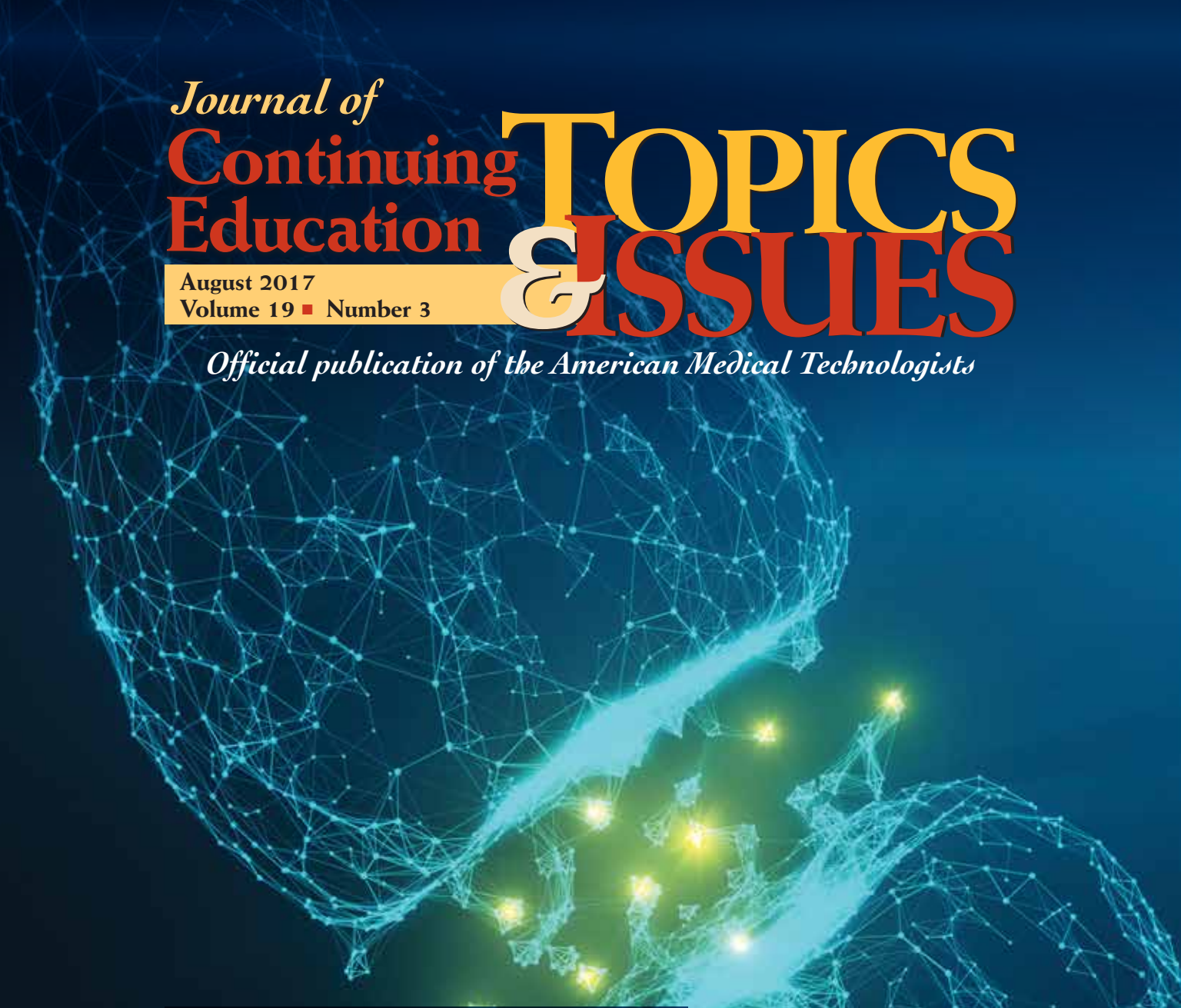
Journal of
Continuing Education TOPICS & ISSUES
August 2017
Volume 19 ■ Number 3
Official publication of the American Medical Technologists



AMT
American Medical Technologists
Certifying Excellence in Allied Health

Inside This Issue

Journal of Continuing Education Topics & Issues
August 2017
Volume 19 ■ Number 3

Contents

Associate Editor
Diane Powell

Business Office
American Medical Technologists
10700 W. Higgins Rd., Suite 150
Rosemont, IL 60018
847-823-5169
e-mail address:
mail@americanmedtech.org
Web Site:
http://www.americanmedtech.org

On the cover: **Blue Glowing Synapse**

This digitally-colorized 3D rendering is of an artificial neuron in concept of artificial intelligence showing synaptic transmission lines of pulses. Abstract polygonal space low poly with connecting dots and lines.

~Brain Wave, *Computer Network*, DNA, Particle, Russia

Credit: istockphotos.com

Journal of Continuing Education Topics & Issues (ISSN 1522-8606) is published in January, April, and August under the sponsorship of the American Medical Technologists, 10700 W. Higgins Rd., Suite 150, Rosemont, Illinois 60018. Subscriptions include three issues of Journal of CE Topics & Issues and three issues of AMT Events: $50.00/year + $10 postage for foreign countries. Members may not deduct subscription price from dues.
Postmaster: Please send change of address to AMT, 10700 W. Higgins Rd., Suite 150, Rosemont, Illinois 60018.
Moving? Be sure AMT publications move with you. Send your new address and old mailing label from an AMT publication to AMT six weeks before you move.

Article 442
2 Clock Hours

Global Health Demographic Surveillance Systems: Tracking of Sickle Cell Prevention and Monitoring

By: Kimberly Scott

Abstract

This paper explores the current status of information systems used to track and monitor Sickle Cell Anemia (SCA) in the United States and Africa (Cameroon, Uganda, Sub-Saharan). This paper is based on the literature that exists, observing the process and procedures that are established. The paper provides empirical evidence of the significance of management information systems and how they contribute to the tracking and monitoring of blood conditions on the two continents. The paper concludes by identifying the need for a comprehensive management information system, and practical framework that can track and monitor SCA on a global level. The framework is the component required to organize and maintain the data for SCA improvement effort.

Global Health Demographic Surveillance Systems

Sickle cell genes are present in more than two million Americans, 80,000 to 100,000 of whom manifest any of the conditions we now label as sickle cell disease (Savitt, 2010). With 2,000 affected children born each year, this disease that weakens the body's defense system leaves one to wonder what protocols are established and what is being tracked to handle the most common genetic disorder in the United States and Africa (Kenyon, Kavanagh, Fiechtner, Textor, & Wang, 2012). The significance in understanding the disease is a priority given the statistics outlined in this paper. Furthermore, the variability in care provided suggests that additional improvements in morbidity and mortality can be realized from reliable delivery of evidence-based interventions.

Management Information Systems (MIS) provide the healthcare industry with a method to adequately address the morbidity and mortality rate of sickle cell anemia. Evidence-based research is vital to evidence-based healthcare. Evidence-base allows healthcare practitioners to make adept decisions using relevant, valid information to treat patients experiencing the same condition across the board. Given the ability to not only track and monitor patients and the disease, but to collect, analyze, and interpret various data on a global level also presents the opportunity of growing a scientific basis for intervention needed to improve the sickle cell population.

The objective of this article is to evaluate global health demographic surveillance systems that can be used to track and monitor sickle cell disease (SCD). A specific focus is placed on the different types of management information systems that have the capability of systematically collecting, analyzing, and interpreting data. Lastly, the purpose is to identify and explore various frameworks for organizing information necessary for healthy communities.

Review of Literature

The review of literature will contain a variety of case studies, articles, and the current state of theory and evidence of the topic. To begin, the first study provides evidence that the lack of knowledge and comprehension of sickle cell anemia, places limits on properly caring for children with the disease. Instead, parents in Africa have accepted pregnancy termination rather than care due to unemployment and the lack of knowledge about other options that exist. Little is known about parents' knowledge of, and attitudes towards, preventative genetics in sub-Saharan Africa. The study conducted by Wonkam, Njamnshi, Mbanya, Ngogang, Zameyo, and Angwafo, (2011), examined parents' attitudes of children with sickle cell anemia (SCA) focusing on

Kimberly Scott, MBA, AHI, RMA, Instructor/Medical Assisting, Health Service Administration, and Business, Keiser University, West Palm Beach, FL, and eCampus online, Ft. Lauderdale, FL

Article 443
1.5 Clock Hours

Retinal Detachment: A Patient's Perspective

By George H. Roberts

George H. Roberts, EdD, MLS(ASCP) CM, MT(AMT) Dean School of Health Sciences, Natural Sciences, and Math, Retired Adjunct Anatomy and Physiology Instructor Louisiana Delta Community College West Monroe, LA

Case Study

A 71-year-old white male began to observe materials floating around in his left eye in early January and called to make an appointment with his ophthalmologist. The materials noted varied from time to time but appeared as discrete black balls of varying sizes, spider web-like materials, and irregularly-shaped materials that were not discrete. On the day of the appointment with the ophthalmologist, his medical assistant began to take a patient history. Immediately upon the mention of these materials floating around in the eye, the patient was informed that the ophthalmologist would not see the patient and would be referring him to a retinologist. Luckily, the retinologist was able to work the patient in that same morning. Upon completion of the evaluation, the retinologist told the patient that these materials were termed "floaters" and were insignificant, required no treatment, and would resolve over time by either sinking to the bottom of the vitreous humor, or the brain would learn to ignore them. The patient continued to observe the "floaters" which did vary in number and size over the ensuing four months. However, the retinologist stated that the patient should return for a follow-up visit at six months or to return earlier should significant changes be noticed.

Approximately four months later, this patient noticed that "floaters" began to appear in the right eye. A return visit was scheduled and upon examination, the patient was told the same information as stated above, except for the fact that there was now a posterior vitreous hemorrhage (PVH) in the left eye. Follow-up visits were scheduled and the hemorrhage repaired itself without intervention.

During the last week of August of that same year, the patient scheduled an exam with the ophthalmologist to determine the need for new glasses. The examination was completed and new glasses were ordered due to a change in vision. The following day, the patient began to notice a "shower" of "floaters" in the right eye though no action was taken by the patient. The following day, the patient noticed that the medial corner of the eye near the nose developed a blackened area. This blackened area began to slowly extend to cover more of the eye. On Monday morning, a visit to the retinologist was scheduled for the following Thursday afternoon. The retinologist examined both eyes and stated that you have a retinal detachment with multiple tears in the right eye that will require surgery to repair. The patient then asked when the surgery would be performed; the retinologist stated tomorrow morning at 7:00. If we do not do this now, you will be blind. The retinologist stated that he would place a scleral buckle in the eye to repair the detachment, that the patient would have to lie in a prone position (stomach) for a minimum of three days, and could only get up to go to the bathroom and eat. Ultimately, the retinologist used a combination of procedures to repair the damage including: 1) scleral buckling; 2) pneumatic retinopexy; and 3) laser photocoagulation.

The surgery was performed on that Friday morning, the patient returned home later that afternoon with directions to place three different drops into the eye as prescribed, that he was to remain lying on the left side rather than the stomach for three days, and return the following morning for a follow-up visit. On Saturday morning, the physician stated that everything was progressing as expected and to continue with the eye drops as prescribed and make scheduled follow-up visits and to schedule a visit if any significant changes were to

Article 444
1.5 Clock Hours

The Role of Intestinal Microbiota

By Kathryn E. Webster, Kimberly Knoblauch, Erin DeRango

Abstract

Historically, intestinal bacteria were thought to be beneficial simply by outcompeting pathogenic bacteria. Research has shown that gut bacteria interact with host systems far more than originally thought, influencing multiple systems, including the nervous system and the brain. Through production of neurotransmitter molecules, such as serotonin, gut bacteria have far-reaching effects. Recent research has investigated links to host health and effects of gut bacteria on obesity, metabolism, and immune function, as well as effects on the brain including stress responses, anxiety disorders, mood, depression, and autism. Most research has been carried out with mouse models and proving causal relationships in humans is problematic. This article seeks to describe the gut microbiome, it's relationship with the brain, effects on serotonin production, and ongoing research in this dynamic area.

Kathryn Webster, MS, MT(ASCP), Assistant Professor, Illinois State University

Kimberly Knoblauch, MLS(ASCP), Clinical Laboratory Scientist/Mycology and Mycobacteriology Laboratories, Mayo Clinic, Rochester, MN (May 2017 graduate of the Medical Lab Science program at Illinois State University)

Erin DeRango, MLS(ASCP), Medical Laboratory Technologist/Blood Bank, Northwestern Memorial Hospital, Chicago, IL ((May 2017 graduate of the Medical Lab Science program at Illinois State University)

Introduction

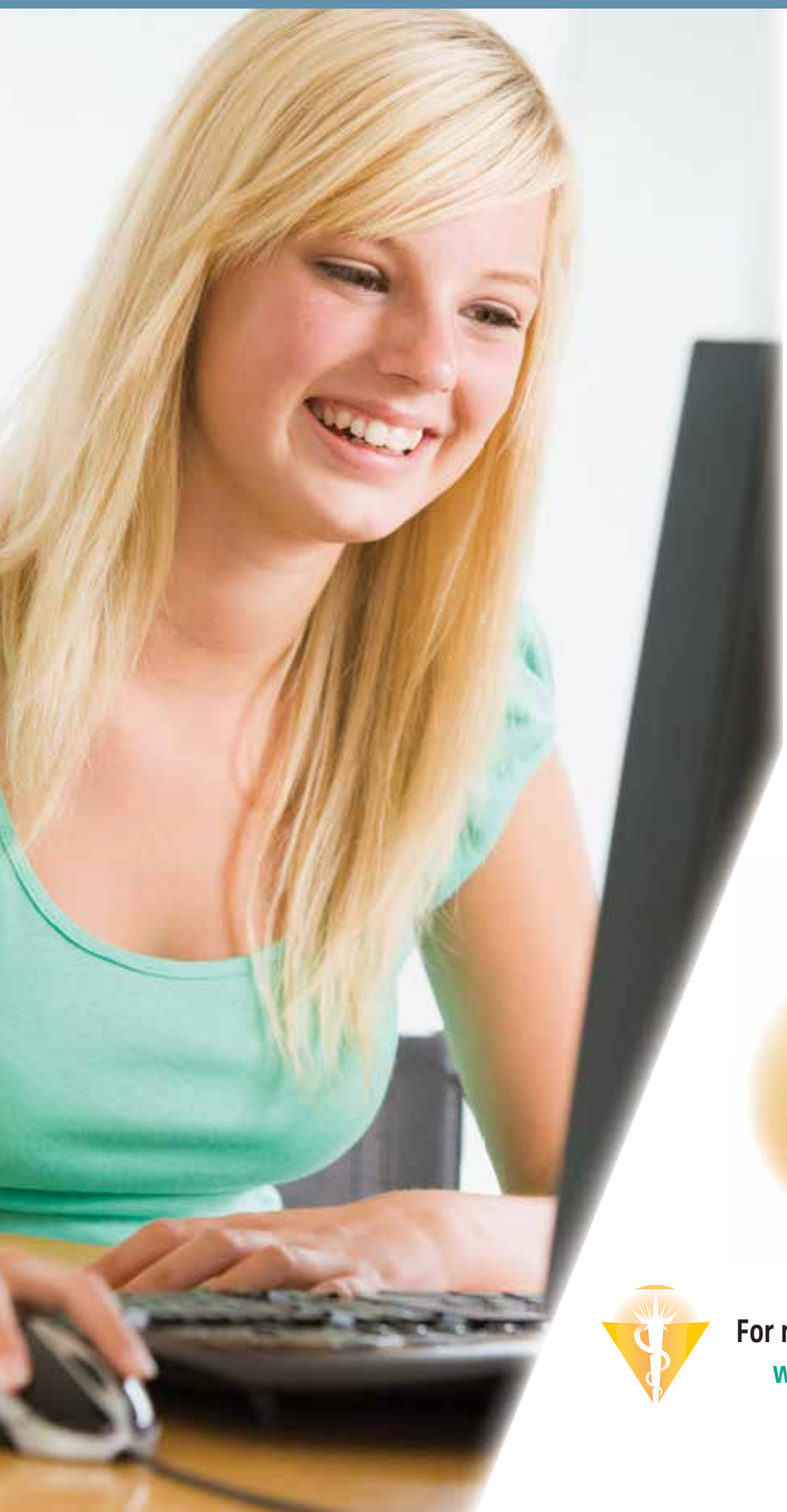
For each one human cell in the body, there are approximately 10 microbial cells. These cells colonize most of the body including the skin, mouth, genitalia, intestinal tract and urinary tract. The microbiome is partly passed from the mother at birth and partly determined by lifestyle. Bacteria are the most numerous in the intestine, where they perform actions including synthesizing vitamins and signaling the immune system (Collins, 2014, Wang, 2016). Gut microbes are estimated to constitute 2 to 6 pounds of a person's overall body weight (Borthwick, 2015). Research suggests that people with certain diseases have different types of bacteria in their intestinal tract than a healthy person does. Research also shows that healthy people tend to have a more diverse microbiome in which the wide array of bacteria are able to break down many different food sources (Collins, 2014).

The gastrointestinal (GI) system plays a role in the complex gut-based endocrine system, the enteric nervous system, and the part of the immune system associated with the intestinal system. It communicates with the brain through these systems and with the help of complex neurotransmitters. Serotonin [5-hydroxytryptamine (5-HT)] is an important neurotransmitter that is most well-known for its influences over the brain for mood, anxiety, and happiness, and is also a precursor for melatonin. However, serotonin also plays a key role in many other organ systems as well. It assists in clot formation when released by platelets by causing vasoconstriction, regulates GI motility and may even be involved with sexual function. It influences a wide variety of metabolic functions, including appetite and sleep, and plays a role in the regulation of body weight and temperature, fear conditioning, and stress response, as well as mood, memory, and cognition. It is now thought that serotonin plays a role with most, if not all, signaling systems in the brain. Therefore, any variations in serotonin levels, whether by genetic variants, disease processes, or environmental factors can be linked to psychiatric and neurological disorders (Muller, 2015, Jenkins, 2016).

Synthesis of Serotonin

Serotonin is a metabolite of tryptophan, an essential amino acid acquired from the diet. The pathway from dietary tryptophan to metabolically active serotonin is a complex one, which also interplays with numerous other biochemical pathways and is beyond the scope of this review. One such pathway can involve tryptophan in the bloodstream crossing the blood brain barrier and exerting direct effects upon the brain. However, the vast majority of tryptophan is absorbed in the gut by enteroch-

AMTrax™ Online Recording System



AMTrax is a member service designed to help you keep track of earned continuing education (CE) credit. The system:

- Provides an effective means of validating and organizing participation in CE activities
- Provides a convenient means for documenting certification-related activities for employers and licensing agencies
- Helps self-assess progress in complying with the Certification Continuation Program (CCP)

Entering your CE data online is simple! Visit www.americanmedtech.org and click on AMTrax under the CE tab. You must be logged in as a member to take advantage of this service.

For more information please visit:
www.americanmedtech.org