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The AMWA Journal expresses the interests, concerns, and expertise of members. Its purpose is to inspire, motivate, inform, and educate them. The Journal furthers dialog among all members and communicates the purposes, goals, advantages, and benefits of the American Medical Writers Association (AMWA) as a professional organization. Specifically, it functions to

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➲ Enhance theoretical knowledge as well as applied skills of medical communicators in the health sciences, government, and industry
➲ Address the membership’s professional development needs by publishing the research results of educators and trainers of communications skills and by disseminating information about relevant technologies and their applications
➲ Inform members of important medical topics, ethical issues, emerging professional trends, and career opportunities
➲ Report news about AMWA activities and the professional accomplishments of its departments, sections, chapters, and members

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Seek and Ye Shall Find—and Download

Last summer, an intern for National Public Radio (NPR) found herself suddenly at the center of a raging debate over the ethics of music sharing.

“I am an avid music listener, concertgoer, and college radio DJ,” Emily White wrote in a brief article on the NPR website. “My world is music-centric. I’ve only bought 15 CDs in my lifetime. Yet, my entire iTunes library exceeds 11,000 songs.”

From the heated reactions online, you could have sworn that this 20-year-old had invented file-sharing and single-handedly bankrupted musicians and much of the music industry. As it happens, I didn’t have that reaction. I found the article to be simply another in a never-ending procession of exhibits demonstrating how technology changes everything. And I understood how she felt.

“As I’ve grown up, I’ve come to realize the gravity of what file-sharing means to the musicians I love,” White wrote. “I can’t support them with concert tickets and T-shirts alone. But I honestly don’t think my peers and I will ever pay for albums. I do think we will pay for convenience.”

As professional medical writers, we have something in common with musicians whose livelihoods have been affected by the Internet age (some for the better—see Bieber, Justin). Our work can be copied and shared almost effortlessly, and the ease of global communication has opened us up to competitors thousands of miles away (and, to be fair, opportunities thousands of miles away). Like professional musicians, we generally would like to be paid for our services.

We also have something in common with music lovers like Emily White. Technology has provided us with a Web full of the files we want. Many of us have what sometimes seems like a limitless need for sources of information. Although a lot of what we use is free on the Web, paywalls much steeper than the iTunes song rate of $1.29 hold us back. It is not uncommon to run across article charges of $20 or $30, which can add up to some substantial sums if many papers are needed on a project.

It is likely cold comfort that some small part of such revenues may, directly or indirectly, support medical editing or writing services. (I count myself among those who benefit.) So what is a professional medical writer to do? The best answer, albeit a partial solution, is to become as savvy as possible about finding information that is free to everyone or may potentially be free to you.

With this issue of the Journal, medical librarian Michelle Kraft, author of the Krafty Librarian blog at www.kraftylibrarian.com, joins our masthead. Her inaugural contribution, for the new section called simply “Find,” offers some useful tips for tackling the problem of limited information budgets but expansive information needs. When I sought suggestions from AMWA members about topics she should address in the new section, that was the one that cropped up the most. Michelle’s article will not be the last word on the topic. I suspect she and others will return to it frequently. The topic also has come up in various AMWA discussion forums, and members have generously shared their strategies.

In one LinkedIn post, for example, Karen Estrada, MS, detailed her ideas, which included pointing out that people who have immediate family members serving active duty in the military may be eligible, with sponsorship, to access resources such as Army Knowledge Online.

“They have a good library with a good selection of databases, with access to some free full text,” wrote Estrada, the founder and owner of Military Health Matters LLC, and a former director of library services for an ophthalmology library at the University of Miami Miller School of Medicine. “I am the queen of ‘if there is a free journal/journal article,’ I will find it,” she added later.

Emily White concluded her NPR article with a dream of “one massive Spotify-like catalog of music that will sync to my phone and various home entertainment devices.”

“With this new universal database, everyone would have convenient access to everything that has ever been recorded, and performance royalties would be distributed based on play counts (hopefully with more money going back to the artist than the present model),” she wrote. “All I require is the ability to listen to what I want, when I want and how I want it. Is that too much to ask?”

And all I require is one massive catalog of medical research that synchronizes to all my devices, affordably and, of course, with reasonable compensation for medical writers and editors and others involved in its creation.

Is that too much to ask? Perhaps, but it won’t stop me from dreaming. In our waking hours, though, it never hurts to improve our sleuthing skills, seek support from AMWA colleagues, or, as Michelle Kraft suggests, consult a librarian.

References

ABSTRACT
The endocrine system is a collection of glands and organs located throughout the body. These glands and organs produce, store, and secrete chemical messengers called hormones, which maintain and control a wide range of body functions, including reproductive function, maintenance of growth and development, regulation of sodium and water balance, control of blood volume and pressure, regulation of calcium and phosphate balance, regulation of energy balance and food metabolism, and coordination of the body's responses to stress. Many disease states, including common disorders such as diabetes mellitus, can result from either oversecretion or undersecretion of hormones.

An understanding of the endocrine system is important to medical writers because of its extensive physiologic effects and its role in various disease states. In the first part of this two-part series, we discussed the anatomy of the endocrine system and described the hormones that the endocrine glands produce. We also described the different types of hormones, mechanisms of hormone action, and control of hormone levels. Part 2 builds on the information presented in Part 1 by describing the physiology of the endocrine system and briefly discussing some important diseases resulting from disorders of hormone secretion.

The endocrine system has a vital role in maintaining homeostasis and controlling a wide range of body functions.

It is a network of anatomically distinct organs (endocrine glands) that communicate with each other through chemical messengers called hormones. Each endocrine gland has specialized cell types that produce and secrete specific hormones. Hormone production and release are controlled by the nervous system and by hormonal feedback mechanisms. Through these hormones and feedback mechanisms, the endocrine system interacts with other organs and body systems, including the kidneys, the nervous system, the immune system, the reproductive system, and the digestive system, to help maintain homeostasis and control many physiologic processes.

HYPOTHALAMUS AND PITUITARY GLANDS
The hypothalamus is a portion of the brain that integrates neuronal and hormonal signals from both external sources (environmental signals such as light, heat, and cold) and internal sources (other brain regions, endocrine organs, and nonendocrine organs) and produces an appropriate neuroendocrine response. One of the most important functions of the hypothalamus is to link the nervous system to the endocrine system by controlling the production and release of hormones from the pituitary gland.

The neurosecretory cells of the hypothalamus produce both neuropeptides and releasing hormones. The neuropeptides, which include antidiuretic hormone and oxytocin, travel down the long axons of the cells and are released from the posterior pituitary gland. Antidiuretic hormone increases water reabsorption from the kidneys and thus is important in controlling plasma osmolality. Oxytocin promotes uterine contractions during labor and delivery and stimulates milk ejection in lactating women. Oxytocin is also thought to affect behavior.

The releasing hormones travel through blood vessels to the anterior pituitary, where they stimulate the release of pituitary hormones. Each releasing hormone controls the production and release of one or more pituitary hormones, and each pituitary hormone affects the function of one or more target glands or organs (Figure 1). A hypothalamic hormone, corticotropin-releasing hormone, controls the release of corticotropin from the anterior pituitary gland. In turn, corticotropin controls the release of cortisol from the adrenal gland. Gonadotropin-releasing hormone controls two pituitary hormones: follicle-stimulating hormone (FSH) and luteinizing hormone (LH). FSH and LH control the production of the reproductive hormones testosterone, estrogen, and progesterone in the testes and ovaries. Growth hormone (GH) release from the pituitary gland is stimulated by GH-releasing hormone and is inhibited by somatostatin. In turn, GH regulates growth and development, and energy metabolism. Thyrotropin-releasing hormone stimulates the release of both thyrotropin and prolactin. Thyrotropin controls thyroid hormone release from the thyroid gland, and prolactin stimulates milk production.

Disease States
Diseases caused by pituitary gland malfunction usually result from hormone-producing pituitary adenomas. Adenomas are benign tumors that have the potential to cause serious
health complications by producing large amounts of hormones in a manner that is not regulated by the usual feedback mechanisms. The most common types of pituitary adenomas are prolactinomas, GH-secreting tumors, and corticotropin-producing tumors. Prolactinomas can cause excessive milk production and reproductive dysfunction. Excess GH can cause acromegaly in adults and gigantism in children. Excess corticotropin can cause excessive cortisol production (Cushing syndrome), central obesity, hypertension, and hyperglycemia. Diseases resulting from a reduced level of pituitary hormones include diabetes insipidus (a condition in which the kidneys cannot conserve water), which is caused by a lack of antidiuretic hormone from the posterior pituitary.

**OVARIES AND TESTES**

The ovaries are the female reproductive organs. LH and FSH stimulate the production of estrogen and progesterone in the ovaries and, together, control the menstrual cycle. During the first part of the menstrual cycle (the follicular phase), FSH is responsible for the recruitment and growth of an ovarian follicle. LH acts on the granulosa cells of the follicle to stimulate the production of estrogen. Increasing levels of estrogen stimulate the release of more LH from the pituitary, resulting in a surge of LH, which is required for ovulation. During the second part of the cycle (the luteal phase), LH is responsible for the formation of the corpus luteum from the remnants of the ovulatory follicle and for the production of estrogen and progesterone from the corpus luteum. Progesterone acts on the reproductive tract to prepare it for the initiation and maintenance of pregnancy. In addition to its reproductive effects, estrogen stimulates the growth and proliferation of breast tissue, influences mood, provides protective effects for the heart, protects against bone loss, and may protect against colon cancer.

The male reproductive organs, the testes, are also regulated by LH and FSH from the pituitary gland. The main functions of the testes are testosterone production and spermatogenesis. Testosterone and its metabolites are responsible for male sexual development—including the descent of the testes from the abdominal cavity to the scrotum (which normally occurs before birth), growth and maturation of male reproductive organs, and stimulation of spermatogenesis—and for the growth of the larynx and deepening of the voice during puberty, inhibition of breast development, anabolic effects on muscle, and male-pattern baldness.

**Disease States**

Approximately 25% of female infertility cases are due to ovulation that is absent or infrequent. Hormonal causes of infertility resulting from insufficient ovulation include polycystic ovary syndrome, insufficient gonadotropin-releasing hormone, hyperprolactinemia (which affects estrogen levels), and primary ovarian insufficiency (lack of estrogen). An overactive or underactive thyroid gland, diabetes mellitus, and obesity can also affect fertility.

In boys and men, decreased testosterone production (ie, hypogonadism) can be caused by disorders of the hypothalamus or pituitary or by testicular dysfunction. Low levels of testosterone in early childhood result in short stature, lack of deepening of the voice, female pattern distribution of secondary hair, and underdeveloped muscles and genitalia with delayed or absent onset of sexual maturation. Testosterone deficiency in adults leads to an alteration in body composition associated with muscle weakness and atrophy, changes in mood and cognitive function, and regression of sexual function and spermatogenesis.

**ADRENAL GLANDS**

The paired adrenal glands have two distinct hormone-producing regions. The outer region of the gland, the cortex, produces three types of steroid hormones: mineralocorticoids (aldosterone), androgens (testosterone), and glucocorticoids (cortisol). The inner region, the medulla, produces catecholamines (epinephrine and norepinephrine). The adrenal cortex has three functionally distinct layers, each of
Abnormal adrenal function can arise when the pituitary gland makes too much or too little corticotropin and when the adrenal gland either does not make enough hormone or secretes too much. Prolonged exposure to high cortisol levels causes Cushing syndrome, which is characterized by weight gain, particularly in the trunk and face. Excess cortisol levels can also cause excessive sweating, reduced libido, and impotence in men, and amenorrhea and infertility in women. Sometimes these conditions are temporary and are caused by taking certain medications. These conditions can also be caused by pituitary gland disorders (tumors or other damage), autoimmune disease, or adrenal gland tumors.\textsuperscript{3,5,6}

**PANCREAS**

The pancreas has a central role in energy metabolism, use, and storage. Specialized cells within the pancreas, the islets of Langerhans, produce two hormones, insulin (produced by the $\beta$ cells) and glucagon (produced by the $\alpha$ cells). Insulin has anabolic effects that promote the synthesis of carbohydrate, fat, and protein, and decrease blood glucose concentrations. Glucagon has catabolic effects that increase blood glucose concentrations. Working together, these two hormones control blood glucose levels (Figure 2). High blood glucose levels stimulate the production of insulin, which increases the entry of blood glucose into muscle, fat, and liver cells. The glucose is then converted into metabolic energy (in muscle cells) and is used for the synthesis of fat (in fat cells) and glycogen (in muscle and liver cells). Glycogen is a carbohydrate that serves as a form of energy storage in muscle and liver cells.

**Figure 2. Maintenance of blood glucose levels via insulin and glucagon secretion.** (Marieb, Elaine N., Essentials of Human Anatomy & Physiology, 10th, ©2012. Printed and electronically reproduced by permission of Pearson Education, Inc, Upper Saddle River, New Jersey.)
blood glucose levels stimulate the production of glucagon from the pancreas. In the liver, glucagon stimulates the breakdown of glycogen into glucose, which is then released into the bloodstream, causing blood glucose levels to increase.

**Disease States**

The most common disease resulting from impaired pancreatic hormone release is diabetes mellitus, which is the result of insufficient insulin. An estimated 23 million people in the United States have diabetes mellitus, including approximately 5 million with undiagnosed diabetes mellitus. The two main forms of diabetes mellitus are type 1 and type 2. Type 1 diabetes mellitus, also known as insulin-dependent diabetes, accounts for about 5% of diabetes cases. It results from beta-cell destruction and can be treated with insulin. Type 2 diabetes mellitus accounts for about 95% of diabetes cases and results from a combination of insufficient insulin production and insulin resistance (impairment of the body’s ability to use insulin). It is frequently associated with obesity and lack of exercise.

**GROWTH HORMONE**

Produced by the anterior pituitary gland, GH is under the control of two hypothalamic hormones: GH-releasing hormone, which stimulates GH release, and somatostatin, which inhibits GH release. GH is secreted in a pulsatile fashion in 3- to 5-hour intervals during a 24-hour period, with a surge of GH released after about an hour of deep sleep. GH has a wide range of effects on the liver, skeletal muscle, bone, and adipose tissue. In the liver, GH stimulates the production of glucose, decreases the uptake of glucose from blood, and stimulates the production of another growth-promoting hormone, insulin-like growth factor 1. During childhood and adolescence, GH increases body height; throughout a person’s lifetime, GH increases calcium retention in bone and promotes bone mineralization. In skeletal muscle, GH increases muscle mass, increases protein synthesis, and decreases glucose uptake. GH stimulates the breakdown of triglycerides, suppresses the uptake and accumulation of circulating lipids, and reduces glucose uptake in adipose (fatty) tissue.

**Disease States**

Both overproduction and underproduction of GH by the pituitary gland can be problematic. Too much GH leads to gigantism in children and to a disease called acromegaly in adults. Acromegaly is characterized by soft tissue swelling that results in enlargement of the hands, feet, nose, lips, and ears, and a general thickening of the skin. The overproduction of GH is usually caused by a GH-secreting tumor of the pituitary gland. Deficiency of GH in children can lead to dwarfism; the cause can be congenital, head trauma, or damage to the hypothalamus or pituitary gland caused by treatment of tumors of the head.

**THYROID GLAND**

In response to the secretion of thyrotropin from the pituitary gland, the thyroid gland produces two hormones, triiodothyronine (T<sub>3</sub>) and thyroxine (T<sub>4</sub>). Both T<sub>3</sub> and T<sub>4</sub> have effects throughout the body and are involved in regulating body metabolism, body heat, and oxygen consumption. In addition, T<sub>3</sub> and T<sub>4</sub> are important for growth and development during childhood. The thyroid gland is also important in controlling calcium and phosphorus levels in the body. Upon sensing high blood calcium levels, the thyroid gland produces the hormone calcitonin, which inhibits the release of calcium from bone into the bloodstream and inhibits the absorption of calcium by the intestines, thereby lowering calcium levels (Figure 3). Calcitonin also inhibits phosphate reabsorption in the kidney.

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**Figure 3.** Maintenance of calcium homeostasis in blood via calcitonin and parathyroid hormone release. (Marieb, Elaine N., Essentials of Human Anatomy & Physiology, 10th, ©2012. Printed and electronically reproduced by permission of Pearson Education, Inc, Upper Saddle River, New Jersey.)
Disease States
The underproduction of T₃ and T₄ is called hypothyroidism. Hypothyroidism is most often caused by an autoimmune disease that leads to chronic inflammation of the thyroid gland. Less common causes of hypothyroidism include acute inflammation of the thyroid gland, insufficient thyrotropin produced by the pituitary gland, and drugs for other conditions that affect thyroid function. Hypothyroidism slows the body's metabolism. In children, development and growth are delayed.

Hyperthyroidism occurs when too much T₃ and T₄ are produced. This excess hormone production is most commonly caused by an autoimmune disease or by thyroid growths (called nodules) that produce too much hormone; rarely, hyperthyroidism is caused by inflammation of the gland. Hyperthyroidism can cause rapid heartbeat, intolerance to heat, and weight loss.

PARATHYROID GLANDS
The parathyroid glands work with the thyroid gland to maintain normal blood levels of calcium and phosphorus. In humans, the four parathyroid glands are embedded behind the thyroid gland. Upon sensing low blood calcium levels, the parathyroid glands make parathyroid hormone (PTH), which causes the release of calcium from bone into the bloodstream and the reabsorption of calcium in the kidney, thereby increasing the blood levels of calcium (Figure 3). Parathyroid hormone also decreases the reabsorption of phosphate in the kidney.

Disease States
Overproduction of PTH can be caused by primary or secondary hyperparathyroidism. Primary hyperparathyroidism occurs when a noncancerous tumor secretes PTH or when enlarged parathyroid glands produce more PTH than normal. In secondary hyperparathyroidism, the parathyroid glands are normal, but they secrete too much PTH because of low blood levels of calcium, which can be caused by chronic kidney failure or other conditions.

PINEAL GLAND
The pineal gland produces the hormone melatonin, which promotes drowsiness and sleep. Melatonin production is stimulated by darkness and inhibited by light. Cells in the retina of the eye detect ambient light and send a signal to an area of the hypothalamus called the suprachiasmatic nucleus, which regulates the 24-hour circadian rhythm. Neuronal circuits from the suprachiasmatic nucleus connect to clusters of cells called the paraventricular nuclei. The signal then travels to the superior cervical ganglia and finally to the pineal gland. In some animals, melatonin levels influence hibernation and seasonal breeding.

Disease States
Several different types of pineal gland tumors have been associated with abnormal onset of puberty in children. Scientists have attempted to correlate melatonin levels with disease occurrences, but more data are needed to confirm causal relationships.

THYMUS GLAND
The thymus gland is where T lymphocytes (also called T cells) mature early in life. If the thymus does not develop or is removed during childhood, the immune system will not develop completely. The thymus produces and secretes hormones called thymosins. T lymphocytes become immunologically active when they interact with thymosins either inside the thymus or in the bloodstream.

Disease States
If the thymus does not develop (as in DiGeorge syndrome), the immune system is mildly to moderately deficient.

SUMMARY
The endocrine system works with other body systems to control and coordinate many physiologic processes, including reproductive function, growth and development, maintenance of homeostasis, and responses to stress. Overproduction or underproduction of hormones can lead to diseases such as diabetes mellitus, infertility, Cushing syndrome, and acromegaly.

Author disclosure: The authors note that they have no commercial associations that may pose a conflict of interest in relation to this article.

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References
anabolic—Involving constructive metabolic processes.

catabolic—Involving destructive metabolic processes.

diabetes—Hormone Health Network of The Endocrine Society.

endocrine gland—A ductless gland that produces hormones and releases them into the circulation (eg, ovaries, pancreas, pituitary gland).

endocrine system—An integrated network of multiple organs that release hormones that exert their effects on neighboring or distant target cells.

feedback mechanisms—The process by which the concentration of one hormone in the blood can control the production and release of another hormone. There are positive feedback mechanisms and negative feedback mechanisms in the endocrine system.

glossary

homeostasis—The maintenance of internal conditions within a normal range by a living organism.

hormone—A chemical that is released by an endocrine gland and affects cells in an organ in another part of the body (eg, estrogen, growth hormone, insulin).

menstrual cycle—The monthly cycle in which an egg is released from an ovary, the endometrial lining of the uterus prepares for pregnancy, and the endometrial lining is shed if pregnancy does not occur.

neuroendocrine—A cell type that secretes hormones into the bloodstream in response to a neural stimulus (eg, the hypothalamus is a neuroendocrine gland).

spermatogenesis—The formation and development of male gametes, called spermatozoa, in the testes.

recommended reading


• Hormone Health Network. Diseases and conditions.

  www.hormone.org/Public/conditions.cfm.
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Technological advances make it possible to present the results of calculations to any number of decimal places with little effort or consideration of their meaning. Calculations that once took hours by hand can now be done by computer in a fraction of a second. However, careful consideration should be given to the precision with which results are presented. For example, a report may present all pharmacokinetic parameter values to 3 decimal places, the mean change in potassium levels to 2 decimal places, or the risk estimate for developing cancer to 4 significant digits. These values appear to be precise, but are they meaningful?

There is an inherent uncertainty in all measurements. Significant digits (also referred to as significant figures) are defined as all certain digits plus one uncertain digit. Reporting values with too much or too little precision may be misleading. Consider the mass of an object as indicated by using 3 different types of scales:

- Kitchen scale: 4 g
- Triple beam balance: 3.6 g
- Analytical balance: 3.582 g

The first value is presented to 1 significant digit. According to the rule of significant digits, that single digit is therefore an uncertain, estimated value, meaning the “true” value could be as much as 1 higher or 1 lower; that is, the true value could range from 3 to 5 g. The second value has 2 significant digits and is accurate to the nearest tenth of a gram (the value lies between 3.5 and 3.7 grams). The third value has 4 significant digits and is accurate to the nearest thousandth of a gram (the value lies between 3.581 and 3.583 grams).

Those who studied math and science in secondary school were likely introduced to this concept and later had it reinforced in college. Yet many may have forgotten this training. It is worth remembering why it is important: The inappropriate use of significant digits can misrepresent scientific data with potential consequences for decision-making. For those who have forgotten the rules, here is a brief refresher.

**NUMBER OF SIGNIFICANT DIGITS**

There are rules for determining the number of significant digits in a measured quantity:

1. All nonzero digits (1-9) are significant:
   - 4.63 mg has 3 significant digits.
   - 9.8°C has 2 significant digits.

2. Zeros that are positioned between nonzero digits are significant:
   - 208 g has 3 significant digits.
   - 5.004 µg has 4 significant digits.

3. Leading zeros to the left of the first nonzero digits are not significant; these zeros are placeholders, indicating the position of the decimal point:
   - 0.04 mL has 1 significant digit.
   - 0.053 nm has 2 significant digits.

4. Trailing zeros to the right of a decimal point are significant:
   - 1.0630 dL has 5 significant digits.
   - 0.70 mg has 2 significant digits.

5. Trailing zeros in whole numbers are not necessarily significant:
   - 140 cm may have 2 or 3 significant digits.
   - 52,400 km may have 3, 4, or 5 significant digits.

The ambiguity in the last examples can be avoided by using standard exponential (or “scientific”) notation. Depending on whether the number of significant digits is 3, 4, or 5, 52,400 km can be presented as:

- $5.24 \times 10^4$ km (3 significant digits),
- $5.240 \times 10^4$ km (4 significant digits),
- $5.2400 \times 10^4$ km (5 significant digits).

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*It is the mark of an educated mind to rest satisfied with the degree of precision which the nature of the subject admits and not to seek exactness where only an approximation is possible."

– Aristotle
Exact numbers are known with complete certainty and are considered to have an infinite number of significant digits.\textsuperscript{1-4} Exact numbers include conversion factors (eg, 1 in = 2.54 cm), constants (eg, π, e), or counts (eg, 27 students in a classroom). The number of apparent significant digits in an exact number can be ignored when determining the number of significant digits in a calculation.

**MATHEMATICAL OPERATIONS**

As noted above, all measurements are approximations with inherent experimental uncertainty. In calculations, the precision of a result cannot be greater than that of the least certain input parameter.

1. **Addition and subtraction:** The result is rounded off to the same number of decimal places as the least precise value.\textsuperscript{1-3} For example, 
   
   \[135 \text{ (3 significant digits)} + 53.487 \text{ (5 significant digits)} = 188.487,\]
   
   which is rounded to 188 (3 significant digits).

   **Note:** This rule is applied when determining the number of decimals in a mean and standard deviation.

2. **Multiplication, division, and trigonometric functions:** The result is rounded off to the same number of significant digits as the least precise value.\textsuperscript{1-3} For example,
   
   \[6.2 \text{ (2 significant digits)} \times 24.63 \text{ (4 significant digits)} = 152.706,\]
   
   which is rounded to 150 (2 significant digits). To calculate \(\sin(kx)\), where \(k = 0.035 \text{ m}^{-1}\) and \(x = 7.63 \text{ m}\), the result is reported to 2 significant digits, ie, 0.26.

3. **Logarithms and antilogarithms:** A logarithm is divided into 2 parts by the decimal.\textsuperscript{5} The integer before the decimal is the characteristic, and the numbers after the decimal are the mantissa.

   For logarithms, the characteristic reflects the power of 10 (ie, the exponent), and is, therefore, not considered when determining the number of significant digits. Only the digits in the mantissa (after the decimal) are significant. For example,
   
   \[
   \log(3.00 \times 10^6) = 4.47712125472,\]
   
   which is rounded to 4.477 (3 significant digits).

   A pH of 6.47 has 2 significant digits and corresponds to a \([H^+]\) of 3.4 \times 10^{-7}.

   A pK\textsubscript{a} of 4.578 has 3 significant digits and corresponds to a \(K_a\) of 2.64 \times 10^{-5}.

   \[10^{2.64} = 338.8442,\]
   
   which is rounded to 340 (3.4 \times 10^2 or 2 significant digits).

   An antilogarithm is the number for which a given logarithm stands; for example, where \(\log x\) equals \(y\), then \(x\) is the antilogarithm of \(y\). For antilogarithms, the resulting number should have as many significant digits as the mantissa in the logarithm.

**ROUNDING OFF NUMBERS**

The final result of a calculation should be rounded to the appropriate number of significant digits to avoid implying a higher level of precision than is justified by the data.\textsuperscript{4}

1. If the digit to be dropped is greater than 5, add 1 to the last retained digit. For example,
   
   \[84.7\] rounded to 85.

2. If the digit to be dropped is less than 5, leave the last remaining digit as is. For example,
   
   \[26.4\] rounded to 26.

3. If the digit to be dropped is 5, and if any digit following it is not zero, add 1 to the last remaining digit. For example,
   
   \[28.51\] rounded to 29.

4. If the digit to be dropped is 5 and is followed only by zeros, add 1 to the last remaining digit if it is odd, but leave it as is if it is even.

   \[47.5\] rounded to 48.

48.5 is rounded to 48.

This rule is designed to avoid bias because, over a series of calculations, any rounding errors will be averaged.\textsuperscript{4}

5. For multistep calculations, keep as many digits as practical in intermediate results (at least 1 digit more than the final result) to avoid round-off error.

**PRACTICAL APPLICATIONS FOR PRESENTING SIGNIFICANT DIGITS**

Clinical study reports (CSRs) provide an example of the challenge in properly presenting significant digits since CSRs are complex documents that incorporate data from many different sources. To ensure that the output in tables, figures, and listings is meaningful when reporting clinical study data, critically review the statistical analysis plan and specify the appropriate level of precision for each output variable.

If a bioanalytical method is validated over a calibration range of 7.754 to 3969 ng/mL, all plasma drug concentrations in the final report should be presented to 4 significant digits (ie, 7.754 to 9.999 ng/mL; 10.00 to 99.99 ng/mL; 100.0 to 999.9 ng/mL; 1000 to 3969 ng/mL). If you present the value 3969 ng/mL to 3 decimal places (eg, 3938.748 ng/mL), the result will have 7 significant digits, which is more precision than the analytical methods permits. The area under the plasma concentration-time curve (AUC) is calculated as the sum of the areas between concentrations. According to the rules of significant digits, all AUC values should be presented to whole numbers with 4 significant digits (corresponding to the least precise values included in the calculation). As another example, a provision should be in place in the statistical analysis plan to ensure that \(P > .999\) is not presented as 1.000 and that \(P < .001\) is not presented as 0.000.

**WHY DOES IT MATTER?**

The responsibility to report precision in the results of scientific research...
should be shared by medical writers, statisticians, clinical reviewers, and others who may be involved in the reporting process. Adherence to these rules is far from pedantic. Failure to do so can have far-reaching consequences, as demonstrated in the following examples:

- Phillips and LaPole suggested that a misleading claim of precision in an epidemiologic study of phenylpropanolamine and stroke may have influenced policy makers, resulting in the withdrawal of the product from the US market.\(^6\)

- Reporting results of laboratory tests to an inappropriate number of significant figures “may adversely affect the clinical interpretation.”\(^7\) Badrick and colleagues provide an example of an increase in a patient’s potassium concentration from 4.8 to 5.2 mmol/L in an assay with an imprecision of 0.1 mmol/L. They concluded that an increase of 0.4 mmol/L represented a likely change in the patient and could not be attributed to assay imprecision alone. Had both values been presented as 5 mmol/L, this difference would not have been detected.

- A scientific advisory panel providing recommendations to the US Environmental Protection Agency was convened to discuss “factors affecting the confidence in reporting estimates of cancer risk to risk managers and the public.”\(^10\) The panel concluded that “presentation of additional significant figures in risk estimates may introduce false precision, and thereby mislead risk managers as they are considering possible risk management options.”

**CONCLUSION**

Clinicians, regulatory agencies, policy makers, and other stakeholders rely on data to make informed decisions. Therefore, people in scientific research have a responsibility to ensure that the results obtained are meaningful. Understanding and applying the rules of significant digits will help in this endeavor.

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**References**


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Come November, Columbus, OH, is where you want to be! Whether you write or edit for health care professionals, lay audiences, or the pharmaceutical industry, the 2013 AMWA Annual Conference will enhance your knowledge and professional skills.

As we encourage you to expand your horizons at the conference, we are expanding the horizons of the conference itself. This year’s conference is teeming with new session formats, an extended list of invited speakers, presentations on timely topics, and a host of networking events. Among the most exciting changes is the extension of the conference, with educational programming beginning on Wednesday afternoon and special events planned for Sunday morning.

To help you prepare for the conference, AMWA is using a variety of electronic media to keep you up-to-date with information (see box on page 64). Visit the AMWA website (www.amwa.org) to get more details on the conference. You will also find fact sheets on the value of the conference that you can use to justify your attendance to your employer—or to yourself, if you’re a freelance.

The New, the Tried and True (with a Twist), and the Old Converge in Columbus

By Lori Alexander, MTPW, ELS
2013 Annual Conference Administrator, on behalf of the Annual Conference Committee
In with the New...

The 2013 Annual Conference has a broad array of great new features.

Wednesday Start
If AMWA workshops are the primary reason you attend the conference, you can get a head start by taking a workshop on Wednesday afternoon. Participating in a Wednesday workshop increases your options because it can free up time for you to attend sessions on Thursday through Saturday. And with the central location of this year’s conference, you may not need to pay for an extra night at the hotel to take advantage of a Wednesday workshop. If you can’t arrive early, don’t worry, plenty of workshops are available through Saturday afternoon.

New Session Formats
If you don’t want to attend a workshop on Wednesday, how about an Intensive Seminar on career development? John Hadley, a career search counselor, will lead a 2.5-hour session on how (and when) to leave a job, how to conduct a powerful search campaign, and how to enhance your interview skills.

The Intensive Seminar is among the new session formats developed this year, with a goal of creating a more robust learning experience. Intensive Seminars are 2.5 hours, cost a nominal fee, and have limited attendance, so be sure to sign up early. In another Intensive Seminar, Jason Berkowitz, vice president, client services at Pontoon, a workforce solutions company, will provide step-by-step direction for freelance writers to elevate their role to “consultant,” positioning themselves as experts and providing their clients with more value. The third Intensive Seminar focuses on the many databases within the National Library of Medicine (NLM). Holly Ann Burt, MLIS, AHIP, outreach and exhibits coordinator, NN/LM-Greater Midwest Region, and Alison Aldrich, clinical informationist, Ohio State University, will suggest tips on the best database for your needs and how to conduct an effective search once you’re there. Internet access will be available in the room, so bring your laptop and follow along.

Other new session formats introduced at this year’s conference include Topic Seminars, 1-hour sessions that focus on a critical issue, technique, or process; Hands-On Demonstrations, 30- or 60-minute sessions that enable you to practice as you learn; and Pro/Con Debates, 1.5-hour sessions that provide a lively discussion on two sides of an issue.

Invited Speakers
This year’s conference features award-winning experts from government agencies and local universities and health care programs. Our lineup of invited speakers features the recipients of the AMWA Alvarez and McGovern awards: Gregory D. Curfman, MD, executive editor of the New England Journal of Medicine (NEJM), and Cynthia Baur, PhD, senior advisor for health literacy, Office of the Associate Director for Communication, Centers for Disease Control and Prevention (CDC). Among Dr Curfman’s signature accomplishments is the development of the NEJM’s “Perspective” section, which spotlights issues in the health policy and health care reform arena. Dr Baur has been extensively involved with health literacy initiatives at the CDC, including its Health Literacy Council, health literacy website and blog, and online health literacy training for health professionals. AMWA is thrilled and honored to recognize these two individuals for their outstanding contributions to medical communication.

Like last year, representatives from the US Food and Drug Administration (FDA) are scheduled to speak at the AMWA conference. Lesley Navin, of the Division of Drug Information at the FDA, will discuss the FDA drug information databases and navigating the FDA website. We expect to soon confirm additional FDA speakers, and information will be posted on the AMWA website and included in the registration brochure.
Programming for Students
To introduce students to the medical communication field, AMWA is planning sessions of particular interest to students on Saturday. Drawing students to the conference will help expose young writers and scientists to medical communication as a career and potentially increase our membership with a new generation of medical writers and editors.

Sunday Fun
Many conference attendees leave on Saturday, but we’re giving you reasons to stay. Last year’s annual business meeting during lunch was a tremendous success, and it will be scheduled again for Saturday at noon. We know that after 3 days of sessions and workshops, some of you are looking to unwind a bit but still gain some interesting and useful information.

We’re scheduling “soft topic” sessions for the last afternoon to help you use your time wisely without taxing your brain. For example, you can learn how to avoid burnout and how to be active despite your sedentary job (complete with yoga tips!) Of course, if you’d rather keep your nose to the grindstone, you can take one of several workshops that afternoon.

Stay until Sunday, and you can enjoy one of two special tours exclusively for AMWA conference attendees. Hop on a bus and take off for the renowned Columbus Zoo and Aquarium. Or, if you’re a foodie, lace up your sneakers and set off for a walking food tour of a nearby Columbus neighborhood. Either activity is a great way to end your conference experience and say goodbye to this great city—and your colleagues. Fees and details will be available on the AMWA website and in the conference registration brochure.

...Tried and True...with a Twist
Among all the new session formats are the “tried and true” sessions, such as panel presentations, how-to sessions, and roundtable discussions. Because of AMWA’s move to soliciting proposals for all session types, we were able to develop a program with exceptional depth and breadth, with an emphasis on writing and editing (of course!), social media and technology, career development, business aspects of freelancing, and other relevant skills (e.g., slide design, oral presentations, and project management). Care has been taken to build a schedule that helps attendees participate in as many sessions as possible on their preferred topics.

Those of you who are not morning people will be happy to learn that we are offering the popular roundtable discussions over lunch as well as breakfast. That’s right, if your brain functions best later in the day, sign up for a lunch roundtable, and leave the breakfast roundtables to the early risers.

Popular networking events from last year return, with many occurring in the exhibit hall, giving you the convenience of networking while also browsing the exhibitor booths. In the exhibit hall, you can enjoy the welcome reception on Wednesday evening, a boxed lunch on Thursday afternoon, the networking reception on Thursday evening, and continental breakfast on Friday morning—all complete with free food! The conference also brings you not one, but three sessions on networking, so you can network more effectively at these events.

...and Back with the Old
AMWA conference attendees, we heard you! So, back by popular demand is the Chapter Greet & Go. The Chapter Greet & Go enables you to meet up with your chapter colleagues before heading off for dinner on Thursday evening.

Chapters will also have a new resource at the conference—a room dedicated to informal chapter gatherings. The room will be set up with several roundtables, perfect for small-group discussions about chapter business or for cross-chapter conversations on common issues of concern.

This year, you will also find the return of Creative Readings, and in a new time slot—Saturday afternoon. Look for more information on how to participate from Creative Readings host, Donna Miceli.

The Annual Conference Committee continues with planning a program full of exciting and innovative sessions, speakers, and events. Be sure to check all information sources (see box) to stay up-to-date on details, and plan to be part of this exceptional experience! See you in Columbus!

KEEP UP-TO-DATE ON THE 2013 AMWA ANNUAL CONFERENCE
AMWA website (www.amwa.org)

Now: Find the schedule at a glance, a list of workshops (ordered according to certificate program), a list of sessions (ordered according to topic area), hotel information, and fact sheets to justify attendance.

Before End of June: Registration brochure posted.
July 10: Registration opens.

Also, stay informed with the AMWA Conference Connector, the AMWA Conference Blog, Twitter (#amwa13 for conference tweets), Facebook, and LinkedIn.
IT WILL SOON BE HERE—the long-awaited new AMWA website will be launching by July. The new site not only offers an updated face for the organization but also provides better navigation and dynamic content in real time, such as AMWA’s Twitter feed and updates on annual and chapter conference events. The new amwa.org will be compatible with all major browsers and will be mobile optimized for viewing on tablets and smart phones. In addition to a clean navigation structure, a robust search tool will allow visitors to easily find the exact content they need.

But once it’s launched, the new website will not be complete without your involvement. You will need to visit amwa.org to establish your online presence within the AMWA community. To log in for the first time, you will need to use your default username, which is simply your last name and the last 2 digits of your member number (without spaces), and your existing password, which is still your full member number. When you log in from the home page, you will be directed to your member profile page. This is where you will be able to change your login information to anything you choose. To support the security of your account, change your username and/or password after the initial login. Usernames need to be unique; the system provides a “check availability” tool to ensure you choose a unique username. To ensure updates to your profile take effect, save the changes, log out and log back in.

From your profile page, you can also manage your member information, identify whether you want your name to be listed in the online member directory, and control what contact information you share in the online member directory.

After logging into the site, you will see a Quicklinks menu on the left side of the page. This menu offers links to additional functionality and certain members-only resources within the site. For example, members with listings in the Freelance Directory can find and manage their directory listing in just one click under Quick Links. The Freelance Directory will still be free for potential employers to search when they need to hire freelances. The new Freelance Directory will have a clean, clear interface both for those searching and those managing listings. The listings themselves have been expanded to incorporate additional information you may want to share, such as social media links. So freelances, be sure to log in to the new system and spend some time updating your listing.

Members will be able to access their curriculum record from Quick Links on the left side of the page. This will allow you to see a history of your current and past educational activities within AMWA, including enrollments and certificates earned.

Finally, to get the most out of our online community, visit our Online Community Forums. These forums are like those of ancient Rome but with a 21st century twist: Members can meet virtually to discuss business (but let’s steer clear of politics and gladiatorial combat). To participate in the forums, you’ll need to set up your online forums profile. It’s important to note that this is separate from the member profile mentioned above. See sidebar for instructions on setting up your online forums profile and getting started.

To provide some structure to the forums, AMWA volunteers and staff have set up some general forum categories, which are somewhat similar to the former listserves. At launch, the online forum categories will include Essentials of Writing and Professional Communities. Within these categories, you can connect with professional peers, ask questions, and start discussions. For example, to post a question about starting a freelance business, you would go to the Professional Communities category, click on the Freelance community forum and click New Topic.

Another forum category is AMWA Announcements, where you will find...
How to Get Started in the Online Forums

You will need to be logged into the members-only side of the new AMWA website to have access to the new Online Community Forums. To access the forums, click Online Forums from the Quicklinks menu on the left side of the page. By participating in the AMWA Online Community Forums, it is understood that you agree to abide by the Terms of Use and Community Guidelines for the forums. The first time you visit the Online Community Forums page, fill out your forum profile, which is different from your AMWA membership account profile. To access your online forum profile, click Member Control Panel from the forum console at the top of the page.

From the Member Control Panel, you will be able to edit your online forum profile and manage your forum subscriptions.

To set up your forum profile, click Edit Profile. Add your real name under Profile Information to establish your online identity within our community. Please note that your profile username is the same as your member account username. We recommend that you change your username in your membership account profile. From your profile, you can also create a customized signature. Be sure to click yes so that it is automatically attached to all of your posts.

Under Forum Preferences on the Edit Profile page, you can also choose whether to display your e-mail address to other members and specify whether you would like to be notified by e-mail message when someone replies to a topic in which you have posted.

Once you have established your forum profile, you are all ready to join the discussions.
**Q:** What process did AMWA go through in creating its new website? Who was involved?

**A:** AMWA went through an extensive process to solicit proposals for an association database and website. The technology solution that was chosen integrated both components. The website design process began in earnest shortly after the 2012 Annual Conference. We recruited AMWA members to help design and develop the website during AMWA’s annual volunteer recruitment drive that ended shortly after that conference. Also in January of this year, AMWA’s president, Doug Haneline, appointed a special task force to work directly with AMWA staff to provide guidance on the website design and needs for both existing members and potential members. Other existing committees have been involved in the process as well. This has truly been a team effort; our volunteers, AMWA staff and consultants, and beta testers are working to ensure that our members’ needs are met with the new website. This not only includes developing an online community but also meeting the evolving needs of our educational program.

**Q:** Some members seemed to really like the listserves discussion groups. Why are they going away?

**A:** The old technology that AMWA had to support the listserves is out of date and was not capable of integrating with the technology for the new AMS system. In addition, the vendor is no longer supporting the version of the listserve that we had. Because the technology that was chosen for the AMS already had an integrated solution for member-to-member communication, we adapted that for our use.

We have had persistent problems with delays in receiving e-mails from the listserves, which subscribers have noticed periodically. Because our staff members had to manually subscribe or unsubscribe members to receive e-mails or digests, members could not manage how they wanted to receive information from the listserves. This has been a persistent problem and has caused some members to leave the organization. While the listserves will be closed for participation, their content will be archived on the new website so members will still have access to the extensive knowledge that has been shared among our members.

**Q:** How did you come up with rules for the LinkedIn discussion group and the online forum?

**A:** The Online Community Committee is charged with periodically reviewing the existing rules for member-to-member communications and updating them as needed. We look at other organizations’ policies and templates, as well as recommended legal disclaimers, to guide our process in creating the guidelines that will maintain professionalism within our online community and keep it a valuable resource for our members.

For the online forums, the rules were adapted from the existing listserv rules, but obviously updated based on the new functionalities of the system.

For LinkedIn, the Social Media Committee reviewed the rules of other groups on LinkedIn and then drafted the rules based on best practices for our community. Because the AMWA LinkedIn group is open, we needed to balance the...
Navigating the Pay Wall

By Michelle A. Kraft MLS, AHIP

Senior Medical Librarian, Cleveland Clinic Alumni Library, Cleveland, OH

It happens all too often: The article or database you want is not available for free online. No one has subscriptions to every article or resource, so what do you do when you have to have that out-of-reach item? There are several methods for trying to navigate around the “pay wall,” the Web page that pops up asking for your credit card number or PayPal account information when you click “access full text.”

Before you get started on the search, be sure you know what you are looking for. Is it a journal article, report, database information, book, or chapter? This sounds obvious, but in my experience as a librarian, I have encountered many doctors who have thought that what they were looking for was a journal article when it really was a paper presented at a conference or something completely different. Once you know what you are looking for, it becomes a little bit easier to form a strategy for getting it.

Make a note of every public library, college, or medical school that you are willing to drive to. Public libraries and many public college libraries allow members of the public to use their materials and online resources within the library. Some private college libraries also allow this, but it is best to double-check with them first. Once in the library, much of what you need will be available on the computer. College and medical school libraries will have more medical articles, databases, and books available, but public libraries can have a surprising amount as well.

Send an e-mail message or call the library and ask about getting a membership to use their services. Some public and private colleges and medical schools offer memberships to the public for a yearly fee, and some colleges provide access to alumni. Membership privileges may include access to some resources from home, borrowing privileges, and document delivery. Although libraries won’t have every resource you need, they can borrow copies of articles or books from other libraries within their borrowing group.

Authors likely have official copies of their journal articles, although publishers may limit the number of copies they receive and distribute. However, contacting the author may be a good option when other efforts have failed. In fact, it may be the only way to obtain difficult-to-find items, such as conference proceedings, various types of reports, or other documents known as the “gray literature.” Getting in touch with authors of journal articles can be surprisingly easy, as contact information for the corresponding author is usually published in a publicly accessible page of the article.

Medical writers are fortunate that PubMed, the National Library of Medicine’s database of indexed citations and abstracts, is free. Many articles listed are also available for free, so sometimes you may be able to find the information you need in an article that isn’t behind a pay wall. When researching a topic, the easiest way to make sure you only retrieve free articles is to limit your search to “free full text available” articles by using the filter function available on the left side of the page. (For information about setting up filters, go to: www.ncbi.nlm.nih.gov/books/NBK53591.)

Finding specific items for free or for a minimal fee is important, but writers typically want to stay abreast of the news and literature, so consider compiling a list of free or open access resources that you can regularly browse or receive alerts from. PubMed Central is one of the larger repositories of open access journals. The full list of journals that have open access articles in PubMed Central is

Not all free articles are quality articles or are published in peer-reviewed publications.
available at [www.ncbi.nlm.nih.gov/pmc/journals/](http://www.ncbi.nlm.nih.gov/pmc/journals/). This list provides holdings dates, information regarding when current articles will become freely available via open access, and whether the journal deposits all or selected articles for each issue. (PubMed Central also is home to manuscripts that were supported by National Institutes of Health funding, although these manuscripts may differ in minor ways from the final version published by a journal.)

If there are specific topics or journals you like to keep abreast of, it is a good idea to create and use PubMed’s free MyNCBI account. It allows you to save searches in your own account and set up automated e-mail message alerts of new search results.

You may have heard of green and gold open access options. Green open access repositories are sites where authors and institutions self-archive a version of their articles for free public use. To find these repositories, explore these two directories: OpenDOAR (the Directory of Open Access Repositories, at [www.opendoar.org](http://www.opendoar.org)) and ROAR (the Registry of Open Access Repositories), at [http://roar.eprints.org](http://roar.eprints.org).

Gold open access refers to publisher sites that provide immediate free public access to content. The Directory of Open Access Journals, at [www.doaj.org](http://www.doaj.org), contains a list of thousands of open access journals, such as those published by BioMed Central and the Public Library of Science.

Not all free articles are quality articles or are published in peer-reviewed publications. With the advent of the open access movement, there has been an increase in the number of well-meaning, but inexperienced open access publishers, and also what have been termed predatory publishers because of their questionable editorial practices. It pays to do a little investigating to see if the journal, book, or resource you want to use is found in a reputable database such as PubMed or is aligned with a reputable repository or publisher.

Finding good free medical articles may sound complicated at first, and it is a bit of an art form. Nonetheless, if you search often enough, you will find your own technique. And don’t forget to try to find a library or librarian to work with. We’re here to help you get your information.

Author contact: kraftm@ccf.org

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**PubMed**

In PubMed, filter results to display list of articles with free full text available.

→ Choose “free full text available” from filter list on left side of screen

OR

→ Add to search string: free full text[sb].

Search Example:

`publishing AND free full text[sb]`

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**New website Q&A continued from page 67**

Q: **Launching a new website is a huge task. If AMWA members see any glitches that need fixing, such as broken links, or if they have other comments, whom should they contact?**

A: Well, our volunteers, AMWA staff and consultants, and beta testers who have been contributing to launching the new website certainly hope there are no glitches, but if there are, members should send an e-mail message to OCAdmin@amwa.org.

Q: **Do you need any more volunteers to help manage social media or review the website periodically to keep it up-to-date? If so, whom should volunteers get in touch with?**

A: AMWA relies on its volunteers to support each department. Most volunteers commit to serving a year on a committee, and the year typically runs from annual conference to annual conference. Some committees like the Social Media Committee require regular teleconferences, whereas others may require less frequent communications. Recently, the Member Resources Committee did a time assessment for all of our committees, and that resource can be used by our members to help guide their decisions in offering their time to volunteer.

AMWA will be doing its next volunteer drive from September to November. Filling out the call for volunteers form during that time is the best way to express your interest in volunteering for AMWA.
How do you avoid this trap? A client pushes you hard to be available during a specific timeframe to work on a project, but the work doesn’t come through. Meanwhile, you have either turned down other work or not sought other opportunities so that you will be available.

A - This is one of the many sticky issues associated with freelancing, and there is no perfect answer. Obviously, if this is a good client who gives you numerous, well-paying projects, and the project the client wants you to wait for is a lucrative one, it can be especially difficult not to give in to the client’s request. On the flip side, if freelancing is your only source of income, it can be financially risky to turn down any opportunities for work, either from existing clients or potential new ones. My first approach would be to remind the client that, because you have other clients who depend on your services, you don’t feel comfortable from a business perspective about guaranteeing your availability during a specific timeframe unless he or she can guarantee the timing of the project. If the client really values your services he or she might be willing to consider negotiating some form of retainer, or a guaranteed partial payment, similar to the kill fee many magazines pay if they assign an article that subsequently doesn’t get published. If you decide to take your chances and acquiesce to the client’s wishes, and another project requiring the same timeframe does come along, you might consider subcontracting some of the work to a trusted colleague.

—Donna Miceli

A - This situation only happened once to me early in my career. In that instance, the client pushed back the project dates three times before finally canceling. On the basis of that experience, I have made it a hard-and-fast rule to never commit to a future project without billing a start-up fee (usually 25% of the total agreed-upon budget). In the event the project is a no-go, that fee covers the time I set aside. Of course, most of my projects are long-term ones. I would consider agreeing to set aside time for a small project (less than 20 hours) with clients for whom I have worked in the past, but I would let them know that I would take on other projects while waiting. Yes, sometimes I have been overbooked with more project hours in-house than I anticipated. But that situation (having to work nights and weekends to clear my schedule) is preferable to sitting around waiting for something that may not come through.

—Elizabeth L. Smith

A - First, unless the downtime is welcomed, a freelance should always be seeking new opportunities and should reserve time each week or month to submit proposals to new sources or contact the existing client list—with a new idea, inquiry about upcoming projects, or even a friendly hello. Second, if the type of work you do warrants charging a minimal fee, payable in advance, to reserve time, consider that to be a legitimate practice. Collecting payment after the reserved time has come and gone with no project in sight may be difficult. Several of my physicians send appointment reminders that state appointments missed but not canceled will be billed. Similarly, the freelance must push back—nicely; self defense requires stating that reserving work time includes guaranteed compensation.

—Phyllis Minick

A - Unfortunately, this trap is hard to avoid. There are many factors that can delay, derail, or detonate a project, and about 99.9% of them are completely out of your control. If a client is really pushing you, then you can try to negotiate a retainer-type contract, in which you are guaranteed payment for a certain set number of hours a week or month. Or you could make sure your contract stipulates an upfront payment at the time of contract signature. That way, you are not left completely high and dry. A freelance friend recommended adding a delay clause in the contract, ie, if the project doesn’t start within X number of weeks from the contract signature, you are released from obligation or at least are free to take on other projects.

If I have been waiting for a project to start and nothing has been happening as planned or promised, and I am contacted by another client with work, I sometimes use this as an opportunity to contact the first client to see if I can get things moving by noting that I have a chance to take on something else.

—Sherri Bowen
**Q.** As a regulatory writer, I have found that many of the projects I work on are confidential. How do I showcase this kind of experience on my résumé or other marketing materials without compromising the confidential nature of this work?

**A.** My CV includes a list of projects I’ve participated in but with all drug names redacted (eg, Integrated Summary of Safety for [ORAL DRUG], an opioid analgesic). I also keep a running list of references—people who can attest to my experience and expertise. (Note: Always ask your references ahead of time [and every time!] if they are willing to serve as a reference for you, and if they agree, let them know they may be contacted and by whom. That is just common courtesy.) Beware if a potential client asks to see a complete document you have written, even with confidential information redacted. I did this once early in my career when I was young and stupid, and the client took the document and ran with it (presumably to follow my format or template) and I never heard from this person again. Knowledgeable clients typically will not ask you for samples. Tell the less knowledgeable ones that you are happy to give them the contact information for your references—after you’ve checked with your references first, of course!

—Sherri Bowen

**A.** Almost all writing projects in regulatory affairs and clinical research are confidential. Therefore, samples are not available for the freelance writer to hand out to prospective clients. Those who hire regulatory/clinical writers are well aware of this. Something crucial that I wish to point out: In reality, an experienced person in clinical/regulatory writing can tell from a 15-minute telephone interview whether the prospective writer really does know how to do this kind of writing, ie, has actually written investigator brochures (IBs), clinical study reports (CSRs), integrated summaries of safety and efficacy (ISS/ISEs), briefing documents, etc. This is not an area a person can fake easily.

Demonstrating the quality of your work, however, is another issue. Consider the following ideas:

1. Give your new client the name/phone number of a former client to call about the quality of your work. (Be sure to ask the person first if he or she is willing to be contacted this way.)
2. Take a CSR you have written and render it generic. It takes many hours to remove all identifying names and data, but it does show the quality of one’s organization, critical thinking, and writing/editing skills and can be offered as a “sample.” Remember, not all CSRs are alike, despite ICH-E3 (the CSR guidelines of the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use).
3. Create your own generic ICH-compatible template, which may be used as a sample if you’re willing to share it with a prospective client who is not yet paying you. (I use this when I work for a small company without its own ICH-compatible template.)
4. Prepare sample outlines of ISS/ISEs that you’ve written over the years — again, with all drug and sponsor identification removed—so the prospective client can see that you do indeed know what belongs in these summaries because you’ve actually written them.
5. If a drug has been on the market for years and not much is confidential anymore, consider seeking client permission to distribute part of an IB that you had created. Otherwise, take an IB you’ve written in the past, remove all identifying information and use it, or part of it, as a sample.
6. Write an article, or a standard operating procedure, on the process of writing a CSR or ISS. Post it on your own website or get it published elsewhere. This will showcase your writing skills while showing that you know how to do it.
7. Provide one of the above plus a sample of another type of project you’ve written — preferably related to clinical research, eg, a paper for publication.

Any of the above should be sufficient to take the place of an actual sample regulatory document. I do, however, want to echo Sherri’s comment that you need to be careful about who you provide any samples to. One additional caveat: It’s not unusual for the prospective client to be inexperienced in this kind of writing; many will never admit it, but you should be able to determine if that’s the case through a conversation. The project manager doesn’t necessarily have to have this experience, but when he or she does not, it’s important to clarify expectations at the outset to avoid difficulties along the way. The experienced and wise project manager does not focus on format and other clerical details at the expense of organization, structure, and content; formats and templates are best attended to after the content is good. If your client spends too much time on format, it may be a sign of inexperience. You may need to do some educating.

—Cathryn Evans
Switching careers can be a little like that quote. Making a career change is never easy, especially if you’ve got kids to support and a mortgage to pay and you enjoy eating on a regular basis. However, after 5 years in the medical writing field, I found that I enjoyed managing medical writers much more than I enjoyed the actual writing process. That was the moment when I realized it was time for a change and began to seek opportunities to move from writing regulatory documents to performing regulatory tasks such as providing consultation on submission structure.

As part of that transition, I became more familiar with the guidances and regulations that not only pertained to document format and content (eg, ICH M4 from the International Conference on Harmonisation) but those that dealt with submission types and the requirements for each type (eg, from the Code of Federal Regulations, 21 CFR 312 and 314). Reading these provided insight on submission strategy.

Transitioning from medical writing to regulatory affairs isn’t the first career change I had made during my 20 years in the pharmaceutical industry. In my first position, I was a pre-clinical pharmacologist. I then became a clinical research associate and clinical trial manager, transitioned into medical writing, and am currently employed as a regulatory affairs professional.

All of these previous career experiences and the preparation I had done reading guidances and regulations contributed to acquiring the hard skills necessary for the transition to regulatory affairs. However, in addition to learning these hard skills, I also had to adjust my frame of mind to incorporate the soft skills and personality traits necessary to “survive” each functional area’s culture.

Creativity and risk taking, while valued in the regulatory affairs environment, aren’t qualities that will endear a medical writer to a client. Medical writers deal with cold hard facts and report those facts as objectively and dispassionately as possible, whereas regulatory affairs professionals take those facts and seek creative strategies to reduce review time frames or regulatory risks.

Also, most writers I know enjoy solitary working conditions. In regulatory affairs, I find that I spend at least 40% of my time in meetings and another 20% fielding calls from people in other departments wanting regulatory assessments of various manufacturing changes to ensure they are in compliance. There is less time for introspective thought and research; answers are generally expected during the course of the conversation or meeting. I have also found that dealing with data (ie, cold hard facts) was a good deal more straightforward than dealing with regulations and guidances. Most regulations and guidances are open to various interpretations. “It depends,” I find myself saying quite often.

It’s the fast pace and challenges that make regulatory affairs interesting for me. I like walking into the office and never knowing what the day may bring. I like the social aspects too and being able to see not just a small portion of the drug development process but the big picture view.

For anyone interested in making a similar transition to regulatory affairs, I recommend the following. First, join RAPS (Regulatory Affairs Professional Society). RAPS, like AMWA, offers career development resources such as classes, job fairs, and certification programs. Second, seek opportunities to challenge yourself to advance from medical writing projects that focus on study-specific information, such as protocols and clinical and nonclinical study reports, to documents that focus on the big picture, such as higher-level summary and briefing documents. Contributing to the more advanced documents helps hone the type of strategic thinking that will help a writer make the transition into regulatory affairs. Plus, prospective hiring managers will find
that type of advanced writing experience a more valuable background as it is more closely aligned with the types of writing tasks that regulatory professionals perform.

Also, don't underestimate the opportunity to parlay your past experience as a medical writer into transferable job skills. Instead of emphasizing documents written or quality control and editorial skills, focus instead on the qualities that are important to both medical writing and regulatory affairs, such as communication, interpersonal skills, time management, prioritization, and team work.

Finally, I would caution against anyone thinking of making a similar change as a way of gaining respect from your colleagues. During my time as a medical writer, I interacted with some chemists, biologists, and physicians who assumed my only skill was to make their “brilliance” look pretty on paper. Now that I am in regulatory affairs, I interact with some chemists, biologists, and physicians who assume that my disagreement with their rationale for deviating from guidance is because of a lack of understanding of the science. After many years and a few career transitions, I have come to the conclusion that respect is related to the quality of your work and not the type of work you do.

I will end this story the way I began it, with a quote, which has been attributed to Buddha: “Your work is to discover your work and then with all your heart to give yourself to it.”

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References
Designing Continuing Medical Education to Improve Clinician Practice
Part 2: Writing the Needs Assessment

By Johanna Lackner Marx, MPH, MSW, CCMEP
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Health care practitioners must participate in continuing education to maintain their licenses to practice. Accredited continuing medical education (CME) helps clinicians stay current on topics such as new clinical guidelines, regulations, and health policy that affect patient care.

CME providers must follow certain standards when creating accredited CME. These standards are outlined by the Accreditation Council for Continuing Medical Education (ACCME), the entity that puts its stamp of approval on providers of CME. Continuing medical education must (a) be related in some way to the work clinicians do by helping them practice more effectively or efficiently; and (b) fulfill a need for training to improve clinician competency. In other words, CME providers must first identify where clinicians’ professional ability fails to meet best practice standards, then design CME that provides them with education that helps them elevate their level of competency.

To ensure that the instructional materials or activities we create meet these two requirements, we follow a process that guides the development of CME. In the last issue of the AMWA Journal, I discussed this process, called educational linkage, through which we connect (1) a documented deficiency in clinician performance or patient care; (2) the educational intervention; and (3) the direct benefits clinicians gain from participating in CME programs, such as enhanced knowledge or clinical skill, better attitudes, and improved practice performance. Ultimately, this results in improvement in health care outcomes. In Part 1 of this series, I discussed the first phase in writing a needs assessment (NA): how to identify gaps in practice and where to find information to document these gaps. (See AMWA J, 2013; 28(1): 28-30.) Here, in Part 2, I continue the discussion on writing NAs by describing how we pull together information from the gap analysis and assessment of needs to create a formal NA document. In future articles, I will discuss how, through educational linkage, this document is used to inform the program’s educational objectives, content, and evaluation, as well as outcome studies to demonstrate the effectiveness of the CME.

Reasons for Writing CME Needs Assessments (NA)
CME providers write NAs to provide documentation of the need for CME (fulfilling a requirement by ACCME), and to guide the development of the education program. In addition, NAs also are written to be included in grant proposals for commercial funding for CME as validation of the need for education.

CME providers have not developed a common template for NAs. However, there are specific types of information that are universally included. The result is a succinct report that describes the condition of interest and its epidemiology, compares how it is treated and managed with what guidelines recommend, and shows how CME can effectively change behavior of clinicians so that their practices are better aligned with best practice standards, with the goal of improving patient health outcomes.

An NA’s length and format are shaped by the reason it is being written. For example, an NA that is written to fulfill the ACCME documentation requirement can consist of a bulleted list or a table, whereas an NA written for a grant proposal is formatted as a report in accordance with page limits and other requirements included in a grantor organization’s request for proposals. Any way you write it, however, the information in an NA can be included in three main sections, as outlined below.

Section 1: Introduction
• The purpose for writing the needs assessment
• Source of documentation
• Identification of the condition, disease, or clinical problem being addressed
  –Cause
  –Risk factors
• Definition of patient population affected by the condition, disease, or clinical problem
  –Demographics (eg, sex, age, ethnicity, and socioeconomic status)
  –Prevalence/incidence
  –Morbidity/mortality
• Description of effect of condition on society at large
  –Economic (eg, work days lost, health care costs)
  –Trends (predictions of impact if condition grows unchecked)
Section 2: Best and Current Practice
- Description of best practice standards (the way clinicians should practice)
- Description of gap in clinician competency (the way clinicians currently practice)
- Description of barriers preventing best practice

Section 3: CME as the Solution to Improve Current Practice
- Explanation of the value of CME
- Examples of how CME has been effective in changing clinician behavior

For grant proposals, this last subtopic can provide a nice lead-in to how the CME activity, for which funding is sought, has been designed to improve clinician competency.

CME writers need to master the art of writing NAs. For many of us, NAs are the most common document we are hired to produce.

To provide you with an idea of how these three sections are written into an NA, the accompanying sidebar provides excerpts from an excellent sample NA written by a student in the CME Training for Medical Writers course I teach. (The sample is used with permission.) The annotation is mine.

### SECTION 1: INTRODUCTION
The goal of this needs assessment is to identify potential professional practice gaps in and barriers to the appropriate management of hypertension in the primary care setting. [PURPOSE]

Hypertension is increasingly being diagnosed in both older and younger individuals, and the rate of uncontrolled hypertension is suboptimal. [CONDITION IDENTIFIED]

Clinical practice guidelines, results from physician and patient surveys, government reports, and systematic reviews of the current literature were used to document gaps and barriers. [SOURCES]

Hypertension is prevalent, affecting 31% of the US population. Among adults 45 years and older, hypertension is the number one diagnosis at visits to office-based physicians and hospital outpatient departments. [PREVALENCE/INCIDENCE]

Individuals who are normotensive at age 55 have a 90% lifetime risk for the condition, which means that as a large proportion of the US population continues to age, hypertension will become an even greater problem. [RISK; TRENDS]

In addition, the rate of hypertension among younger individuals (24–32 years) has recently been found to be higher (19%) than previously estimated (4%). [INCIDENCE/PREVALENCE]

Hypertension is associated with considerable morbidity and mortality and is a major risk factor for cardiovascular disease and stroke. Hypertension is the cause of death in 1 of every 7 deaths in the United States and accounts for nearly half of all cardiovascular disease-related deaths. [MORBIDITY/MORTALITY; RISK]

Hypertension also places huge economic demands on an already-overburdened health care system, with the American Heart Association estimating that the indirect and direct costs of hypertension are more than $93.5 billion per year. [EFFECT ON SOCIETY]

### SECTION 2: BEST PRACTICE, CURRENT PRACTICE, AND BARRIERS
A complicating feature of hypertension is that 46% of individuals with the condition have uncontrolled blood pressure—that is, a blood pressure above the recommended goal established by the Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). [OBJECTIVES]

Controlling hypertension according to evidence-based guidelines involves identifying hypertension as a diagnosis, selecting the most effective drug therapy, and routinely monitoring blood pressure and adjusting medications to achieve a target blood pressure. [BEST PRACTICE]

The JNC 7 defines hypertension as blood pressure of 140/90 mm Hg or more and recommends monitoring blood pressure at approximately monthly intervals until a blood pressure below the hypertension limit is reached. [BEST PRACTICE]

Furthermore, the JNC 7 recommends that a thiazide-type diuretic should be initial therapy for hypertension and advises that more than one antihypertensive agent is usually required to control blood pressure, and that drug therapy should be intensified if the blood pressure goal has not been reached. [BEST PRACTICE]

Physicians report a high rate (94%) of familiarity with the JNC 7 guidelines, and the appropriate treatment of hypertension according to JNC 7 guidelines increased shortly after their dissemination but was not sustained beyond a few years. [CURRENT PRACTICE]

Subsequent research has shown that treatment with fixed-dose combination medications is more effective than the use of single agents given together and enhances patient compliance as well. [BEST PRACTICE] However, the use of fixed-dose combinations is underutilized. [CURRENT PRACTICE]

The approximate 50% rate of controlled hypertension indicates that physicians are not adhering to the JNC 7 for appropriate treatment interventions. The reasons for this lack of adherence are unclear, but many factors have been found to control and influence the severity of hypertension. [CURRENT PRACTICE]

Clinical inertia has been identified as the primary barrier to controlling hypertension through adjustment of drug therapy, with one study showing clinical inertia as the reason 63% of patients with uncontrolled hypertension did not have their medications changed. In that study, several factors were found to be predictors of no medication change, including diabetes as comorbidity, a blood pressure that was less than 10 mm Hg away from target, a patient load of more than 26 per day, and patient...
PRACTICE

Other studies have also shown that a blood pressure within 5 to 10 mm Hg of target was less likely to prompt a medication change. In addition, physicians have reported such other reasons as using a “wait until next visit” approach before intensifying medical therapy, inadequate time to discuss hypertension management with their patients, patient-related factors (lack of compliance with drug therapy and/or follow-up visits), and staff-related factors (inaccurate blood pressure measurements).

Patient-related factors have been documented in several studies as major contributors to uncontrolled hypertension, which means that improving rates of control relies on strategies to motivate patients to adhere to medical therapy and lifestyle modifications as well as to appropriate follow-up.

SECTION 3: CME AS SOLUTION

Controlling hypertension requires a comprehensive approach, with improvements needed in health care delivery systems, physician behavior and practice, and patient adherence to prescribed treatment. Continuing medical education (CME) provides clinicians with an excellent opportunity to review guidelines and to learn new strategies for treatment and management.

Several strategies have been successful in improving hypertension control, and interactive CME programs have been shown to change physician behavior with respect to the appropriate management of hypertension through implementation of these strategies. CME activities that focus on evidence-based strategies can improve control and, ultimately, reduce the morbidity and mortality associated with hypertension.

Because of the lack of patient adherence to antihypertension drug therapy, CME activities that highlight documented interventions that enhance patient compliance and patient education can help physicians implement strategies that will better engage patients in self-management, leading to improved rates of control and better patient outcomes.

References

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A federal résumé is like a take-home exam. Surprised? Then take a closer look at the government’s hiring process. Applicants are expected to provide evidence not only of the knowledge, skills, and abilities required for the jobs to which they apply, but also of every aspect of the specialized experience these jobs require. Each application provides a fresh opportunity to revise one’s résumé to outline the job duties and accomplishments that support one’s answers to what may be a lengthy, substantive questionnaire. With potentially hundreds of applicants competing for a single position, it helps to know what hiring officials are looking for in the applications they receive. It is also important to be able to present an application that uses the right language and is in the right format.

1. Read announcements carefully, taking note of the series number, grade, minimum education, and the required specialized experience. Each 4-digit series number refers to a position spelled out in the Handbook of Occupational Groups and Families. The grade reflects the education and/or requisite experience, as well as supervisory or leadership level. A competitive résumé will separately address each of the factors laid out in the series description. That is, unless the series ends in —01 (0301, 0601, 1001, etc.), in which case the job is either multidisciplinary or has no pre-assigned definition in the Handbook. Compare this FDA health communications specialist job (www.usajobs.gov/GetJob/ViewDetails/339671000) with this Forest Service job (www.usajobs.gov/GetJob/ViewDetails/334705200). (These positions have expired but can still be reviewed online.) Both are GS-1001 series positions; while the former “develops and implements communication and risk mitigation programs, projects, and strategies for the general public and other audiences,” and has many other specialized communications functions, the latter primarily “mak[es] presentations to community groups.”

2. Take the educational and specialized experience requirements seriously, along with the list of knowledge, skills, and abilities (“KSAs”). In your résumé, redefine your duties, responsibilities, and accomplishments with each past employer according to the announcement’s KSAs. When preparing your résumé, use key words and phrases from the announcement to describe your experience. If the announcement calls for “written communication skills,” you might describe your history as a nurse as “applied excellent written communication skills to document patient care and treatment, including....” If the job requires “the ability to present specialized information in writing,” you might say instead, “presented specialized information in writing, making timely and accurate entries in patient records, including....” Note the use of first person implied. Use it consistently. Use present tense for your current job, past tense for jobs that have ended. Also limit your use of definite and indefinite articles.

3. There is almost always a questionnaire accompanying the application (find the link in the announcement). Preview it, and you will likely see multiple-choice questions probing your threshold level of specialized experience and various aspects of your substantive experience. Review them carefully, and before bothering to apply, assure yourself that you can answer “D” or “E” (sometimes “4” or “5”) to most if not all of them; otherwise, you are not likely to be deemed “best qualified,” and therefore will not be in the group from which the interview list is made. Back up your answers with evidence in your résumé. If the questionnaire has you claiming expertise in Section 508 compliance (a set of standards under the Rehabilitation Act that governs accessibility of electronic information), make sure your résumé states that you prepare Section 508 content independently, train others, are the go-to-expert for Section 508 in your division, and/or that you provide peer support or mentoring in this area.

4. Pepper your résumé with concrete examples of recent career accomplishments (within the past 10 years) that address the KSAs. Use the announcement key words and phrases when you describe these accomplishments. Use metrics, wherever possible, to quantify your results. Anchor your accomplishments to specific employers and...
jobs, rather than merely claiming you possess expertise in a summary at the top of your résumé, where it cannot be verified by reference to any of the specific positions you have held.

5. Avoid the signal-to-noise problem. If the position is a writing job, and not a scientist or clinician job, do not go on at length about your experience as a researcher or care provider, long ago. If the job announcement doesn’t address accessibility, remove that big Section 508 compliance paragraph from your résumé. Save it for a different application. A résumé is neither a memoir nor a response to a clearance investigation. You are not obliged to recite the full details of every single job you have ever held. The résumé is an opportunity to present information that is timely, accurate, and relevant to the position you are applying for. It should contain information sufficient to enable federal hiring officials to gauge your superior ability to do the job at hand. The USAJobs.gov builder provides an “additional information” text box at the end of the résumé. Positions that are over 10 years old may be summarized, briefly, in this section. Use no more than a line or two to identify long-ago job titles, employers, and dates, and perhaps a brief parenthetical, if needed, to address the position’s relevance to the job you now seek. You may include a similar section at the back of your résumé in Microsoft Word. This is the proper location for those “ancient history” jobs.

6. Read the application instructions carefully, and follow them. If you qualify based on education alone, choose that answer and upload your transcript. Choose “education plus experience” only if your degree isn’t enough to meet minimum requirements and you must rely on work experience to meet the threshold for applying. If there is a separate, 1-year specialized experience requirement, the questionnaire will ask, “Do you have at least 1 year specialized experience in—?” Answer “Yes.” If “Yes” isn’t your answer, don’t apply. If your answer is “Yes,” human resources should be able to find all aspects of that qualifying experience within about 10 seconds, anchored to one or more positions within the past 10 years. (If you have to go back further than that, break the 10-year rule and move an older job forward in the résumé.) Clearly state how many hours per week you worked in each job and state the inclusive months and years. If your qualifying experience was only part of your job, quantify what was qualifying and quantify what wasn’t. If they have to guess at it to do the math, you’ll be deemed unqualified.

7. If no cover letter is requested, but there’s an opportunity to upload one, supply it. Summarize why your education, knowledge, skills, and experience make you highly qualified to help the agency fulfill its mission. Tell them you are applying because you are committed to public service and to advancing the agency’s mission to (fill in the blank). The agency mission is stated at the top of the announcement. Paraphrase it.

Here’s a final, unnumbered tip. Use a PC rather than a Mac to apply, and use Internet Explorer, as the application interface may make it difficult to apply using Safari, Google Chrome, or other browsers. Try not to growl. Sooner or later, these interfaces will become more user friendly, but for now, you may just have to live with it.

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**Microsoft Word 2010 for Medical and Technical Writers**

Peter G. Aitken PhD and Maxine M. Okazaki PhD

*Written by medical writers, for medical writers*

Learn how to use Word for long, complex documents

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Every medical writer knows the importance of references. It’s emphasized when you are in training. It’s always stressed by your editors. It’s often the part of a paper that gives you headaches. Yet difficulties persist in spite of these pressures. Two types of errors can occur in things we take for granted. The reference itself is incorrect.

OK, so we took all the precautions and double-checked our references. But we may have lost sight of the possibility that the reference we quoted is itself wrong.

A few months back, Jane Eliza Stark, DO, in a scholarly and well-documented article in the Journal of the American Osteopathic Association, discussed the writings of Andrew Taylor Still, MD, DO, founder of osteopathy. Dr Still wrote a great deal about his experiences and philosophy and, as the highly regarded “father” of the discipline, has been quoted widely. But as Dr Stark found, factors such as questionable copyright dates and misquotes of the original by subsequent writers, led to subsequent errors in “quoting Dr Still.”

As an example, Dr Stark cites one of Dr Still’s repeated warnings, which she quotes from his original work: “To find health should be the object of the doctor. Anyone can find disease.” She unearthed a “startling number of variations” of his comment, among others, “A doctor’s job is to find health, anyone can find disease.” Dr Stark points out: “By changing ‘should be’ in the original sentence to ‘is,’ the statement’s conditional nature is altered. …”

Dr Stark makes a strong and valid point. It makes me think of several precautions:

• When quoting someone, be sure you are using the original quote.
• Do not accept someone’s paraphrasing as a reference.
• If you must paraphrase, be sure it is accurate.
• If you paraphrase, be clear that it is your interpretation, and do not attribute it to the original author.

Dr Stark’s lesson tells us clearly that even a minor (or modest) change in wording may forever modify the original meaning.

Changing the wording or punctuation can play havoc.

Punctuation is another matter. Even that little curlicue on the line (our friend, the comma) may unequivocally alter meaning and intent. We all may have our own good examples of how punctuation changes things. My favorite example (oft repeated) is: Let me call you sweetheart! A simple statement. Mistakenly add a comma and it changes the meaning forever: Let me call you, sweetheart!

On the comedic side, a while back I ran across an example that showed how a tender love note could become a hate note just by changing the commas and periods.

Dear John,
I want a man who knows what love is all about. You are generous, kind, thoughtful. People who are not like you admit to being useless and inferior. You have ruined me for other men. I yearn for you. I have no feelings whatsoever when we’re apart. I can be forever happy. Will you let me be yours?
Gloria

Just change the punctuation a bit, and it becomes a hate note:

Dear John,
I want a man who knows what love is. All about you are generous, kind, thoughtful people who are not like you. Admit to being useless and inferior. You have ruined me. For other men I yearn. For you I have no feelings whatsoever. When we’re apart I can be forever happy. Will you let me be?
Yours, Gloria

Clearly, this suggests a couple of warnings:

Never change a word in a quotation.
Never change a comma or period—or any other punctuation.

So from two disparate sources—a learned article and a humorous twist—we are reminded of an important guideline about references: The quotation marks say to the reader, “This is exactly what the author wrote (or said).”

References
In the Service of Good Writing

Women and Girls Often Go Boldly, but They Are Never Female Men

By Laurie Thomas, MA, ELS

The people who don’t want children to study grammar in grammar school make one important point: some traditional grammar rules can be ignored, and some should definitely be violated. For example, some influential grammarians of the past claimed that it was wrong to split an English infinitive, yet they insisted that it was OK to use grammatical gender in English in a way that misrepresents biological sex. In other words, if you follow these old rules, you can end up with sentences that are not only awkward but misleading. As medical editors and writers, we must think carefully about which of the rules of grammar to follow and which to relax or ignore.

In the early 20th century, some stylebook authors would have been horrified by this phrase from the prologue of the television show Star Trek: “to boldly go where no man has gone before.” Why would that phrase have offended them? Would they have pointed out that there were bold women on the USS Enterprise and that no women had ever been to those places either? No. They would have objected to the adverb being uttered between to and go. The infinitive was split. In contrast, they would have found it perfectly OK to ignore women and girls or to refer to them as men. However, women and girls are often bold, and they often go somewhere, but they are never female men.

In 1908, H. W. Fowler argued that “The split infinitive is an ugly thing...; but it is one among several hundred ugly things.” In contrast, the Chicago Manual of Style’s 16th edition states, “It is now widely acknowledged that adverbs sometimes justifiably separate an infinitive’s to from its principal verb.” English infinitives are made up of two separate pieces—an infinitive marker (to) and the stem of the verb. If an adverb is modifying that infinitive, why not tuck the adverb between the infinitive marker and the stem? Good writers do it all the time. The meaning of “to boldly go” is clear, and the alternative phrasings sound clumsy. Of course, a good writer would avoid putting too many words between the infinitive marker and the stem, but a single adverb can fit in there nicely.

The writers of the Star Trek franchise did eventually correct the problem with the gender and age referent in “where no man has gone before.” Starting with Star Trek: the Next Generation, the infinitive phrase became “to boldly go where no one has gone before.” I’m glad that the infinitive remains boldly split.

To understand the problem with grammar rules, you must understand the grammatical structure of the rules themselves. There are two kinds of grammar rules: descriptive and prescriptive. Descriptive rules describe. They are statements of fact about how the language is typically used. As in other statements of fact, the main verb in a descriptive rule is in the indicative mood. Descriptive rules may explain whether a certain kind of construction is common or rare, but they do not express value judgments or attempt to influence usage. In contrast, prescriptive rules prescribe. They are actually commands (do this, don’t do that!). Thus, the main verb in a prescriptive rule is in the imperative mood. Unfortunately, the way that we express the mood of verbs in English is often unclear. For example, the auxiliary verb may is sometimes used to express probability and sometimes used to grant permission. Thus, it could be used to describe or prescribe.

If an adverb is modifying that infinitive, why not tuck the adverb between the infinitive marker and the stem?

Good writers do it all the time.

In English, the way in which the imperative mood is expressed depends on whether the command is positive or negative. In a positive command, the imperative mood is expressed by using the stem of the verb. Notice that the subject of the verb (you) is implied: “(You) go!” Sometimes the emphatic do is used: “(You) do go!” The negative imperative is formed by putting the words “do not” (or the contracted form, don’t) in front of the stem of the verb: “(You) don’t go!” Modal auxiliary verbs, such as shall, should, and must, can also be used to express commands. Notice that the statement “you must not split infinitives” uses the modal auxiliary verb must to express a command. The King James Version of the Bible uses the verb shall, as in “thou shalt” and “thou shalt not” in the Ten Commandments.
Commands are not statements of fact. Instead, they represent expressions of value judgments and attempts to influence someone else's behavior. Since commands aren't statements of fact, they cannot have a truth value. They cannot be true, and they cannot be false. A command may be wise or foolish, practical or impractical, but it can't be true or false. When I encounter a command, whether it is phrased with a verb in the imperative mood or with a modal auxiliary verb, I automatically ask myself who is issuing that command, and for what purpose? Why shouldn't I split infinitives? Why should I follow any of the other rules I find in grammar books?

Prescriptive rules can serve two purposes. One is to help you say what you mean—accurately, precisely, and unambiguously. The other is to make your writing sound better, to prevent it from grating on someone's ear. Often, the usage notes in the dictionary can help you decide whether good writers follow a particular rule. If the rule doesn't improve clarity and if great writers see no need to follow it, I generally ignore it—unless it's required by the house style of a particular publisher. In other words, a prescriptive rule is just someone's opinion of what you should or should not do. You'll have to decide for yourself whether to comply.

*Laurie Endicott Thomas is the author of* Not Trivial: How Studying the Traditional Liberal Arts Can Set You Free.

**Acknowledgment**
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**References**
If you’re new to Pinterest, a social networking website that is composed almost entirely of images, you may be wondering the following:

- What is its purpose?
- How is it different from Facebook? Twitter?
- Why should I, a medical writing professional, use it?
- And, is it a gigantic waste of time?

The Point of Pinterest

Created in 2009, Pinterest is an interactive website that lets you “pin” images you like to “boards” you create on your home page. Think of bulletin boards, then imagine finding images you’re drawn to and pinning them in place. A writer for the Huffington Post described it as an online scrapbook for those who like to organize the chaos of the Internet.¹

Underneath each image is a caption that you create or revise to let your followers know why you pinned it. Captions can contain website and other identifying information. For many Pinterest members, the goal—particularly if you are marketing something—is to get others to repin it to their boards. If your wording is clever enough, the caption will make its way around the site.

The Peculiars of Pinterest

Pinterest is different from Facebook or Twitter in that you don’t post text for people to read; you pin pictures for people to see. From the moment you sign on, you are presented with a multitude of images. You can also search for topics you like—personal or professional. Then you can save images you find to your various boards, which are visible to your followers. Unlike Facebook, where you can choose your friends, with Pinterest you can’t choose your followers. You can, however, create “secret” boards that are visible only to your invitees. And, like many social networking sites, you can import your contacts (from e-mail software, Facebook, or Twitter) for instant popularity.

Pinterest’s Place in Our Profession

Originally created on the premise that self-promotion and commercial usage would not be permitted, Pinterest recently rolled out business pages. The question now becomes, “Can Pinterest benefit me professionally?”

Considering that Pinterest reached 10 million visitors faster than Facebook or Twitter,¹ the answer, most likely, is yes. I remember chatting with a fellow AMWA member about whether she thought having a blog was worthwhile. I couldn’t see blogging fitting into my tight schedule because it requires a constant stream of information and attention. She told me how she’d met a client through her blog about wine. Because she wrote about wine so beautifully, he contacted her. The moral of the story is this: You never know whom you’ll meet online. And you could just meet someone who wants to employ you.

Shortly after the release of business pages, Pinterest also announced the availability of Web analytics, which allow you to see who’s been perusing your boards and what images are most often repinned by viewers. Seeing what people like may be of use to you in your professional life, as it could influence the way you design your website, the colors you use on your business cards, or the way you dress to meet a client.

If you don’t think Pinterest is serious enough, consider that the Centers for Disease Control and Prevention has a page.
My Pinterest Philosophy

For this article, I converted my personal Pinterest to a free business account. Immediately, I was inundated with job offers. OK, not really. But I was able to include the Pinterest icon on my website, which gives visitors a link to my Pinterest page and a chance to see what I’m about. Having a business account also places you in the “about” section of the Pinterest site, where you can create a short biography about yourself, both in words and in pictures.

Although Pinterest may appear at first blush to be all about weddings and puppies, the areas of most interest in the United Kingdom are venture capital, blogging, content management, public relations, and Web analytics.2 Could someone with those interests be your new client?

As far as time is concerned, pinning a few images is quick. Plus, it wakes up the brain from our usual buffet of text and ushers in a fresh perspective, possibly adding to our productivity.3 And like most social networking sites, Pinterest is another (free!) way to interact and generate potential business contacts.

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References

Because I was still in the midst of dealing with the effects of Hurricane Sandy when copy was due for the special mentoring-themed issue of the *AMWA Journal* (Volume 27, Issue 4), I thought I would touch on the mentoring subject here. On her blog, medical and children’s writer Cheryl Reif talks about her first experience with a writing coach and how it helped her define the next steps she needed to take to reach her goals. She explains that her coach homed in on important matters, such as where she was selling herself short, and asked questions that helped her identify her priorities. Reif has posted interviews with seven coaches covering a variety of writing coach–related topics: How can a writer decide if working with a coach would be beneficial? What sort of goals or skills do you work on with a client? What lies outside the client/coach relationship? What are the mechanics of a coaching relationship?

Is a writing coach right for you? It’s a question worth considering if you are looking to jump-start your career. Reif’s website also features a listing of writer resources that are either on her site, such as a manuscript formatting guide, or elsewhere on the Web. These other resources include word frequency or phrase frequency counters, and the Wonk Tools website, which offers writer's block and vocabulary tools. Another linked resource is the Autocrit Editing Wizard. You can try it as a guest; subscribers can upload longer documents. The service is geared to fiction writing, but I pasted in some narrative nonfiction I had written, and it worked quite well.

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**Web Wanderings**

By Barbara Woldin

Freelance Writer/Editor, High Bridge, NJ

Cheryl Reif Writes

How to Thrive on the Writer’s Road

[www.cherylreif.com/writer-resources/writing-coaches](http://www.cherylreif.com/writer-resources/writing-coaches)

As medical writers, we should be well versed in the American Medical Association (AMA) style, but how well do we all know the other writing styles in the industry? The concise style guide reference pages on this site are free to all and available as either Web pages or PDFs. Styles covered, in addition to AMA, are the American Psychological Association (APA); the *Chicago Manual of Style*; the American Sociological Association (ASA); and the Modern Language Association (MLA).

Bookmark the Dr Abel Scribe website and you will have the basics of these style guides at your fingertips, along with links to the related societies. There is also a separate PDF document titled “Writing Research Styles: A Primer,” which provides an extensive introduction to using research styles. It includes a checklist of things to learn when using a style new to you. For those who are new to research writing, the site has an article titled “Basic Features of Research Styles.”

**Writing in the Life Sciences**

The McCulley/Cuppan Blog on Tools and Strategies for Improving Quality of Knowledge Management and Communication in the Life Sciences

[www.mcculley-cuppan.blogspot.com](http://www.mcculley-cuppan.blogspot.com)

Hosted by Gregory P Cuppan and Jessica Mahajan of McCulley/Cuppan LLC, this blog is for those of you in regulatory science and others interested in medical, pharmaceutical, biological, and chemical research and development, or in short, the world of life science research. Through their blog, they offer tools and strategies for improving the quality of knowledge management and the communication of research in the life sciences. If you are tasked with managing research outcomes or authoring and reviewing research reports or other types of technical or regulatory documents, then you will likely find helpful information on this blog. Topics are varied and sometimes provocative. Examples of blog post titles include “Importance of Language and Writing Style in a Clinical Study Report,” “Regulatory Writing Must Be ‘Fit for Function’ Not Perfect,” “Peer Review Revisited,” “Importance of Language and Writing Style in a Clinical Study Report,” and “Minimal Time and Effort Should be Applied to the Creation of the Clinical Study Report Synopsis.” Whether you are a seasoned regulatory writer or want to break into this field, you may find this blog to be a must read.
AMWA’s 73rd Annual Conference

November 6-9, 2013 / Columbus, OH

Join us at

Online Registration Opens July 10, 2013
Visit amwa.org for more information

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Or call Natalie DeSoto at 717-580-8184
News of recent natural disasters and the hardships endured by those affected can spur interest in disaster preparedness. With technology’s critical role in staying open for business, it is increasingly important to be ready for anything—accidental data loss, electrical power surges, theft, blackouts, and large-scale natural catastrophes. Such occurrences can be detrimental to business; however, their impact may be lessened with preparation, including performing regular data backups and acquiring a handy supply of extra fully charged batteries, charging devices, and mobile broadband solutions.

Data Backups
With respect to data backups, redundancy is key. According to a blog article by Caron Beesley, a moderator for the SBA.gov Community networking site, computer users should have at least two backup forms to help minimize data losses. Three major backup methods are as follows:

- **Disks:** With disks, data backups can be performed locally. According to Beesley, disks have been a go-to backup method; however, as backing up to a disk is a manual process, some files or data may be overlooked.
- **External hard drives:** A better option is an external hard drive—a small, external hard drive that can sit on a desk. External hard drive devices, with 1 terabyte of storage space, can be purchased for less than $100.
- **Cloud-based methods:** A cloud-based backup service uses multiple, virtually connected servers that are generally hosted by a third-party provider. One of the main benefits of a cloud-based method is portability; these services can be used from virtually anywhere with an Internet connection. Some providers of these offsite storage services include Carbonite, Dropbox, Jungle Disk, Mozy, and Symantec. These services may allow multiple computers and mobile devices to connect, back up, and download data. Backups may occur automatically; depending on the service, an automatic data transfer may be set to occur almost simultaneously or daily.

Potential drawbacks exist to each of these systems. With local disks and hard drives, data may be lost via theft or natural disaster. Offsite cloud-based methods raise privacy and security considerations. Medical writers and editors will need to make sure they use strong passwords, comply with medical privacy policies if they have access to patient information, and be mindful of client privacy needs.

An alternative to an offsite cloud-based service is using a wireless network and a hard drive to create an onsite personal cloud solution; however, this option may be vulnerable to local disasters. Therefore, users of any of these methods, services, or both should evaluate the potential benefits and risks to decide which procedures may be the most suited to their needs. According to Beesley, an automated backup is a necessity. Moreover, given the varying degrees of data sensitivity involved in business, considering combinations of these backup options may be optimal.

Preparing for Power Surges and Outages
Other than having a fully charged laptop or extra battery handy, what other options are available during a power outage?

For cell phones, smart phones, or tablet PCs, the batteries can be recharged with an external battery pack or portable charger, which can be purchased for less than $50. (Brands to consider include Anker, PowerGen, Trent, and RAVPower). Although a little more expensive, similar devices are available to charge laptop computers. For desktop computers, an uninterruptible power supply can provide a desktop computer with power for several minutes to several hours during an outage, providing time to save documents and safely turn off the computer. (Brands include APC, CyberPower, and Tripp Lite.) Similar to a surge protector outlet strip but with a built-in backup battery, an uninterruptible power supply can help lessen the effects of power fluctuations and outages on computer equipment.
Mobile Internet Access
In the event local Internet service goes down, several alternatives for getting connected include finding a nearby coffee shop with Wi-Fi access, using a cell phone as a cellular modem (also known as tethering), or using a mobile broadband device that provides Internet on an as-needed, no-contract basis. Some mobile broadband devices allow a user to simultaneously connect several computers and tablets. Providers include T-Mobile, Verizon Wireless, and Virgin Mobile. Depending on the provider, mobile broadband service can be purchased for a day, a week, or a month. These services can be easy, convenient, and economical for both travel and emergency situations.

References

TECH TALK REVIEWS

Curio version 8 (www.zengobi.com)
Developer: Zengobi Inc
Platform: Mac OS only; requires OS 10.7.4 or later
Price: $99.99

Curio 8 combines mind mapping with a visual approach to project management that includes calendar/reminder syncing and file management. Curio feels to me most like a feature-filled, digital whiteboard, although it is called a digital notebook.

I use Curio to mind map, outline, and create and track projects whether they are Word or Pages documents or Powerpoint or Keynote slide sets. I like the application’s Sleuth feature, which searches for and downloads images from multiple websites for use in slides; Curio keeps track of the source URLs. I can insert PDFs, documents, digital recordings, videos, other URLs, and more as part of a project folder and readily access and work within those attachments. It also integrates with my Evernote account.

Curio’s complexity is both a strength and a weakness. I can’t begin to list all of its features here, but it does come with a full trial version, training module, e-manual, and user bulletin board.

Advantages:
• A very visually based tool for developing, organizing, and tracking a project. (It is not at all like a Gantt chart.)
• Free 25-day trial
• Many useful features

Disadvantages:
• No iPad or tablet version, but it does import mind maps from iThoughts, MindManager, and other mind-mapping apps.
• Takes a while to learn and remember all of the available features
• Mac only

— Mary E. King, PhD
King Medical Communications LLC, Boulder, CO

Freshbooks (www.freshbooks.com)
Platform: Cloud-based
Price: $14.00/mo for up to 25 clients; $29.95/mo unlimited. Free 30-day trial.

Freshbooks is a cloud-based accounting system that is the perfect solution for busy medical writers. Create and e-mail invoices, track expenses by category, and generate a variety of reports all through your Web browser. Freshbooks is incredibly intuitive to use. If you don’t need all the bells and whistles of accounting systems such as QuickBooks, Freshbooks is an affordable and professional solution. My invoices look crisp and professional and tax season is a breeze with easily generated reports, including profit and loss and expenses.

— Mark R. Vogel, MA
San Francisco, CA
I still remember the moment 2 years ago when Melanie Ross, who was then AMWA's immediate past president, called me and asked if I would accept the nomination for the office of AMWA president-elect. I remember it, of course, because being nominated for a leadership position in any organization is a great honor: It means that people you work with—people who know you well—think so well of you that they are willing to entrust you with oversight responsibility for the whole organization, for a whole year.

In AMWA, of course, we don’t have a vice president; instead, we have a president-elect. Operationally, this means that the second person in the leadership has agreed in advance to become president after a year of learning the job by observation and participation. And that’s the reason we never vote directly for next year’s president: When we vote for next year’s president-elect, we are at the same time voting for the president for the following year. Not using this system would leave open the possibility that no one would run for president (a very real problem in volunteer and nonprofit organizations), or someone with no experience or limited experience would be thrust into the position and have to learn about the issues and responsibilities on the job.

This system, combined with the set of experiential requirements set out in the AMWA Constitution and By-Laws, means that potential candidates for president-elect have held several positions at the Executive Committee (EC) level and have in-depth national-level experience with AMWA. It also means they have longevity in the organization; of the 13 members of this year’s EC, almost half have belonged to AMWA for more than 20 years. The one-term-only rule for the presidency, and the rule prohibiting past presidents from serving on the EC, together create a constant demand for new leadership talent, and in practice an EC turns over completely every 6 to 8 years.

Although before becoming president-elect I had served as secretary and had been on the EC in various roles for 5 years, I have to say that in my year as president-elect, with Barbara Snyder as president, I was on a steep learning curve. As president-elect you have few set duties, which may seem strange, but the reason is that you have to be ready to take over the presidency at a moment’s notice. What you are really doing, along with the other elected officers, is giving the president and the executive director policy advice when situations come up.

And situations do come up: Edie Schwager dies and a proper tribute must be planned. A controversy arises on the discussion forums, over, say, certification. Senator Grassley or someone else starts calling us “ghostwriters,” and a response is required. The budget needs an adjustment. Something about a future annual conference contract needs review. An AMWA staff member resigns or a position is restructured. A major storm knocks out power for several days in the areas where HQ is located and a third of the membership lives. Or, more positively, AMWA has an opportunity to partner with a sister organization on a project of shared interest. Things happen, and through the Administrative Review Committee (ARC), which consists of the national officers, AMWA responds appropriately and promptly.

After a year of this annealing, for which there is no substitute, the president-elect has, as Civil War soldiers said about their first combat experience, “seen the elephant.” Before you know it, you are standing in front of a room full of AMWA members at the annual conference, being inaugurated, giving a speech, and receiving applause.

And then, the real work begins: Weekly calls with the executive director (my innovation—adding the president-elect). Monthly ARC calls. Quarterly face-to-face meetings with the EC in exotic locales—Fort Lauderdale, Bethesda, Columbus. Semi-annual meetings of the Board of Directors. Teleconferences on budgeting, planning, scheduling, policies, electronic infrastructure, national and regional meetings, publications, workshops—the list goes on. To use one of my favorite words from the Victorian era, the multitudinousness of AMWA’s endeavors and initiatives is striking, especially for a group of only 5,000 members. But the president needs to see everything that AMWA does both distinctly and in the context of the entire association—the forest and the trees, both at the same time.

This is because AMWA’s president has three essential tasks: (1) speaking on behalf of AMWA, both internally and externally; (2) managing decision-making so that goals, objectives, and policies are reviewed and set; and (3) working closely with the executive director so that all the efforts of staff, committees, task forces, and other work groups
I need to say that I didn't set out to be AMWA president. I was Michigan chapter president, served on national committees, was an administrator of several EC-level areas, and I liked the work. Importantly, my work was noticed, and I was mentored by many generous AMWA members. The process worked in my case, and in the case of many others. But we need to ask ourselves: Do some members toil in obscurity? Is there a reservoir of talent among members that AMWA is not tapping? One of AMWA's goals for the next several years is to make leadership opportunities more open and transparent, and part of this task involves review of the Constitution and By-Laws.

Being president of AMWA is a wonderful opportunity, and I am grateful that so many of my fellow members took the trouble to mentor me and recommend me for committees and task forces. Our goal as an association should be to create structures and processes that provide a constant supply of committed and expert leadership.

Quarterly Update from the Medical Writing Certification Commission

By Karen Potvin Klein, MA, ELS, GPC
2012-2014 Chair, AMWA Medical Writing Certification Commission

The Medical Writing Certification Commission was established to initiate, evaluate, maintain, and oversee the credentialing program for medical writers. The commission seeks to represent the diversity that exists within the profession and serve as a voice for stakeholders who have an interest in maintaining high standards in medical writing.

**ISMPP poster:** Our abstract, “A Medical Writing Survey to Develop a Certification Examination,” was accepted as a poster presentation for the International Society for Medical Publication Professionals (ISMPP) annual conference, which was held on April 29-May 1 in Baltimore. Tom Gegeny, a member of the Certification Commission and ISMPP, presented the poster on our behalf. The poster provides more detail regarding the survey results, which were described initially in our AMWA Journal article (Gegeny TP, Klein KP. AMWA’s Medical Writing Certification Initiative: Where Are We Now? AMWA J. 2012; 27(4):184-187).

**Item-writing training:** Our first item-writing training session with the certification vendor Schroeder Measurement Technologies (SMT) was held May 8-10. All sessions are being held at SMT headquarters in Clearwater, FL, for logistic and test-security reasons. Participants were Lori Alexander, Tom Gegeny, Bart Harvey, Nancy Katz, Kathleen Maguire, Marianne Mallia, Donna Miceli, Sharon Nancekivell, Victoria White, and me. Lauren Ero from the AMWA office also attended. The product of this meeting is the beginning of a bank of test questions for the eventual certification exam. We continue to seek subject-matter experts for subsequent item-writing sessions. If you are interested in learning more about this process, please contact Susan Krug at skrug@amwa.org.

**DIA Medical Writing Community Meeting:** David Clemow, Certification Commission member, reprised the AMWA Open Session from October 2012 at the DIA Medical Writing Community conference in Phoenix on March 18-21, 2013. David was one of the organizers of the DIA meeting. Karen Klein and Susan Krug attended the meeting as AMWA exhibitors. They also assisted David in fielding questions during the question and answer section of his talk. Roughly 50 people were present. Attendees were extremely interested in the concept of a certification for medical writing and in pursuing partnerships between DIA and AMWA. We also spoke with many attendees at our exhibit booth, some of whom were members of both organizations.

In the next update, we’ll provide a progress report on the item-writing process, policy development, and other administrative matters related to the commission.
Each year, the slate of AMWA officers is chosen by the Nominating Committee, which consists of the president-elect (who serves as chair) and six voting members who are not members of the Executive Committee (EC). The Nominating Committee receives from AMWA headquarters the names and biographies of all members meeting the criteria for the 3 elective offices: president-elect, secretary, and treasurer. New this year, an EC interest form was also distributed to qualified candidates giving them an opportunity to express their interest in serving in an elected officer position. Members of the Nominating Committee discuss the potential candidates and select one candidate for each position. The names of these candidates are then presented to the Board of Directors for approval at its spring meeting.

The following candidates were approved by the Board of Directors at its spring 2013 meeting:
- President-elect Karen Potvin Klein, MA, ELS, GPC
- Secretary Stephen Palmer, PhD, ELS
- Treasurer Christine F. Wogan, MS, ELS

President: The president-elect automatically assumes the office of president at the annual business meeting held during the annual conference of the following year. The 2013–2014 AMWA president will be Brian Bass. Brian is President of Bass Global Inc. in Robbinsville, NJ. He earned a BA in communications from Ramapo College of New Jersey. Brian joined AMWA in 1994 and became a fellow in 2001. Before becoming president-elect, Brian’s service to AMWA has included the following: administrator of the annual conference; administrator of development; administrator of public relations; leader and member of many committees, including the Eric Martin Award Committee, the McGovern Award Committee, and the Fellowship Committee; president-elect, president, and immediate past president of the Delaware Valley Chapter; Delaware Valley Chapter education chair and Princeton Conference chair; annual conference workshop leader, open session moderator and speaker, and roundtable leader; and AMWA Journal Freelance Forum panelist.

President-elect criteria: The president-elect (1) must have served on the Executive Committee for a minimum of 2 full years, and (2) must be a current member of the Executive Committee when his or her name is being considered by the Nominating Committee.

Nominated for president-elect is Karen Potvin Klein, MA, ELS, GPC. Karen is associate director of research services and development in the Office of Research at Wake Forest University Health Sciences in Winston-Salem, NC. She earned an AB in classics from Brown University and an MA in liberal studies from Wake Forest University. Karen joined AMWA in 1989 and became a fellow in 2006. She brings a wealth of experience to the position of president-elect, having served AMWA previously in the elected office of secretary; as administrator of several EC departments, including Certification Commission Chair and job analysis panelist, special project/communications administrator, awards administrator, annual conference workshop administrator, publications administrator, and public relations administrator; on committees and task forces including chair and member of the Eric Martin Award Committee, the Budget and Finance Committee, and the Task Force on Partnering with Higher Education; as a roundtable, workshop and klatch leader; open session moderator and panelist; and peer reviewer, editor, and author of manuscripts for the AMWA Journal and reviewer for Essays For Biomedical Communicators: Volume 2 of Selected AMWA Workshops.

Secretary criteria: The secretary must have served on the Executive Committee within the 3 years immediately preceding his or her consideration by the Nominating Committee.

Nominated for secretary is Stephen Palmer, PhD, ELS. Steve is a senior scientific medical writer at the Texas Heart Institute in Houston, TX. He earned a PhD in social and health psychology at the State University of New York at Stony Brook, where he also earned his MS. He holds a BA from Wesleyan University. Steve joined AMWA in 2002 and became a fellow in 2011. Currently Steve serves as secretary. His previous AMWA service includes the following: admin-

Conference chair; annual conference workshop leader, open session moderator and speaker, and roundtable leader; and AMWA Journal Freelance Forum panelist.
Treasurer criteria: The treasurer must have served at least 1 full year on the Budget and Finance Committee within the 5 years preceding his or her consideration by the Nominating Committee. It is also desirable for the treasurer to have served on the Executive Committee before assuming the office of treasurer.

Nominated for treasurer is Christine F. Wogan, MS, ELS. Chris works in Houston, TX, at MD Anderson Cancer Center, where she is program manager for Division Publications. She earned a BA in biology at Swarthmore College and an MS in biological sciences at the University of Houston at Clear Lake. Chris has a distinguished record of service in AMWA. She joined AMWA in 1989 and was named a fellow in 2012. Currently Chris serves as treasurer. Her previous AMWA service includes the following: administrator of awards; Journal peer reviewer; and annual conference editing/writing sections chair; workshop leader, open session panelist and moderator, and roundtable leader; and, for the Southwest Chapter, director-at-large, treasurer, president, and immediate past president.

Procedure for Additional Nominations
According to AMWA’s bylaws (Article III.2d), additional nominations for president-elect, secretary, or treasurer may be made by any member whose dues and special assessments are current, provided that any such nomination is submitted in writing to the secretary of AMWA at least 30 days before the annual business meeting (at the annual conference in Columbus, OH, November 9, 2013). Any individuals so nominated must meet the criteria outlined in the bylaws (Article III.1.a through 1.d) for their names to be placed on the ballot. Such a nomination must state clearly the qualifications of the candidate, must be signed by 50 members in good standing as of the date of receipt of the nomination, and must be accompanied by a letter from the candidate stating that he or she is willing to serve if elected.

For additional information about how you can get involved in AMWA at the national level, see the box below, “Pathway to Executive Committee Participation.”
The American Medical Writers Association (AMWA) is holding its financial position despite a still-recovering economy. At the end of the past fiscal year (July 1, 2011, through June 30, 2012), expenses exceeded income by $57,343. This figure includes $10,000 from reserves for a technology needs assessment and $21,000 from reserves for certification program development. Our investments have tracked slightly above the financial indices. We have done fairly well by continuing to sustain membership and reduce expenses wherever possible, while still making important expenditures for the future health of the organization.

How Should This Report Be Interpreted?
This financial report provides a snapshot of the financial status of a dynamic organization. AMWA’s fiscal year begins on July 1, so income from the annual conference, which accounts for about one-third of AMWA’s total income, is realized in the first half of the fiscal year. Because many sources of income have associated expenses, differences between income and expenses (i.e., excess of income over expenses or vice versa) should be considered, as well as variances from the budget and changes from the previous year. When differences between income and expenses are compared with differences from the previous fiscal year, the change is reported as net gain over (or loss from) the previous fiscal year.

What Are AMWA’s Sources of Income?
Membership dues and annual conference registrations accounted for 75% of the $1,639,373 income for fiscal year 2011–2012 (Figure 1). Membership was sustained compared to the previous year. Education had a net gain in income ($37,642) compared to the previous fiscal year, mostly from revenue from new enrollments in the Essential Skills and Specialty Area certificate programs. Although revenue from chapter workshops had decreased, there was a 14% increase in the revenue from onsite workshops. Furthermore, sales of self-study modules (Basic Grammar, Punctuation, Sentence Structure, Statistics, and Elements of Medical Terminology) continued well and the newest module, Ethics, was released, increasing our revenue in this category. Revenue from registrations for the 2011 Annual Conference was similar to the previous year.

Other income sources that each represent more than 1% of total income for this year were sales of Jobs Online advertisements ($50,275) and Freelance Directory listings and access ($29,070).

What Are AMWA’s Expenses?
Staff salaries and associated expenses such as payroll taxes and benefits accounted for 40% of the total expenses of $1,696,716 (Figure 2). Personnel-related expenses (e.g., wages, payroll taxes) were higher, primarily because of the overlap in employment of the incoming and outgoing executive directors in 2011 and retirement costs (payment for unused vacation time) for the previous executive director. As of June 30, 2012, AMWA had six full-time employees and one part-time employee in addition to an executive director. Two
positions were eliminated and outsourced (meeting planner and graphic designer), and a new position of deputy director was created. Staff members’ many responsibilities include working on educational programs; supporting membership services; maintaining the website, Freelance Directory and Jobs Online listings; marketing AMWA’s products and services; coordinating meetings; implementing AMWA’s awards programs; and bookkeeping.

Annual conference (2011) expenses were the second-highest expense category (20%). The largest expense was meal functions, which are heavily subsidized by AMWA and averaged about 16% more than in 2010. Other major conference expenses (more than $10,000) were (in descending order) nonworkshop audio/visual support ($35,118), workshop audio/visual support ($32,968), bank charges for credit card use ($26,860), conference logistics/consultant ($20,140), design/editing/temps ($13,468), workshop leader benefits ($11,777), printing ($10,767), and registration area and supplies ($10,350).

Administrative expenses (17%) increased by $26,644 from last year. Office rent was the largest subcategory at $122,649. Other administrative expenses exceeding $10,000 were for bank/credit card charges ($36,295), computer services ($21,467), a financial audit ($18,631), telephone/Internet access ($15,844), and depreciation ($13,705). The remaining major expense categories were publications ($75,381) and membership benefits not included elsewhere in the budget ($26,991).

Other expenses (17%) representing more than 1% of total expenses were (in descending order) insurance ($83,708), EC/Board of Directors ($68,436), education ($56,827), and certification expenses ($28,028). Insurance costs cover health, dental, life, and disability insurance for staff and liability insurance for AMWA officers. Education expenses were primarily for onsite workshops and the self-study modules. EC/Board expenses include EC travel and hotel rooms and food for January, April, and July EC meetings, and food and audio visual for board meetings held in April and at the annual conference.

What Lies Ahead in the Current Fiscal Year?

In January 2012, Executive Director Susan Krug, in consultation with then-President Barbara Snyder, then-President-elect Douglas Haneline, and I, prepared the 2012-2013 AMWA budget with input from the Budget and Finance Committee. On the basis of experience and the information available at that time, we budgeted $1,749,600 in income (Figure 3) and $1,769,656 in expenses (Figure 4) for a projected deficit of $20,056. Two major technology improvement projects are planned for 2012–2013 fiscal year: an association management software database system and a new website. This new technology will integrate all AMWA membership, conference, products, and services into a single database management system. This important effort to bring headquarters’ technology and infrastructure up to industry standards will increase member service, program capacity, and workflow efficiency. The 2012–2013 budget anticipated higher costs for the 2012 Annual Conference compared to what was budgeted for the 2011 conference (by $73,325). Hotel, convention center, and conference production costs continue to rise. Registration fees and event ticket prices will be increased slightly to cover the actual cost of these events. Cost-containment measures such as streamlining audio visual, labor, and production costs, and eliminating a four-color printed promotional brochure for the conference, are being implemented. Corporate sponsorships and exhibit hall income at future conferences will continue to further defray conference expenses.

**Figure 3.** Anticipated sources of AMWA’s income during fiscal year 2012–2013 (July 2012–June 2013). The amounts are from the budget approved by the AMWA Board of Directors at the 2012 spring meeting.

*Other = Jobs Online ads (2.9%); Freelance Directory (1.5%); interest (<1%); special projects (<1%); publications (<1%); awards (<1%); label sales (<1%); general fund contributions (<1%); Web and Internet (<1%); misc. shipping/handling (<1%).

**Figure 4.** AMWA’s anticipated expenses during fiscal year 2012–2013 (July 2012–June 2013). The amounts are from the budget approved by the AMWA Board of Directors at the 2012 spring meeting.

*Other = Insurance (4.4%); certification (3.4%); EC/Board of Directors (3.0%); education (4.1%); Web and Internet (<1%); special projects (<1%); awards (<1%); unrelated business tax (<1%); mission-related misc. expenses (<1%); misc. shipping and handling (<1%); Jobs Online (<1%); label sales (<1%).
Although it is too early to predict the outcome for the 2012–2013 fiscal year, the data so far in the largest categories of income indicate that it is likely to continue in a positive direction as the economy slowly recovers. Since AMWA relies heavily on dues income, the major consideration will be membership numbers for the fiscal year. Membership-related income at the end of fiscal year 2011–2012 ($665,332) was slightly under that expected ($665,800 budgeted). We hope that as the current economic conditions recover, so will membership, by maintaining current members, increasing new memberships, and bringing any lapsed members back to the association.

**What About the Long Term?**

As a general rule, nonprofit organizations should have operating funds of 25% to 33% of annual expenses budgeted (for AMWA, this was $402,483 to $813,673 for fiscal year 2011–2012). Despite the sluggish economy and less-than-stellar return on investments, as of June 30, 2012, AMWA operating funds (cash and cash equivalents totaling $624,193; Table 1) were right within the target range.

Nonprofit organizations also should have reserves of 6 to 12 months of annual operating expenses (for AMWA, $804,965 to $1,609,930 for fiscal year 2011–2012). AMWA’s reserves are defined as its short-term investments in certificates of deposit that mature in 1 to 5 years and long-term investments in mutual funds (60% stocks and 40% bonds) that are managed by Morgan-Stanley Smith-Barney. As of June 30, 2012, our short-term and long-term reserves amounted to $1,006,913 (Table 1), which is at the high end but within the target range.

As of June 30, 2012, the Endowment Fund balance was $197,266, the interest of which continues to be used on special projects consistent with the fund’s mission statement and as determined by the Board of Directors.

In summary, AMWA has weathered another year of a slow economy and downturn in investments. AMWA continues to experience positive financial health with respect to the current market, as we have observed a favorable upswing that has continued. Keeping this in mind, and with continued conservative investing, we are planning and budgeting for the year ahead and our pursuit of medical writing certification.

**Acknowledgment**

The authors thank the 2011–2012 Budget and Finance Committee for help in reviewing reports and budget information: Kate Casano, Alison Woo, Mary Alice Ditzler, and Julie Kay Beyrer, and ex officio members Barbara Snyder, Douglas Haneline, and Susan Krug.

**Table 1. AMWA Balance Sheet as of June 30, 2012**

<table>
<thead>
<tr>
<th><strong>Assets</strong></th>
<th><strong>Amount</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents</td>
<td>$624,193</td>
</tr>
<tr>
<td>Short-term funds (maturity 1 to 5 yr)</td>
<td>$100,066</td>
</tr>
<tr>
<td>Accrued interest on short-term investments</td>
<td>$1,274</td>
</tr>
<tr>
<td>Miscellaneous bank receivable</td>
<td>$0</td>
</tr>
<tr>
<td>Long-term investments</td>
<td>$906,847</td>
</tr>
<tr>
<td>Total accounts receivable</td>
<td>$7,384</td>
</tr>
<tr>
<td>Prepaid expenses and supplies inventory</td>
<td>$71,305</td>
</tr>
<tr>
<td>Fixed assets (furniture, equipment)</td>
<td>$58,766</td>
</tr>
<tr>
<td>Other assets (McGovern and Endowment funds, deposits, inventory assets)</td>
<td>$397,554</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>$2,167,389</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Liabilities and Net Assets</strong></th>
<th><strong>Amount</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts payable and accrued expenses</td>
<td>$100,507</td>
</tr>
<tr>
<td>Unearned (deferred) income</td>
<td>$526,369</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td><strong>$626,875</strong></td>
</tr>
<tr>
<td>Total Equity/Assets</td>
<td>$1,563,467</td>
</tr>
<tr>
<td>Net income</td>
<td>-$58,541</td>
</tr>
<tr>
<td><strong>Total Equity</strong></td>
<td><strong>$1,504,925</strong></td>
</tr>
<tr>
<td><strong>Total Liabilities and Equity</strong></td>
<td><strong>$2,131,801</strong></td>
</tr>
</tbody>
</table>

*Because of rounding, calculation of the details may not equal total amounts listed.*
Drugs Information Association
June 23–27, 2013
Boston, MA
www.diahome.org

International Society of Managing and Technical Editors
August 6–7, 2013
Washington, DC
www.ismte.org

Seventh International Congress on Peer Review and Biomedical Publication
September 8–10, 2013
Chicago, IL
E-mail: jama-peer@jama-archives.org
www.peerreviewcongress.org

Regulatory Affairs Professionals Society
September 28 - October 2, 2013
Boston, MA
www.raps.org

Health Data Workshop (Association of Health Care Journalists)
October 3–4, 2013
Anaheim, CA
www.healthjournalism.org

Council for Programs in Technical and Scientific Communication
October 10–12, 2013
Cincinnati, OH
www.cptsc.org

Plain Language Association International
October 10–13, 2013
Vancouver, Canada
www.plain2013.org

Health Literacy Annual Research Conference
October 28–29, 2013
Washington, DC
www.bumc.bu.edu/healthliteracyconference

National Association of Science Writers
November 1–5, 2013
Gainesville, FL
www.sciencewriters2013.org

American Public Health Association
November 2–6, 2013
Boston, MA
www.apha.org/meetings

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