acmt
newsletter

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American College of Medical Toxicology

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THE PRESIDENT'S PERSPECTIVE
FACING THE FUTURE: RECONSIDERING MEDICAL TOXICOLOGY

Paul M. Wax, MD, FACMT

I would like to broach the issue of the economic viability of the practice of medical toxicology. How does one successfully make a living as a medical toxicologist? Some of these challenges are clearly different than those encountered by other medical specialties. As emergency medicine matured as a specialty, clearly a driving force was a very large demand for emergency services. Although it had taken some tinkering, 3rd party payers became well versed in paying for EM services. There was a very large business for the taking, and now more than 20,000 physicians now make a living practicing emergency medicine.

Medial toxicology has evolved with a very different set of promoters. Unlike emergency medicine, there has not been much of an economic impetus to develop medical toxicology. The driving force has been part intellectual and academic curiosity, and part public health service. The development of a viable business model to support careers in medical toxicology has taken a back seat.

Let's be realistic. Many of us really love medical toxicology; we are captivated by the field. We are willing to spend a substantial portion of our professional time engaged in activities pertaining medical toxicology with little or no compensation. But relatively few of us make a living practicing medical toxicology full time. Why is this? Can this change? Should we continue to train 25 new fellows in Medical Toxicology each year if there are so few jobs to support a full time practice in medical toxicology?

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ACMT SPRING COURSE RECAP

Beth Baker, MD, FACMT

The 2007 Spring ACMT meeting took place in beautiful Miami Beach. Local ACMT member Jeff Bernstein, M.D., FACMT, provided a graphical overview of the geography and nightlife of South Beach at the end of his talk on "Indigenous Toxins of South Florida" (mojitos didn't even make the list!).

The remainder of the conference highlighted intriguing issues such as judicial review of scientific evidence, adverse drug reactions, expert testimony, cardioactive steroids, and lethal injection. Environmental poisoning topics included pesticide residues in food, WTC syndromes, naturally occurring radioactive materials, and ground water contamination.

The Fellows' Research Symposium was a resounding success with 11 medical toxicology fellows-in-training presenting their research concepts to a broad audience for direct feedback in a highly interactive session.

There was also a roundtable discussion regarding career opportunities in Medical Toxicology. There were rumors of late night carousing and salsa dancing in the evening. Special thanks goes to all of the speakers and to my co-organizer
Asim Tarabar, M.D.

AGENTS OF OPPORTUNITY COURSE

Charles McKay, MD, FACMT

The national network established between ACMT and the ATSDR (Agency for Toxic Substances and Disease Registry) of the CDC continues to provide consultation and education to state public health entities and other health professionals. During the last fiscal year (9/05-10/06), ACMT members have delivered the Agents of Opportunity Course 15 times to a total audience of more than 1,200. This year (since September 2006), we have presented the course about 10 times. More than 80 ACMT members have had the opportunity to present this material to public health, pre-hospital, fire, police, military, and medical personnel.

Recently, the importance of this material has been underscored by two processes/events. On the positive side, many states are completing Hazard Vulnerability Assessments for the chemical industries in their regions. Many of the issues that departments of public health, environmental protection and fire services are dealing with are covered in the Introduction and Local Vulnerability lectures. On the unfortunate side, our concerns about the nefarious use of locally available chemicals has been demonstrated several times this month in Iraq, with insurgent attacks using chlorine tankers as weapons. Exploding these chemical bombs has resulted in hundreds of injuries, taxing both the physical and emotional reserves of both the Iraqis and coalition forces. The material in the Toxic Gases and Psychological Aspects of Chemical Terrorism lectures covers these issues. Please contact your ACMT regional representatives regarding potential interest in your area. While our current budget limits the number of courses, it is important that we provide information to ATSDR regarding the continued need for this course.

JMT: YOUR ACMT JOURNAL

Christian Tomaszewski, MD, FACMT, Editor-in-Chief and Sean Kullman, Managing Editor

Imagine a virtual journal where manuscripts are submitted on-line, reviewed and managed through a web-portal, and then freely accessed anytime. No need to imagine anymore. As of November 2006, the *Journal of Medical Toxicology (JMT)* is available on-line in addition to the quarterly printed copy that comes to your address on acid-free paper from a quality publishing house, University of Pennsylvania Press. And why do I emphasize *acid-free*? Because that is just one requisite for Medline recognition, for which we are applying. With a journal that can last virtually forever in printed and on-line formats, we look forward to acceptance by the National Library of Medicine in the near future. The best part of such approval is that it will retroactively apply to past issues.

What does it take to get Medline approval? We think it takes a quality journal that is peer-reviewed, provides good original investigations, and fills a unique niche in the medical publication world. Does *JMT* fit the bill? It certainly does.

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ACMT CALENDAR OF EVENTS

2007

May
1 — **Methamphetamine Course Arlington, VA**

May
1-4 — **EAPCCT Congress, Athens Greece**

October
19-24 — **North American Congress of Clinical Toxicology, New Orleans, Louisiana**

October
20 — **ACMT Pre-Meeting Symposium**

Transforming Intuition into Knowledge: Resolving Global Controversies in Medical Toxicology

CPC and ACMT Business Meeting

2008

March
7-8 — **ACMT Spring Course San Diego, CA**

The 6th Annual Spring Course is designed to offer state-of-the-art insight on current issues in medical toxicology.

Noted experts from around the country will provide in-depth information on important topics.

FORUM NEWS

As the college moves forward, we are attempting to incorporate new technology and methods to facilitate the free exchange of ideas and information. One of the most important is the upgrade of the current ACMT.net mailing list. To do so, we have moved to a new model, a moderated online discussion board, now called "The Forum." To those of you unfamiliar with this model, it offers a number of advantages over our previous method of mailing out individual messages. These advantages include:

1. Online, fully moderated, member-restricted 24-hour access from any Internet connection
2. Fully searchable content organized and grouped by similar category (i.e., MedWatch, ACMT Meeting Announcements, etc.)
3. Ability to subscribe to broad categories, or individual messages, and have updates emailed as they are available
4. Ability to attach and exchange files
5. Ability to setup and organize topics of individual or group interest (e.g., fellowship board review topics)
6. Exchange messages between members

Please take advantage of the features and power the Forum provides, and explore its capabilities. Take time to familiarize yourself and read the FAQ (frequently asked questions,) as well as the current version of the Forum handbook. If there are any problems or questions regarding the use of the forum, or you would like to see new features or components, please email forum@acmt.net.

THE PRESIDENT'S PERSPECTIVE *(continued from page 1)*

These are all questions that deserve serious discussion. Most fellowship training programs are poison center based, and yet there are at most about 63 FTE poison center medical director positions, and the total number of FTE positions around the country may be considerable less. These 0.5 and 1.0 FTE positions are certainly desirable, and such a practice is bread and butter medical toxicology, but they are limited in number and will not increase based on evolving consolidation of our current national poison center system. Of our 450 ACMT members, such poison center positions may support 50 members – perhaps 1 in 9.

Other medical toxicologists have valiantly tried to establish consultation or admitting services to care for patients with acute poisoning. Such endeavors can be extremely time consuming, and in the majority of cases such a practice does not generate a full time salary. Often there is just not enough volume of acute care cases to generate adequate revenue. A few have been successful, mostly by turning to care of patients with chronic (or questionable!) exposures or nonmedical services such as litigation support, but the numbers are low. The number of medical toxicologists who live off a salary solely based on their inpatient clinical billings are very few indeed.

How about other opportunities? The outpatient practice of medical toxicology including occupational and environmental toxicology is a path chosen by relatively few members despite a demand for these services. While emergency physicians, hospitalists, and intensivists, may question the need to include a toxicologist on many acute poisonings, there are few other physicians (such as some occupational physicians) who will compete with the medical toxicologist in providing outpatient toxicology consultations. With such demand, and the relative dearth of competitors, why shouldn't this be a much more substantial component of medical toxicology practice? To this end, have medical toxicology fellowship programs given training in occupational and environmental toxicology enough prominence?

In recent years a few medical toxicologists, both new grads as well as those at mid-career, have taken positions in the government, hired as medical toxicologists. These folks now work at ATSDR, CDC, EPA, and FDA. While the total number may not be more than a dozen, they are introducing the concept of medical toxicology to organizations without a track record of hiring medical toxicologists. These trail blazers are to be commended.

In order to really develop a specialty that can support a full time practice (and integrate a new graduating class of 20-25 fellows year after year) perhaps we need to think outside the box. A few naysayers may argue that for most medical toxicologists, their toxicology practice is not meant to be economically self-supporting, and that they prefer to practice their primary area of specialization and dabble in medical toxicology. In many cases their mentors and role models have practiced this way, and this tradition is characteristically emulated by the trainees.

But where does this leave medical toxicologists who would prefer to practice medical toxicology full time? Perhaps we need to expand our skill set. If we look at the practice patterns of other physicians we observe the constant evolution of other specialties. Cardiologists taught themselves cardiac ultrasound (echocardiography), grabbing this skill set from Radiologists. Urological surgeons taught themselves urodynamics. Anesthestiologists (and others such as Neurologists) developed the subspecialty of pain management. Addiction specialists (usually Psychiatrists) have recently added buprenorphine management to their skill set. Even Gynecologists often offer botox and other facial cosmetic procedures – far removed from their usual turf. These physicians looked outside the box pushing the traditional boundaries of their specialties.

Should medical toxicologists do the same? Should we take a much more proactive position and look for opportunities involving hyperbaric medicine, addiction medicine, or clinical pharmacology. How about selective (I mean very selective) chelation outside of heavy metal poisoning; or even botox itself?

In subsequent newsletters I will address how medical toxicologists may want to think outside this box.

JMT: YOUR ACMT JOURNAL *(continued from page 2)*

As for good material, we have had 11 original investigations submitted and six case study observations since our on-line debut. Of note, eight of these have already been accepted for publication in future issues. In addition, we fulfill a unique niche by taking papers from submission to print in approximately nine months, and our new manuscript tracking system should allow us to improve upon our already successful manuscript processing time.

The *JMT* is drawing international participation from authors and reviewers. We also have unique features that address such diverse areas as "Tox in the News," the "CDC-ATSDR Report," and "Case Files" from our toxicology fellowships.

As an ACMT member, how can you help? Many of you already have by submitting quality manuscripts to a new and progressive journal. Also, over 40 of you have registered as reviewers. By registering as a reviewer, you can detail your interests, making it easier to match you up with manuscripts based on your areas of expertise. We encourage ACMT members to submit their manuscripts at www.editorial manager.com/jmt to further contribute to the international reputation of your journal.

With the quality and quantity we have received to date, I feel that your journal, *JMT*, is well positioned to join the august group of Medlined journals.

TOXICOLOGIST PROFILES: NEWS AND NOTEWORTHY

Toxicologist Takes New Position in Biotech Industry

Christine Haller, M.D. has taken a new position in the biotechnology industry. She has assumed the job of Global Safety Officer in the Department of Global Regulatory Affairs and Safety at Amgen, Inc. in South San Francisco, California. She is responsible for evaluating the safety of new drug entities in the early development phases (First-in-Human through Phase I clinical trials).

A New Toxicologist in New Mexico

Steve Seifert, M.D. is assuming the medical director position at the New Mexico Poison and Drug Information Center in Albuquerque in July. He will have an appointment at the rank of Professor in the Department of Emergency Medicine at the University of New Mexico School of Medicine.

Position with Johnson & Johnson

Jason Vena, M.D., a recent graduate of the fellowship in Hartford, CT, recently took a new position with Johnson & Johnson performing the worldwide assessment of benefit-risk information, evaluation of safety signals, and formulation of responses to regulatory authority inquiries on product safety issues (e.g., opioids and other analgesics).

Charles McKay, MD, FACMT, wins an award for outstanding contribution to the College. Presented by ACMT President Paul Wax, MD at the Spring Course in Miami on March 15, 2007.

Do we have your LATEST email address? If NOT please send it to us at info@acmt.net.

TOXICOLOGY IMAGES OF INTEREST

Ron Kirschner, MD, FACMT

These seeds were being prepared for planting to grow ornamental plants when one was eaten by a family member who confused it for an edible nut. Six hours later he developed vomiting, diarrhea, and painful myalgias and went to the ED. At that time, he was noted to be tachycardic, with a heart rate of 140 beats per minute, and he had a normal blood pressure and mental status. Laboratory work was remarkable for an anion gap of 20 mEq/L, creatinine of 3.6 mg/dL, ALT 76 U/L, and WBC of 19,000/µL. He was admitted to the Toxicology Unit where he was treated with IV fluids, analgesics, and anti-emetics. Within 24 hours his symptoms and laboratory abnormalities resolved, and he was discharged home.

The castor bean (its not a true bean) is not native to the United States, but is often grown as an ornamental plant. It is still widely used in the production of castor oil. The seeds have an attractive appearance (Ricinus in Latin means tick) that may prompt children or uninformed adults to ingest them. This plant grows as an annual to more than 10 feet. The large, lobed leaves may be 3 feet across, and have a green to red/purple coloration. Spiny fruits form in clusters along spikes; these hold three seeds each (see image).[2]

The pulp of the seeds contains ricin, a water soluble protein composed of two polypeptide chains that is one of the most potent plant toxins known. The B chain binds to glycoproteins on animal cell surfaces. Once the protein enters the cell by endocytosis, the A chain irreversibly binds to eukaryotic ribosomes, interrupting protein synthesis. When delivered parenterally, ricin is highly toxic, with an LD 50 in mice of 5-10 µg/kg. In 1978 Bulgarian dissident Georgi Markov was assassinated by injection of a small metal pellet that investigators believe contained ricin. The lethal dose for ingested ricin is approximately 1,000-fold higher.[1]

The ricin content of castor seeds is variable, but has been reported to range from 1% - 5%. The seeds are unlikely to cause toxicity unless chewed, breaking the hard seed coat.[3] The onset of symptoms following ingestion typically ranges from 4 to 10 hours. Initial symptoms include vomiting, diarrhea and crampy abdominal pain. Laboratory evaluation may show leukocytosis, followed by hepatic injury and renal failure as the premonitory signs of multisystem organ failure. Treatment is entirely supportive. Activated charcoal may be helpful to reduce systemic absorption of ricin, though its effectiveness is unproven. Following castor bean ingestion, most patients recover with fluid and electrolyte replacement.[4] There is no specific antidote.

References

1. Audi J, Belson M, Patel M, Schier J, Osterloh J. Ricin poisoning: A comprehensive review. JAMA 2005;294:2342–2351.

2. Nelson LS, Shih RD, Balick MJ. Handbook of Poisonous and Injurious Plants, 2nd Edition. Springer/New York Botanical Garden. New York, NY. 2007

3. Aplin PJ, Eliseo T. Ingestion of castor oil plant seeds. Med J Aust 1997;167:260–261.

4. Challoner JR, McCarron MM: Castor bean intoxication. Ann Emerg Med 1990; 19: 1177.

Ron Kirschner, MD
Medical Toxicology Fellow
Pinnacle Toxicology Center/Pennsylvania State University

ACMT members are welcome to submit interesting images representing medical toxicology for publication in future ACMT newsletters. Please include a brief description of the images. Submissions may be sent electronically to info@acmt.net.

The ACMT, as part of a cooperative agreement with ATSDR, maintains the Internet Library of Images in Toxicology in the Member's Only section of www.acmt.net. ACMT members are encouraged to consider contributing images to this library. Email info@acmt.net for more information.

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Save the Date!

6h Annual Medical Toxicology Spring Course 2008 San Diego™

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The only true beachfront hotel in San Diego, The Del was built in 1888 and is designated a National Historic Landmark. Offering contemporary luxury in an enchanting Victorian atmosphere, it is no wonder that The Del is rated one of the top ten resorts in the world. Local attractions include:

- SeaWorld
- World-famous San Diego Zoo®
- Balboa Park
- Birch Aquarium at Scripps

CALL FOR APPLICATIONS FOR RESEARCH AWARDS

2007 Jazz Pharmaceuticals Award

ACMT is pleased to announce that applications are now being accepted for the 2007 Jazz Pharmaceuticals Award for antidotal research.

This research award provides $7,500 to support new in vitro, animal, or human research in the area of antidotal therapy. This award is open to all current members of ACMT, and toxicology fellows-in-training are encouraged to apply.

ACMT/McNeil Products Fellows-in-Training Award

ACMT is pleased to announce a call for applications for the new ACMT/McNeil Products Fellows-in-Training Award for research involving acetaminophen.

The purpose of this award is to support medical toxicology fellows who are interested in conducting research on acetaminophen including in vitro, animal or human studies on pharmacology, toxicology, outcomes research, medical treatment, or epidemiology.

Detailed application guidelines for these awards and a description of past award winners can be found on the ACMT website. The deadline for applications is MAY 15, 2007.

Contact the ACMT Research Chairperson,
Christine Haller, MD at challer@amgen.com with questions.