaking.



Toronto Chapter Volunteers  
(L) Laura Mandryk and (R) Lottie Garfield

Lottie Garfield  
National V-P Education & Research  
Liaison Community Education,  
Toronto Chapter



# The perils and pitfalls of unnecessary thyroid hormone treatment

**A**n underactive thyroid gland produces many symptoms which make people feel unwell and because the condition develops slowly, affected individuals have often felt ill for a long time. The stresses and strains of modern life, however, commonly cause similar symptoms and when the effect of our miserable weather is added, it is not surprising that many people are convinced that their thyroid gland is abnormal, even when it is not. Picture the scene. A middle-aged lady (and it is usually ladies who are affected) feels tired and run down. She is constipated (poor diet) and feels the cold (it is cold in January). She is gaining weight (too much of the poor diet) and her hair is dry (wrong shampoo). Her family physician suspects that she is suffering from an underactive thyroid gland, but the laboratory reports there is nothing wrong. She is not convinced and goes for a second opinion. She is told that her symptoms do indicate an underactive thyroid gland, that her pulse is slow and her temperature low. The second doctor says that thyroid tests are often wrong and that she should have a trial of 'natural thyroid' - which he thinks is superior to thyroxine. The lady feels great (placebo effect), but after a few months she slips back. The dose of natural thyroid is increased and she is asked to take some thyroxine as well. The same thing happens and she goes back to her family doctor, who finds that her blood tests now show she is thyrotoxic. She doesn't want to stop her treatment and asks for a further opinion from a hospital specialist. Pity the poor endocrinologist!

He finds that her thyroid gland appears to be working normally, but further blood tests are uninterpretable because she is taking thyroid hormones; for what they are worth they are virtually normal. What now? The only option is to stop her medication for a time, allow her endocrine system to reset itself and then repeat the tests. She is unhappy. The family physician is unhappy because he has been bypassed and the endocrinologist is unhappy - he has seen this sequence many times and is tired of getting into trouble for telling patients that he does not agree. The moral? Don't replace the body's normal thyroid functions with hormones from a bottle. This will simply turn off a

by  
**Peter Daggett, MD, FRCP**

normal thyroid gland, but more importantly, can deliver too high a level of hormones against which the body has little protection.

## What problems can arise?

**The bones:** Thyrotoxicosis can cause osteoporosis. Excess of thyroid hormones given as treatment might be expected to do the same thing. Although the evidence for this is not strong, there remains concern that even when thyroid hormones are being used properly, too high a dose could have long term effects on the skeleton. This is particularly true of triiodothyronine (which is contained in 'Natural thyroid').

**The heart:** Excess thyroid hormone causes irregularity of the heart beat and heart failure. I have seen a lady in her 60s who was made very unwell by inappropriate use of thyroid hormones (without the knowledge of her family physician). Patients affected in this way can have strokes and these can be fatal.

**The mind:** Thyroxine makes people feel better. There is a powerful placebo effect, but this commonly wears off after a few weeks. When a patient did not actually need treatment in the first place, larger and larger doses of thyroxine are often suggested, leading to problems detailed above. The patient has become addicted to thyroid hormones.

**Hormones:** If thyroxine is given to someone whose symptoms result from underactive adrenal glands, they may collapse. This can be a difficult diagnosis to make and is one reason endocrinologists like to see patients with symptoms suggesting thyroid disease.

## Conclusion:

Thyroid function tests are reliable. If there is any doubt, ask for them to be repeated or for advice from an endocrinologist. Thyroxine exerts a placebo effect. It doesn't actually make you better long term, unless your thyroid gland really is underactive. Natural thyroid is inferior to thyroxine - it has not been used by British endocrinologists for

many years. It contains small quantities of thyroxine and triiodothyronine. It is not prescribable for a good reason and has to be bought. Inappropriate use of thyroid hormone preparations could damage your wealth as well as your health.

*Peter Daggett, MD, FRCP, is a Consultant Physician and Endocrinologist of Staffordshire General Hospital, England. Reprinted with kind permission from BTF News, publication of The British Thyroid Foundation.*

## Helen Smith, Membership Services Coordinator



Helen joined the Kingston national office staff (of two) in the fall of 2000. She and her husband immigrated to Kingston in 1987 from Kent, England and both are involved in community activities that involve their three children. Helen's duties for the Foundation include the processing of donations and memberships, the maintenance of the Foundation's membership files, the production of membership reports and efficiently serving the needs of our members - and of our chapters - regarding membership. Helen's voice is often your introduction when phoning the national office.

# Thyroid Foundation of Canada Nominations for the 2001-2002 National Board of Directors

**T**he Foundation's nominating committee presents the following slate of nominees for the positions of each officer and member-at-large to be elected at the 21st Annual General Meeting of the Thyroid Foundation of Canada, Saturday, May 26 2001, 9:00 am, Maisonneuve Conference Room, 6<sup>th</sup> Floor, Hôtel du Fort, 1390, rue du Fort, Montréal, Québec H3H 2R7.

## OFFICERS OF THE FOUNDATION (Executive Committee):

President: ..... Irene Britton, Saint John NB  
Vice-Presidents (four):  
• Publicity & Fund Raising: .....  
• Chapter Development: ..... Joan DeVille, Kitchener ON  
• Education & Research: ..... Lottie Garfield, Toronto ON  
• Operations: ..... Venette Godbout, Moncton NB  
Secretary: ..... Darlene Ibey, Thunder Bay ON  
Treasurer: ..... Terry Brady, Kingston ON

## MEMBERS-AT-LARGE (maximum six):

Editor, *thybulletin*: .....  
Liaison, Medical Research: ..... Rita Wales, Napanee ON  
Archivist: ..... Marc D. Abramsky, Kingston ON  
Web Site Coordinator: ..... Ellen Garfield, Toronto ON  
Membership Chair: ..... Nathalie Gifford, Kingston ON  
..... Marvin Goodman, St. Laurent QC

Additional nominations for any of these positions may be made from the floor at the time of the election, provided the nominee has given consent to his/her nomination. All nominators and nominees must be members in good standing of the Foundation.

### PLEASE NOTE:

Our slate of nominees does **NOT** include the following who are automatically members of the national board:

- \* Chapter Presidents (23) elected at each Chapter's Annual Meeting
- \* Immediate Past President, Arliss Beardmore, Vancouver BC

## 2000-2001 NOMINATING COMMITTEE:

Arliss Beardmore, Chair, Vancouver, BC  
Ellen Garfield, Toronto ON  
Nora Hockin, Ottawa ON  
Lois Lawrence, Azilda ON  
Nancy Sellick, Charlottetown PE

## 21<sup>st</sup> Annual General Meeting

Saturday

May 26, 2001

9:00 am

To each member of the Foundation:

Notice is hereby given that the 21<sup>st</sup> Annual General Meeting of the Thyroid Foundation of Canada/La Fondation canadienne de la Thyroïde will be held **Saturday, May 26, 2001, 9:00 am, Maisonneuve Conference Room, 6<sup>th</sup> Floor, Hôtel du Fort, 1390, rue du Fort, Montréal, Québec, H3H 2R7 for the purpose of:**

- Receiving and considering reports from the directors of the national board
- Receiving and considering the financial statements and auditor's report for the year ended March 31, 2001
- Appointing auditors for the financial year ending March 31, 2002
- Electing the executive and members-at-large of the 2001-2002 national board, and
- Transacting such other business as may properly be brought before the meeting

Members of the Foundation and the general public are welcome to attend the above meeting. All TFC members have the right to vote on all resolutions presented for approval.

In accordance with By-Law No. 1, Clause 47, each voting member present shall have the right to exercise one (1) vote. A member may vote by means of a written proxy, provided the proxy holder is a member in good standing of the Foundation. Proxy forms may be obtained from the national office.

*Shirley Penny, National Secretary*

# Combined T3/T4 Treatment for Hypothyroidism

## Roles of thyroid hormones in normal physiology – in youth:

- Regulation of brain and nervous system development before birth and during the first few years of life
- Promotion of normal growth during infancy, childhood and adolescence

## Roles of thyroid hormones in normal physiology – in all ages:

### Regulation of:

- Body temperature
- Heart rate
- Functioning of the digestive tract, including bowel regularity
- Stimulation of normal appetite

## Cognitive disturbance with hypothyroidism:

- Change in memory
- Slowed thinking
- Difficulty with calculations

## Mood disturbance with hypothyroidism:

- Frustration
- Depressive symptoms
- Reduced energy and well-being

## What are T3 and T4?

- Both are thyroid hormones
- T4 (thyroxine) is of longer duration and less potent
- T3 (triiodothyronine) is of shorter duration and more potent
- 80% of the body's T3 comes from peripheral conversion of T4

## Levothyroxine (T4):

- Brand names: Synthroid, Eltroxin, Levothyroid
- Among the most commonly prescribed of all drugs
- The onset of therapeutic effect is 3 - 5 days
- Its half-life is about 7 days

## Lyothyronine (synthetic T3):

- Brand name: Cytomel
- Prescribed so seldom that the manufacturer briefly decided in 1998-1999 to stop marketing it
- The onset of effect is 24 - 72 hours
- Its half life is 16 - 49 hours

by  
**Ronald J. Sigal, MD**

## Historical perspective on treatments for hypothyroidism:

Extracts of animal thyroid tissue were the treatment of choice from 1892 to about 1940.

- Contained both T3 and T4
- Problem: concentrations of T3 and T4 were not consistent
- 1960s: development of blood tests to measure thyroid hormones but assays were unable to distinguish between low and normal TSH (thyroid stimulating hormone)
- T4 doses prescribed in those days were 200-400 g, more than twice the doses typically used today

## Better TSH assays led to lower T4 doses:

- More sensitive T4 assays became available
- Able to distinguish normal from low TSH levels
- It was recognized that previously recommended T4 doses were too high

## Hypothyroid rats need both T4 and T3:

- Rats whose thyroid glands had been surgically removed were infused with placebo or T4, alone or in combination with various doses of T3
- T3 in plasma and most tissues, and plasma TSH only reached normal levels when T3 was added to the T4 infusion

## Important trial comparing T4 alone vs combination T3/T4:

- 33 patients on T4 for hypothyroidism were randomly assigned to either
- Continue their previous T4 **OR**
- Substitute 12.5 g of T3 for 50 g of T4
- Subjects randomized to one condition were crossed over to the other after 5 weeks

## Results:

- Many scores in cognitive performance, and mood were significantly better with combination T3/T4 than with T4 alone
- When asked at the end of the study which they preferred, 20 preferred combination therapy, 11 had no preference and 2 preferred T4 alone

## Should everyone with hypothyroidism receive this regimen?

- Probably not
- Small study (only 33 patients), short duration
- Ratio of T4 to T3 in this study not physiological
- Giving T3 in this manner sometimes causes transient symptoms of hyperthyroidism

## For which patients do I prescribe combination T3/T4?

### Patients who:

- Are treated for hypothyroidism with T4
- Have normal free T4, free T3 and TSH but still do not feel as "well" psychologically and/or cognitively as before their illness

## Timing of T3/T4 dose on days thyroid blood tests are drawn:

- Not a major issue with T4-only therapy (half life of T4 is seven days)
- This may be less true with combination T3/T4 therapy
- Good studies on the optimal timing of testing for combination therapy have not been reported

## Conclusions:

- Intriguing preliminary research findings (and anecdotal experience) suggest a role for combination T3/T4 therapy
- There is insufficient evidence to justify switching all hypothyroid patients to combination therapy
- However, a trial of such therapy may be appropriate in selected patients

*Ronald J. Sigal, MD, MPH, FRCPC, is an endocrinologist in the Division of Endocrinology and Metabolism, Ottawa Hospital. Ottawa ON.*

# So long and thanks



I have been pleased to volunteer my time as the editor of *thyrobulletin* for the past few years and play a part in the continuing evolution of this excellent quarterly newsletter. However, the time has come for me to take my leave. With the help of the editorial committee (a group of marvellous volunteers) and the national office staff, a number of innovations were introduced during my time. A policy clearly defining the role of the editor and the editorial committee was introduced. The production process, the desktop

publisher and the printers have changed, resulting in a quality product at a lower cost – not an insignificant factor since cost-cutting is currently an important consideration to the survival of the Foundation. The change of which I am most proud is the redesign of *thyrobulletin*, resulting in a cleaner look which is more easily read and is, I believe, more interesting. While education is still the primary mandate, people are the focus – people affected by thyroid disease, people overcoming illness or learning to adapt and people engaged in research.

I would like to thank those individuals whose help has been invaluable to me. First, the editorial committee of Margaret

Burdsall, Nathalie Gifford and Mary Salsbury, who have volunteered countless hours to the many tasks needed to produce a publication that, judging from comments received, is appreciated by our members. Secondly Katherine Keen at the national office, who was always available to look after the business needs of *thyrobulletin*.

And so as one chapter for *thyrobulletin* concludes and another begins I would like to say to all that “**It was real good . . .**”

*Ed Antosz*  
Editor, *thyrobulletin*  
997 - 2001

## 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	
<input type="checkbox"/> Regular	\$20.00	\$35.00	\$ _____
<input type="checkbox"/> Senior 65+	\$15.00	\$25.00	\$ _____
<input type="checkbox"/> Student	\$15.00	\$25.00	\$ _____
<input type="checkbox"/> Family	\$25.00	\$45.00	\$ _____

**Donations** (Circle Your Choice)

Education & Services, Chapter Programs, National Research, Where Need is Greatest \$ \_\_\_\_\_

**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: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ Province: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Tel: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: \_\_\_\_\_

Type of Membership:  New  Renewal • Language Preferred:  English  French

We accept your membership fees and/or donations by mail or fax.

All donations and membership fees qualify for a tax receipt. Please send your application and payment to:

**THYROID FOUNDATION OF CANADA**, PO Box/CP 1919 Stn Main, Kingston ON K7L 5J7  
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/Coordinatrice 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

## Chapter & Area Contacts/Liaisons pour les sections et districts

**BRITISH COLUMBIA/COLOMBIE-BRITANNIQUE**

**Cowichan** Victoria Oldnall (250) 246-4021  
**Vancouver** Jacquie Huntington (604) 266-0700  
**Victoria** Liliias Wilson\* (250) 592-1848

**ALBERTA**

**Calgary** Trish Marshall (403) 246-2841  
**Edmonton** Muriel Winter (780) 476-3787

**SASKATCHEWAN**

**Saskatoon** Olive Buck (306) 382-1492

**MANITOBA**

**Winnipeg** Enid Whalley (204) 489-8749

**QUEBEC/QUÉBEC**

**Montréal** Sharon Goodman (514) 482-5266

**NEW BRUNSWICK/NOUVEAU BRUNSWICK**

**Moncton** Bob Comeau (506) 855-7462  
**Saint John** Irene Britton (506) 633-5920

**NOVA SCOTIA/NOUVELLE ÉCOSSE**

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