Dale Ann Micalizzi, Founder and Director of Justin’s HOPE at The Task Force for Global Health, tells a story that illustrates the vital role played by the MH Hotline for thirty years now. Micalizzi received a very emotional “thank you” following a recent presentation on preventing medication errors.

Most of the audience consisted of pharmacists with a few doctors and nurses. Following the presentation, an anesthesiologist approached Micalizzi with tears streaming down his face.

“This was the most emotional and engaged audience that I’ve ever presented for and there didn’t seem to be a dry eye in the house,” says Micalizzi.

The anesthesiologist told a story of when he called the Malignant Hyperthermia (MH) Hotline with his first ever suspected MH case. He was told after being questioned that he could contact the HLC on-call via his personal cell number.

“He said it almost knocked him over that he was personally allowed to call the expert,” says Micalizzi. “He went on to say that a kind, knowledgeable HLC spent 45 minutes with him, and he was so grateful for that.”

Micalizzi recently shared this story with MHAUS and all HLCs. This story illustrates the continued importance of the MH Hotline, which began back in 1982.

“(Before 1982) there was no centralized number available with MH information, and those treating a once-in-a-lifetime crisis lost valuable time trying to find someone at the end of a phone line who might know something about diagnosis and treatment,” recalls Suellen Gallamore, former MHAUS Executive Director.

This was why the MHAUS’ MH Hotline was established – the 24/7 phone line in which health care professionals can get real time advice, before, during, or after an MH case. Today, it is still MHAUS’ most critical service.

In the beginning, the MH Hotline worked through the Central New York Poison Control Center (PCC) in Syracuse, NY. Most recently, calls were managed by the Denver Health and Hospital Authority in Denver, CO.

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Executive’s Corner ...

“All things are ready, if our mind be so.” – William Shakespeare, Henry V

Dianne Daugherty
MHAUS Executive Director

I hope this message finds those of you who live in the cooler climates enjoying the warmth of summer and those who live in the warmer climates finding their weather tolerable, and not oppressive. It seems no matter where we live, there are always changes occurring we must adjust to and be ready for - like the seasons.

For the past number of months the MHAUS staff has been focusing on, among other things, major enhancements to a popular product we have offered for many years now – the MH In-service. Your responses relayed to us that the In-service does what it is designed to do – keep healthcare professionals' minds ready for an unexpected, but often volatile, MH event!

The new MH In-service Video design will be a single DVD with chapters on specific MH topics. Items discussed will include: “What is MH?” – “Genetics of MH” – “What is Needed to Handle an MH Event?” – “MH Mock Drill Preparation” – “Transferring an MH Patient” – “Awake MH” and more!

To have the very latest MH training in a format that allows review of specific chapters/topics as many times as is necessary in order to feel comfortable with the content, engaging graphics and animation for more clarification, a test available on the MHAUS website that is easily accessible for an educator’s use, and PDFs of appropriate content, you need to order one and keep it available for repeated use to keep your mind and all things ready for MH! You will be glad you did.

Another change we are making involves the MH Hotline. As you know, we moved the Hotline to Denver Poison and Drug Center for MH call management in the past and it has worked well. Recently though, we had conversations with MedicAlert Foundation about how MHAUS and MedicAlert could work together to better serve our customers.

MedicAlert, founded as a nonprofit emergency medical information service in 1956, has 2.3 million members in the U.S. alone and has extensive call center experience that began with their MedicAlert ID tag program. It is endorsed by the American Society of Anesthesiologists and their database holds almost 12,000 MH patients to date. MHAUS and MedicAlert worked together in the past and we have decided it is time to renew that relationship for a strong partnership to meet the emergent needs of patients and their healthcare professional who suddenly are faced with an MH event and need help from MH experts.

As of August 1st, the MH Hotline will move to MedicAlert’s team to transfer calls for help to our MH Hotline Consultants. We will combine efforts to offer MH education and join their ID tag system. We will keep our present MHAUS MH ID tag holders advised.

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Nothing like hitting the ground running. MHAUS’ new Development Officer Lisa Iannello has been busy in her first two months. “I’ve been researching past MHAUS funders to update information to determine if they would still be a good fit to approach for resources or funding,” she says. “Meeting with MHAUS staff has provided me with valuable information about their individual areas of expertise. I am now compiling this information into written outlines to be used for the basis of future proposals.”

Besides working on development goals, she has been getting to know the staff and board members, and further educating herself on our organization and the many complexities of MH.

MHAUS Executive Director Dianne Daugherty says the organization recently determined a vital need for a Development Officer to work on a part-time basis finding creative options for monetary support and to assist MHAUS members and grass root groups share MH educational materials in their locale.

Says Daugherty, “Lisa has strength in building rapport inside and outside an organization to the benefit of all those involved, is knowledgeable about various grant possibilities that may be a solid fit with our MH education and preparedness mission, and is very enthusiastic about new untapped resource possibilities.”

Daugherty adds, “Lisa will work closely with staff and me to evaluate, quantify, and apply quality controls to develop action plans for improvement, where possible. We welcome her many strengths and fresh perspective with open arms.”

Lisa has a background in non-profit management and grant development. Her past professional experiences has been involved in building long-term partnerships between non-profits and funders from corporate, foundation, and government sectors.

In the past five years, she has raised $3.5 million in her positions as the Senior Development Officer with the New York State Historical Association and The Farmers Museum and as the Executive Director of the Colorscape Chenango Arts Festival.

“My highest priority is making people connections for MHAUS in support of the mission. I look forward to speaking to many of our supporters and discussing their ideas for MHAUS,” says Iannello.

Contact Lisa via her MHAUS email: lisa@mhaus.org.

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MH Conference Scheduled For September 22nd In Milwaukee, Wisconsin

MHAUS in conjunction with Froedtert & the Medical College of Wisconsin Department of Anesthesiology will present another one-day conference at Froedtert & the Medical College of Wisconsin located in Milwaukee, Wisconsin. The conference will take place on September 22, 2012.

Program:
- What Patients and Their Families Need to Know About MH
- What’s New and What’s Next With Malignant Hyperthermia
- Update on Genetic Counseling
- Genetic Counseling for Families with Malignant Hyperthermia
- Questions and Answers

For more information or questions, contact: Fay at MHAUS 1-800-986-4287 or email fay@mhaus.org
Continued from front page

but in August the Hotline will be managed by MedicAlert, which for many years in the past served as the intermediary for the Hotline.

Regardless the agency that manages the Hotline callers are given a choice to reach an MH Hotline consultant, who is an MH expert, if there is an emergency such as an MH episode underway. The RNs can handle non-emergency questions about MH, like how to mix dantrolene or how long to keep a post-op MH patient.

In 1982, the Board of MHAUS authorized the creation of a Hotline to assist medical professionals in dealing with the malignant hyperthermia syndrome. The mission of the Hotline is to provide expert advice on the diagnosis and management of MH and MH like syndromes.

The goal is to reduce morbidity and mortality from MH and related syndromes by provision of the most up-to-date information and guidance to medical professionals.

Malignant Hyperthermia may be encountered unexpectedly in the perioperative period. The successful treatment of this uncommon disorder requires rapid, expert advice and guidance. By making such advice easily available, the morbidity and mortality from MH and related syndromes will be significantly reduced.

“MHAUS and the MH Hotline have, undoubtedly, saved hundreds, if not thousands, of lives,” says Gallamore.

As the MH Hotline celebrates its 30th Anniversary, all of us at MHAUS want to take this opportunity to thank all the Hotline Consultants who have volunteered their time in the past and to all the current Hotline Consultants. Thank you for your dedication and commitment.

In the U.S. and Canada, the MH Hotline is 1-800-MH-HYPER (1-800-644-9737)
Outside the U.S., call 1-303-389-1647

Did you know?

MHAUS offers a lifesaving hotline, free-of-charge, for any healthcare professional who unexpectedly comes face-to-face with a malignant hyperthermia emergency and quickly needs help. The cost per call to MHAUS is $35.00, and includes the contracted service to transfer your call to a consultant, but this cost does not include the costs associated with the MH Hotline Coordinator, who assures there are consultants ready every day on a 24-hour basis for you. Dedicated MH Hotline Consultants, all well-known MH Experts, freely volunteer their time to help their fellow healthcare professionals through an intense situation.

Consider making at least a $35.00 donation (to cover a single call) specifically to help us maintain this lifesaving tool provided by MHAUS to all healthcare professionals.

Enclosed is my tax-deductible contribution of $______________ in support of the lifesaving MH Hotline.

Please make checks payable to: MHAUS and send to PO Box 1069, Sherburne, NY 13460.

☐ Visa ☐ MasterCard ☐ Discover ☐ American Express

Name on card:______________________________________________________________________

Credit Card Number:_________________________________________ Expiration Date____________

Signature:__________________________________________________________________________
MH Claims Life Of New York Teen

MHAUS has learned of another MH death. An 18-year-old, apparently healthy, Hispanic male entered a New York hospital for repair of an ankle fracture. Approximately 45-minutes into the procedure the patient began exhibiting malignant hyperthermia (MH) symptoms. Despite three rounds of treatment with dantrolene (all 36 vials were used) and the valiant efforts of the medical staff, the patient died about two hours after the initial diagnosis of MH.

Another tragic MH death further illustrates the importance of continuing to learn and educate ourselves to better diagnose and treat MH. Our hearts go out to the family and friends of the victim as well as the medical staff.

The Lila & Jerry Lewis Memorial Fund

There are many special people who take the time each year to remember their loved ones in a way that helps MHAUS. The people below have made gifts during FY 11-12 (October 2011 - September 2012) in memory of Lila and Jerry Lewis. We are most grateful for their support and special tribute gifts.

Life Benefactors
Dorothy Glassman
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Marilyn Lewis Glassman
Dr. Joseph Sugerman
Bob & Dianne Winters
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Please see Full Prescribing Information by visiting http://www.jhppharma.com/products/dantrium-iv.html

SAVE TIME...WHEN TIME MATTERS MOST!
By Henry Rosenberg, M.D.
MHAUS President

Succinylcholine (also called Anectine) is a drug that has been in use for over half a century by anesthesia providers, emergency medicine physicians, critical care physicians and others when they wish to produce paralysis that is rapid in onset but lasts for only a few minutes.

The most common reason for producing such paralysis is to intubate (place a breathing tube) in a patient’s trachea in order to control ventilation of the lungs. In many cases intubation is done for non-emergent reasons, for example routine surgery, but at other times the drug is administered to gain control of ventilation in an emergency. An example of such an emergency is a patient who is in acute distress from shock or from trauma in order to ensure that the patient is receiving an adequate concentration of oxygen and carbon dioxide is being effectively eliminated from the body. This scenario may occur in an emergency room, or a critical care unit.

In another scenario, a patient receiving sedative medication as part of a procedure such as a colonoscopy suddenly stops breathing and begins to show signs of hypoxia (low oxygen). The anesthesiologist or nurse anesthetist must then immediately gain control of the airway most often by intubating the trachea. Although there are other drugs that produce paralysis rapidly, succinylcholine is usually favored because its action is rapid and predictable, and the effect wears off spontaneously in three to four minutes.* The alternative paralyzing drugs generally last for 20 minutes or more, although there are ways to hasten the reversal of the paralysis to a limited extent.

**Succinylcholine Side Effects And Complications**

Sounds like succinylcholine is a great drug and in many ways it is. However, there are a variety of mild to severe side effects associated with succinylcholine. For example, some people experience annoying muscle pain lasting several days, and other experience heart rhythm changes that may be transient or in certain circumstances life-threatening.

As many of you who are interested in MH know already, succinylcholine is also a trigger of MH in the susceptible patient. Succinylcholine, because it produces paralysis, is rarely given by itself. Most often it is preceded by an intravenous anesthetic agent such as propofol or thiopental to render the patient unconscious and is then followed by administration of one of the anesthetic gases for maintenance of anesthesia. For children the usual procedure is to anesthetize the child with a gas anesthetic, thereby avoiding placement of an intravenous line while the child is awake, followed by other agents to facilitate placing the endotracheal tube.

After MH was described in the 1960s, it was soon noted that succinylcholine seemed to accelerate the onset and severity of MH. Cases of MH were reported regularly with gas anesthetics with and without succinylcholine. In the animal model for MH, namely certain breeds of swine, succinylcholine alone in the presence of sedatives was clearly demonstrated to precipitate MH.

However, there are only a few cases of MH apparently precipitated by succinylcholine in the absence of the gas anesthetic agents reported in the medical literature even though probably one in 3,000 patients carry the genetic mutation that is associated with MH susceptibility. Perhaps that is because everyone in anesthesia already knows that succinylcholine is a trigger for MH.

There is another complication of succinylcholine also. In a small but significant number of patients, succinylcholine will produce jaw muscle rigidity rather than relaxation, making mouth opening to insert the endotracheal tube almost impossible. The rigidity lasts several minutes and, when followed by one of the MH trigger agents, will often result in either outright MH and/or muscle breakdown manifest as brown or cola-colored urine and the chance of renal damage.

**Background**

All of this is background to the controversy I wish to describe. Because our MH experts believe that there is enough evidence that succinylcholine...
Continued from page 6

succinylcholine is an MH trigger, dantrolene must be immediately available wherever succinylcholine may be used. In many outpatient settings and offices where superficial procedures such as endoscopy or oral surgery are performed, gas anesthetics that trigger MH are not used, but (and this is a big one) succinylcholine is available for emergency management of a compromised airway. Because there are only a few cases of MH precipitated by succinylcholine that have been reported in the literature and because a full supply of dantrolene costs approximately $2500 with a three year shelf life, some have questioned the requirement that dantrolene be present in those settings where succinylcholine is reserved for emergencies only.

I have been told that some anesthesia providers, in order to avoid the requirement that dantrolene be present if succinylcholine may be used, have chosen not to stock succinylcholine. Without succinylcholine there are concerns that patients may be harmed because it may not be possible to control the airway and low oxygen levels may lead to brain and heart damage. In fact, loss of control of the airway is one of the more common reasons for patient injury.

So, the issue comes down to a rare event (MH) that is fatal 80% of the time without dantrolene, versus the cost of the drug (about $850/year) that may never be used. Although it is true that succinylcholine is an excellent medication to control the airway and is the preferred drug by anesthesia providers and critical care physicians, there are alternative medications and devices to secure the airway.

Because we are dealing with events that are either very uncommon, but with well known complications, they are not reported in the medical literature, so it is hard to do a cost effectiveness analysis. With the advent of electronic medical records and with more aggressive tracking of quality data including adverse events, it might be possible to accumulate sufficient data to make a determination as to how often dantrolene is used to rescue a patient who develops MH when triggered by succinylcholine in the absence of gas anesthetics.

But for now, the MH experts associated with MHAUS feel that because MH is almost uniformly fatal without dantrolene, a full supply of dantrolene should be immediately available when MH trigger agents, including succinylcholine, are used or when there is even a possibility that succinylcholine will be used. There is definitely a need for a large multicenter study on the issue of the cost effectiveness of dantrolene in outpatient surgery centers. Up to this point, the accrediting agencies agree with the MH experts.

* However, in about one in 2500 patients succinylcholine will produce paralysis for an hour or more. This is because some patients lack or have an aberrant enzyme the degrades succinylcholine.

Global Rare Diseases Patient Registry and Data Repository

Our NAMHR of MHAUS is among the organizations with a registry that was selected to participate in the Global Rare Diseases Patient Registry and Data Repository (GRDR) pilot program. The Office of Rare Diseases Research (ORDR), National Center for Advancing Translational Sciences (NCATS), NIH in collaboration with PatientCrossroads, Children Hospital of Philadelphia and WebMD, launched the pilot program to establish GRDR.

The goal is to create a resource of aggregated de-identified patient information from rare disease patient registries to facilitate clinical trials, translational research, comparative effectiveness research, and analyses of data across many disorders and ultimately drug developments and therapeutics for the millions of rare disease patients.

The long term goals of the GRDR is develop a sustainable resource with governance structures and an organizational architecture guided by open-science principles; and provide a sustainable resource funded by private-public partnerships.

ORDR has selected 34 organizations to participate in the GRDR pilot program. Nineteen organizations have patient registries and 15 organizations do not have registries. Information provided by patient organizations, in response to an RFI, was evaluated according to selection criteria and scored by a review committee. Organizations were selected based on their scores and an attempt to have representation across many rare diseases and organization size.

For additional information please contact Dr. Yaffa Rubinstein at Yaffa.Rubinstein@nih.gov (301-402-4338).
MHAUS Presents at World Congress of Anesthesia Meeting

By Henry Rosenberg, M.D.
MHAUS President

The World Congress of Anesthesia is the meeting of the World Federation of Societies of Anesthesiologists (www.anaesthesiologists.org), an organization that represents scores of anesthesia societies around the world. In March of this year the meeting was held in Buenos Aires, Argentina.

I was invited to put together a four-hour segment of the meeting related to MH. With the able assistance of Dr. Sheila Muldoon, Dr. Kumar Belani, Dr. Jerry Parness, and Dr. Tae Kim, all from the US, and Dr. Robyn Gillies from Australia, we covered topics related to the clinical presentations of MH, pathophysiology of MH, genetic testing for MH, treatment and management of MH, management of MH in the outpatient setting as well as anesthesia machine preparation for the MH susceptible.

Even though the session took place on the last day of the meeting, the room was filled. The attendees asked good questions and were very complimentary of the presentations. It was a great event and I believe we provided important information concerning MH for anesthesiologists who ordinarily do not have the opportunity to hear in depth presentations on the subject.

We learned that there are still many countries that do not have dantrolene and, as a result, people still die from MH in many parts of the world. In particular, Dr. Belani has learned of deaths and near misses from MH in India, where most hospitals do not have dantrolene. He has been in active communication with anesthesiologists in India who are now interested in obtaining the drug and educating anesthesiologists about the management of the disorder.

India has a population of over 1 billion people! In addition, highly trained physicians who gained their experience in the US, UK and other European countries have established several hospitals in India. A brisk “medical tourism” business has developed in India. There is no doubt that there are many cases of MH that are not reported regularly.

India is not an exception. Many other countries also lack adequate supplies of dantrolene. Additionally, education on recognition and management of MH patients is also limited. MHAUS will do whatever we can to assist health care providers in any country to recognize, treat and prevent MH.

At the end of the meeting, I met with Ms. Laura Vitcop from Buenos Aires who has a history of MH in her family and is interested in providing more in depth education about MH to patients and families who are affected by MH in Argentina. She and a lawyer from Buenos Aires, Alfredo Mayo, along with others have organized a patient advocacy umbrella group, APAC (www.apac.org.ar), which stands for the Civil Association Help for Critical Patients.

The organization provides information for patients with liver diseases, rheumatoid arthritis, Crohn’s disease and MH. It is the intent of the organizers to develop an MH organization in Argentina patterned after MHAUS. They have secured support from AstraZeneca and are seeking additional funding to develop the MH component of the organization.

I offered that MHAUS would be pleased to provide guidance, copies of our educational material and assistance in whatever way we can.

I look forward to continued communication with Ms. Vitcop and the organization. I will keep you informed of our progress, or you may follow the conversations on the MHAUS Facebook site.

Yet another important event took place shortly after the World Congress Meeting. The Society for Inherited Metabolic Disorders (www.simd.org) is a society of scientists and clinicians that focuses on inherited disorders of metabolism. Many of them are included in mandatory screening in the newborn period by blood tests.

Generally the disorders are genetically determined enzyme deficiencies that require special diets, medications, or avoidance of triggers to reduce the occurrence of significant problems that may have implications for growth and development and malfunction of a variety of important organs. These include amino acidopathies (e.g., phenylketonuria.) Other examples of inborn errors of metabolism include lysosomal storage diseases, organic aciopathies, and metabolic muscle diseases, to name a few.

Through communication and collaboration with Dr. Georgetine Vladutiu at the NY State University at Buffalo, MHAUS was invited to provide a lecture at the Society’s annual meeting on April 1, 2012. Dr. Cynthia Wong graciously accepted the offer to present an overview of MH for the group. This was the first time MH was discussed in a formal way with members of the Society.

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The Malignant Hyperthermia Association of the United States (MHAUS) is pleased to announce the continuation of an award in the amount $1,500 to the author of a manuscript related to malignant hyperthermia (MH).

MH is an inherited disorder of muscle, which is “triggered” by commonly used anesthetic agents and may lead to death or disability. Early diagnosis and prompt treatment is the key to reducing morbidity and mortality related to MH. MH may occur at any time during an anesthetic whether in a hospital, ambulatory surgery center or an office-based setting. A large variety of programs have been developed by the scientific panel at MHAUS in order to increase awareness of the syndrome and its manifestations. These include procedure manuals for recognizing and treating MH applicable to the hospital, office-based, or ambulatory surgery center, and a variety of publications.

In order to promote awareness of MH and its various manifestations and to encourage continued study of the syndrome, Mr. George Massik, a founding member of MHAUS, has graciously continued supporting a writers’ award. The Daniel Massik Fund at The Foundation for Jewish Philanthropies in Buffalo, NY was established by Mr. Massik in memory of his son who died from MH. This Award will provide a stipend of $1,500 to an anesthesia resident/fellow or an anesthesiologist who is within five years of ending his/her training.

The Award will be given to the primary author of the best manuscript concerning, malignant hyperthermia. The format may be a case report, literature review or original study.

- The document should address a significant issue related to the problem of malignant hyperthermia.
- Those participating must currently be a resident fellow in anesthesiology or an anesthesiologist who is within five years of ending his/her training.
- The paper must be a minimum of 3 double-spaced typed pages and a maximum of 10 pages. Author’s CV should be included.
- The paper must not be in any stage of publication.
- Deadline for receipt of the manuscript in the MHAUS office is August 3, 2012.

The winner will be notified by August 31, 2012 to allow for coordination of travel plans.

For further information regarding the application process for this award, please contact the Malignant Hyperthermia Association of the United States (MHAUS), attention Gloria Artist, either via regular mail at P. O. Box 1069, Sherburne, NY 13460, via fax at 607-674-7910 or email at gloria@mhaus.org.
Glossary of MH-related Terms

Contracture test – This is the test that is used to determine a patient’s susceptibility to MH. Muscle is taken from the thigh (about the size of a fingernail) and cut into strips of about one half inch long and mounted in a chamber and made to contract by electrical stimulation. When the anesthetic halothane is introduced in the chamber the muscle not only contracts but develops a contracture (a sustained contraction). This contracture is typical for MH susceptibles. The drug caffeine may also lead to an abnormal contracture, as may a variety of other anesthetics. Although the test is highly accurate, the inconvenience of the biopsy and the requirement for special technical expertise limits its use.

Creatine kinase – An enzyme found in cells, especially muscle cells. Normal levels are up to about 200 iu/L. In cases of muscle membrane breakdown, the enzyme leaks out of the cell. This may occur from any type of muscle trauma, including malignant hyperthermia. After surgery CK levels may normally rise to 1,000 to 2,000 iu/L. When there is severe muscle damage the level may rise to 10,000 or more. At these levels, the muscle pigment, myoglobin, can be expected to be elevated in the blood as a result of muscle damage. In other words, elevated CK is a marker for leakage of myoglobin from the cell. Elevated levels of myoglobin can lead to temporary or permanent kidney damage. After an episode of MH the CK levels may be mildly or dramatically elevated depending in part on the promptness of treatment. In general, peak levels of CK occur about 24 hours after injury and may be elevated for days. Hence, in suspected cases of MH it is important to determine CK levels. In case of heart muscle damage, CK may be elevated, but this represents a slightly different form of CK. CK from regular muscle is termed CK MM, from heart muscle, CK-MB.

Dexmedetomidine – A selective agonist used as the hydrochloride salt as a sedative for patients in intensive care units.

General anesthetics – Compounds that produce loss of consciousness, pain relief and amnesia. General anesthetics are either gaseous agents such as halothane, sevoflurane, and desflurane (all triggers of MH). Nitrous oxide is often used as an adjunct to these agents. It is not a complete anesthetic, and also not an MH trigger. There are a variety of agents that are given intravenously that also may produce anesthesia such as the barbiturates (e.g. thiopental), propofol, and ketamine. None are MH triggers. A variety of other agents are often used during anesthesia such as the narcotics, benzodiazepines (e.g. Valium and Versed) which produce pain relief and sedation.

Hypercapnia – Excessive carbon dioxide in the blood.

Iatrogenic – Induced inadvertently by a physician or surgeon or by medical treatment or diagnostic procedures.

Local anesthetics – These compounds block transmission of nerve impulses involved in pain sensation. These are the “caïne” drugs - novocaine, bupivacaine, lidocaine, mepivacaine. None trigger MH and are safe to use in the MH susceptibles. These drugs are commonly used by dentists, anesthesiologists, pain physicians and surgeons among others.

LMA – laryngeal mask airway – This device was introduced into practice only a few years ago. The device is often used when tracheal intubation is not needed, but control of the airway is desirable. It is a tube that is so constructed that it does not enter the tracheal but forms a seal around the entrance to the trachea (the glottis). Insertion of the LMA is not as traumatic as insertion of an endotracheal tube and does not require deep levels of anesthesia or muscle paralysis.

Molecular genetics – Genetics is the study of inheritance. Molecular genetics is the study of how changes in DNA structure, such as mutations, affect the function of the genes. Molecular, because the study of DNA entails understanding of molecular or submicroscopic changes.

Muscle relaxants – These are drugs that are more properly termed paralyzing agents. There are two classes of muscle relaxants, non-depolarizing and depolarizing agents based on their mode of action. Typical non-depolarizing agents are vecuronium, pancuronium and rocuronium. None are triggers of MH. However, the one depolarizing agent, succinylcholine is a potent trigger of MH. These agents are administered intravenously and are therefore given by anesthesiologists, ER physicians and intensive care physicians.

Neuroleptic malignant syndrome – (NMS) This is a constellation of signs and symptoms marked by high fever, muscle breakdown, acidoisis, muscle rigidity and other signs similar to MH. However, the syndrome is induced by drugs used in the treatment of major psychiatric disorders. These drugs include thorazine, haloperidol (Haldol), olanzapine and other potent antipsychotic agents. The syndrome is not inherited and does not predispose to MH. That is, there is no greater frequency of MH in those experiencing NMS or vice versa. Interestingly, dantrolene is effective in treating NMS. There is no diagnostic test specific for NMS susceptibility.

Opiate – A medication or illegal drug that is either derived from the opium poppy, or that mimics the effect of an opiate.

Oxygen saturation – The main purpose of the blood is to carry Oxygen to the various parts of the body along with nutrients and to remove carbon dioxide and other byproducts of metabolism. The amount of Oxygen in a given quantity of blood is not easy to measure, however the saturation level of the hemoglobin in the blood that carries the Oxygen can easily be measured with an external probe attached to a pulse oximeter. Normal Oxygen saturation is above 98%. At levels below about 90% insufficient oxygen is delivered to the blood, which may lead to many problems.

Pseudocholinesterase – An enzyme that degrades the drug succinylcholine. In about one in 2500 patients this enzyme is deficient. Therefore succinylcholine which usually causes muscle paralysis for about 5 minutes leads to paralysis that may last several hours. It is not life-threatening so long as the patient is connected to a ventilator. Susceptibility to this problem is not related to MH.

Reversal agents – There are several drugs that can antagonize or “reverse” the effects of other drugs. The drug, Narcan, or naloxone reversed the effect of narcotics (including the angeslisa from these agents). Some drugs, neostigmine and pyridostigmine and edrophonium, reverse the effects of the non-depolarizing muscle paralyzing drugs.

Rhabdomyolysis – When muscle is damaged and cells are disrupted, the intracellular constituents begin to leak into the blood stream. This includes creatine kinase, myoglobin and the electrolyte potassium. This is termed rhabdomyolysis. This breakdown may be manifested by muscle pain and in extreme cases dark or cola colored urine.

Subcutaneous emphysema – Gases that are introduced into a body cavity, for example as part of laparoscopic surgery may, in some cases migrate from the body cavity to the tissues under the skin. This is called subcutaneous emphysema. It is recognized because a cracking sensation is felt on touching the skin. The gases eventually are absorbed into the blood stream.

Tachycardia – A rapid heart rate, usually defined as greater than 100 beats per minute.

Tracheal intubation and mainstem intubation – In order to control gas exchange during anesthesia a plastic tube is often placed in the trachea (windpipe). This is done usually when the patient is first anesthetized. One end of the tube is connected to a ventilator or respirator to control ventilation. Since the windpipe bifurcates just below the neck line, if the tube is inserted too deeply, the end may go into one of the branches of the trachea (usually the right side) and therefore only one lung will be ventilated. This may lead to a decrease in oxygen in the blood, and rarely an increase in carbon dioxide as well.

Trendelenberg
Steep head down position.


MHAUS Open House, August 16

Finally ready, we are planning an MHAUS Open House at our new location in Sherburne, NY. If you happen to be visiting in Upstate New York on Thursday, August 16th, please join us and tour our home at 1 North Main Street. We are inviting neighbors from the Village of Sherburne, Chenango County and nearby counties, members of our Board of Directors, and, of course, all staff will be here to chat about their particular area of expertise.

You may meet someone who has spoken to you on the phone and, after joining us, you will be able to put a face with the name. MHAUS has put down roots in the beautiful rolling foothills of the Adirondacks and we welcome you!

Have a wonderful summer season and watch the temperature changes!

Have you visited us lately? Log on to www.mhaus.org to get the latest information on MH, order materials, post a message to the bulletin board or learn about the “Hotline Case of the Month.”

Yes! I want to support MHAUS in its campaign to prevent MH tragedies through better understanding, information and awareness.

A contribution of: $35 $50 $100 $250 $500 $1000 (President’s Ambassador)

or $ ____________, will help MHAUS serve the entire MH community.

Please print clearly:

Name: ______________________________________________________________________

Address: _____________________________________________________________________

City: ____________________ State: _____________ Zip: ____________

Phone: __________________________ E-mail: ____________________

❑ I am MH-Susceptible          ❑ I am a Medical Professional

Please charge my   ❑ Visa   ❑ Mastercard   ❑ Discover   ❑ American Express

Name on card: ___________________________________________________

Credit Card Number: _______________________________________________

Expiration: ___________________________
THANKS! MHAUS is grateful for the financial support of the following State Societies of Anesthesiology: Alabama, Maryland, Michigan, and Pennsylvania. Call the MHAUS office to ask how your group can join their ranks!

Hotline Consultants Honored
MHAUS is proud to announce that two of our Hotline Consultants - Dr. Andrew Herlich and Dr. Jerome Parness - were recognized as the “Best Doctors” in the May issue of Pittsburgh Magazine. Dr. Herlich is on staff at UPMC Mercy, Department of Anesthesiology, and Dr. Parness is on staff at Children’s Hospital of Pittsburgh of UPMC, Department of Anesthesiology. Both have served as Hotline Consultants for many years. Congratulations to Drs. Herlich and Parness for receiving this high honor.

Revised MH Crisis Poster & Pocket Card Now Available
MHAUS has updated our very popular Crisis Poster and Pocket Card for emergency MH therapy. The poster include updates to: Diagnosis, Acute Phase Treatment steps numbers two, four, and six; and Post Acute Phase letter b. Post this information anywhere MH may occur. Contact MHAUS at 800-986-4287 or visit www.mhaus.org to purchase your copy.

Look For MHAUS At These Upcoming Meetings
AANA – August, 4-8 - San Francisco: ASA – October, 13-17 - Washington, DC.

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In-Service Kit NOW $20
Purchase the current version at clearance price of $20 (plus shipping) and sign up to receive notification of the new version upon availability.