

## What the mirror doesn't tell you

### The amazing work and wonder within you

By Tracey Long, PhD, RN, MS, MSN, CDE, CNE, CHUC, CCRN

**I** hate my body." "I'm such a fat, worthless cow." "Where did all these gray hairs and wrinkles come from?" "I have total thunder thighs." "How could anyone find me attractive when I look like this?" "My body is such a burden."

If you're like 97% of the American population, you've probably had thoughts like these at some point. According to a survey by *Glamour* magazine 30 years ago and updated in 2014, 54% of women are unhappy with their body and 80% claim the mirror makes them feel bad about themselves. Unhappiness about body image has been reported in girls as young as age 6. Even men admit to body-image angst; from 1997 to 2001, the number of men who had cosmetic surgery increased 256%. Clearly, we need to evaluate the messages the mirror is telling us. (See *Campaigning for real beauty*.)

#### Mirror, mirror, on the wall

Although many of us rely on the messages in the mirror as the absolute truth, we need to be aware of the inherent distortions it may hold. Ever since 8,000 B.C., when the mirror made its first appearance, people have been evaluating their personal worth based on their physical appearance. Two opposite attitudes exist: Some people are fixated by their own faces, as shown by an obsession with "selfies." Oth-



ers declare their body hatred throughout the day.

We have a love-hate relationship with the mirror—but the mirror may not always tell the truth. People with anorexia nervosa see a distorted view in the mirror; some view themselves as fat even though they're scarily thin. The mere act of focusing on something, such as a nose or a mole, may make it look larger in the mirror. Even your mood may affect the way you see yourself. When you're tired, angry, or anxious, the mirror may reflect your emotions more than your true physical image.

#### Campaigning for real beauty

In 2004, Dove® commissioned a global study, called *The Real Truth about Beauty*, to further global understanding of women, beauty, and well-being—and the relationships among them. The study found only 2% of women would describe themselves as beautiful.

Subsequently, Dove launched its Campaign for Real Beauty, which triggered a global discussion about the need to define beauty more broadly. It uses various vehicles, including media messages, partnerships, and training with the Girl Scouts of America and Boys and Girls Clubs, to promote awareness and education for women and girls of all ages. Its video "**Evolution<sup>A</sup>**" shows how professional makeup artists, photo enhancement, and computer manipulation can make an average-looking woman look beautiful.

## Amazing body facts the mirror doesn't tell you

The more you know about your body, the more you can appreciate it.

- The 60,000 miles of blood vessels inside the average adult are enough to travel around the earth 2.5 times.
- Nerve impulses travel 250 miles per hour.
- The body contains 70 octillion atoms—23 times more than the 300 billion stars in our galaxy.
- The combined hair of a human's head can support the weight of two elephants.
- Human bone is as strong as granite and concrete. A block of bone the size of a matchbox can support 9 tons.
- The human brain can perform 38 thousand trillion operations per second, compared to the 92 trillion performed by the world's most powerful super-computer.
- Your body creates 7 miles of new blood vessels for every pound of fat or muscle you gain to perfuse it.
- Each second, 25 million new body cells are created.
- Your outer skin is replaced every month.
- Besides the classic five senses, you also have a sense of balance, temperature, pain, emotions, air, hunger, thirst, and fullness.
- A red blood cell can travel throughout your whole body in 20 seconds.
- The surface of one lung's capillaries is as large as one side of a tennis court.
- Your body makes about 1.5 L of saliva each day.

### What the mirror tells you

Relying on the mirror to tell you “who is the fairest of them all” may not give you the honest truth. But despite potentially negative messages people get from the mirror, it can provide helpful information. It can tell you a lot about the outside and the inside of your body. Although we focus on our exterior image, the mirror offers clues to the internal health of your body.

Using your critical thinking assessment skills, take an objective look at your skin and hair. The skin, the body's largest organ, can provide feedback on your sleep (or lack thereof) and nutrition. Without adequate vitamin intake or sun, your skin may look pale and flaccid; without adequate essential fatty acids, it may be dull or dry. Stress, overwork, and lack of purpose in your life may reflect in the eyes that stare back at you. Your hair texture and natural color also can hint at the state of your nutrition, exercise, and rest.

### What the mirror doesn't tell you

The mirror doesn't tell you about the amazing functions of your body systems, or that you and your body are the most brilliant

creations in the universe. As Shakespeare's Hamlet exclaimed, “What a piece of work is man! How noble in reason, how infinite in faculty! In form and moving how express and admirable!”

Your endocrine system, for instance, is an amazing creation of numerous autonomic functions working through a negative feedback loop of chemicals to regulate many systems. It also balances your energy levels through the thyroid gland. And when is the last time you thanked your adrenal glands for helping regulate your blood pressure via cortisol and aldosterone?

Thanks to auto-regulation, your body can keep its temperature within the same general range even when the environment around it changes constantly. Breathing is controlled by tissues in your carotid arteries that track carbon dioxide (CO<sub>2</sub>) concentration and send messages to the brain's respiratory center. Your body breathes faster or slower to eliminate CO<sub>2</sub> as needed, all without your conscious awareness.

Your pancreas produces both insulin and glucagon, which naturally oppose each other but work in harmony to balance blood glucose levels. These levels affect the func-

## Learning to love your reflection

Here are some ways to change what you see in the mirror.

- When looking in the mirror, focus on what you love.
- Stop comparing yourself to the celebrities you see in fake air-brushed photos.
- Look past your face and hair so you can pick up on health cues.
- Honor your body by giving it some TLC.
- Take time to care for your body.
- Be grateful for your body systems that are working well.
- Pay compliments to your internal organs.
- Focus on your energy level, not your weight.

tion of all three trillion cells in your body. Your glucose level rises in the morning to awaken you and give your cells energy to start the day automatically. Somatostatin regulates the endocrine system, balancing insulin and glucagon to work in complete balance without your attention.

The mirror doesn't tell you how well your liver detoxifies drugs and chemicals and maintains your blood glucose level when you're asleep. Nor does it reveal that your immune system constantly monitors and patrols your blood for foreign pathogens, which it then kills through a complex chemical cascade. Does it tell you that your spleen has been working hard to store white blood cells and recycle red blood cells?

What the mirror doesn't tell you about your magnificent self is far more interesting and exciting than the cellulite you may glimpse in your reflection. It doesn't let on that your body has innate abilities, such as auto-regulation, self-defense, and self-healing. Even the guy who cut you off on the freeway yesterday has an amazing physical orchestra playing within him. (See *Amazing body facts the mirror doesn't tell you.*)

### The clinician reflection

Ironically, some clinicians who care for sick patients and help promote health and healing are unhealthy themselves. For example, research shows that occupational stress, poor coping behaviors, and lack of support

cause anxiety and depression in nurses. The longitudinal Nurses Health Study, which began in 1988, examines relationships among hormone replacement therapy, diet, exercise, and other lifestyle practices and chronic illnesses. It found female nurses' health was no better than that of the general populace. Ideally, clinicians' health should mirror their knowledge about the human body, health, and illness. Unfortunately, knowledge alone doesn't create vibrant health. We should sing along with the Disney character Mulan, who asks, "When will my reflection show who I truly am?"

As clinicians, we can do better to reflect the true inner beauty of our bodies—and project that beauty in our lifestyles. Balancing the mirror's messages is the key. What the mirror doesn't tell you can inspire you to honor your body. What it does tell you can motivate you to care for yourself so you can better model healthy behaviors for patients.

### Fixing the mirror's reflection

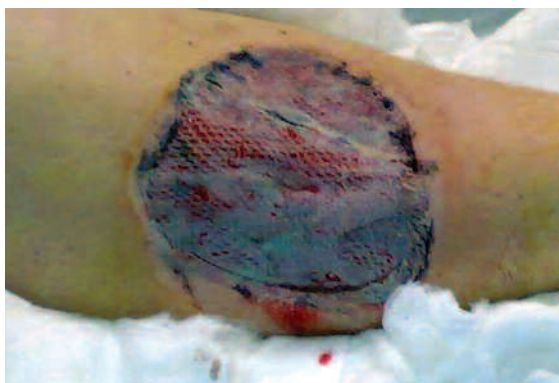
In our society of quick fixes and limited warranties, it's easy—and often necessary—to replace just about everything. We can replace most material objects when they're worn out. The only thing that can't be replaced is the human body. We can misuse and abuse it, or treat it with loving care. (See *Learning to love your reflection.*)

Despite the wondrous advances of medical science (and plastic surgery), your

body is still your very essence. Although it comes with a lifetime warranty, its quality isn't guaranteed; that's up to you.

So what does your mirror say to you?  
And will you listen? ■

Tracey Long is a professor of nursing for Kaplan University and International Service Learning in Las Vegas, Nevada. As an identical twin, she sometimes uses her twin sister as her mirror.



## Skin substitutes: Understanding product differences

**Choosing the right product  
can prove critical to  
patient care—and to staff  
resources in a busy clinic.**

By Myra Varnado, BS, RN, CWOCN

**S**kin substitutes (also called tissue-based products and dermal replacements) are a boon to chronic wound management when traditional therapies have failed. When selecting skin substitutes for their formularies, wound care professionals

have many product options—and many decisions to make.

Repair of skin defects has been a pressing concern for centuries. As early as the 15th century BC, Egyptian physicians chronicled procedures and herbal treatments to heal wounds, including xenografts (skin from another species). The practice of applying allografts (human cadaver skin) to wounds was first documented in 1503. In 1871, autologous skin grafting (skin harvested from the the person with the wound) was tried. Next came epithelial-cell seeding, which involves scraping off the superficial epithelium of healthy skin and transplanting the cells onto the wound.

Today, skin grafting and seeding techniques are used successfully for treating wounds. Autologous grafts are the optimal choice for wound coverage. But availability of skin for harvesting may be limited, particularly in cases of large burns. Also, autograft procedures are invasive and painful.

Allografts and xenografts (for instance, porcine or bovine grafts) may be used as temporary skin replacements. Typically, though, these are later covered by an autograft. Also, they have significant clinical limitations, including immune rejection with allogeneic grafts (grafts from donors who are genetically different from the recipient but of the same species), as well as pain, scarring, slow healing, and infection.

### **Bioengineered skin substitutes**

Bioengineered skin substitutes were created to eliminate certain problems with skin grafts. They're used to treat non-healing wounds and for soft-tissue grafts in patients with life-threatening full-thickness (third-degree) or deep partial-thickness (second-degree) burns, surgical wounds, diabetic foot

ulcers, venous ulcers, and certain other conditions, including epidermolysis bullosa. (See *Skin substitutes for chronic wounds*.)

Bioengineered skin substitutes contain live human cells that are seeded onto a matrix and provided with the proteins and growth factors needed to grow and multiply into the desired tissue. Various biosynthetic and tissue-engineered human skin equivalents are manufactured under an array of trade names and marketed for various purposes. Because these products are procured, produced, manufactured, or processed in different ways, they can't be evaluated as equivalent.

Bioengineered skin substitutes fall into five classifications:

- cultured epithelial autografts
- human skin allografts derived from donated human cadaver tissue
- allogenic matrices derived from human neonatal fibroblasts
- composite matrices derived from human keratinocytes, fibroblasts, and bovine or porcine collagen
- acellular matrices derived from porcine or bovine collagen.

Some skin substitutes also possess unique regenerative properties. For instance, an allograft made of amniotic membrane and umbilical cord (NEOX<sup>®</sup>, made by AmnioX Medical) exhibits the same biology responsible for propagating fetal regenerative and scarless wound healing. When transplanted into the adult wound environment, these placental tissues modulate inflammation and promote healing.

In a 2016 study of 32 diabetic foot ulcers by Raphael, an average of 1.68 NEOX applications resulted in a healing rate of 87.5%. A 2016 study by Caputo et al found that an amniotic membrane/umbilical cord allograft

## Skin substitutes for chronic wounds

Typically, chronic wounds (those that don't respond to initial treatment despite appropriate care) require advanced wound-healing interventions. A wound is considered chronic if it resists healing after 4 to 12 weeks of treatment, depending on wound type. The most common examples of chronic wounds are those with complicated etiologies, such as diabetic foot ulcers, venous leg ulcers, pressure injuries, and surgical wounds. Diabetic foot ulcers, venous leg ulcers, burns, and pressure injuries are most commonly treated with a tissue-based product.

proved effective in treating complex diabetic foot ulcers with osteomyelitis; patients had a 78.8% healing rate after an average of 1.2 applications. In contrast, a 2002 study by Margolis et al found that only 32% of diabetic foot ulcers healed within 20 weeks of standard-of-care therapy (debridement, dressings, and topical ointment).

### Choosing skin substitutes

Efficacy of skin substitutes varies widely in terms of the number of applications needed to close a wound, healing rates, and healing times. Dehydrated amniotic skin substitutes are convenient to store and use, but are less potent than cryopreserved amniotic/umbilical cord skin substitutes, which better preserve the structure and key biological signaling of fetal tissues to quickly promote revascularization in the adult wound bed. Choosing the skin substitute to match the desired clinical outcome is crucial. In addition, Medicare coverage varies considerably by region. (See *How Medicare reimburses for skin substitutes*.)

### Ease of use and storage

Some skin substitutes require more maintenance than others, potentially leading to product waste if storage conditions aren't

## How Medicare reimburses for skin substitutes

Wound centers need to select efficacious and cost-effective skin substitutes that are reimbursable. The Medicare Local Coverage Determination (LCD) for each region determines which skin substitutes Medicare reimburses for, as well as the criteria patients must meet for the skin substitute to be applied. When I was chief nursing officer for a company with many wound centers across the United States, I dealt with multiple LCDs, each with different requirements for applying skin substitutes. One LCD might allow a particular skin substitute to be applied anywhere on the body, while another limited that product to the foot. In determining which advanced tissue products to place on the formulary for our wound centers, we chose those with the widest applicability to the most patients.

optimal. For example, tissue-based products containing live cells have stringent shipping and application requirements; they're shipped on dry ice and the patient must receive the graft within hours after the product arrives at the wound center. During an ice storm in Dallas, a truck delivering a tissue-based skin substitute for one of our patients had to wait out the storm on the side of the road; the patient cancelled his appointment due to impassable roads. By the time the patient rescheduled and the truck arrived with the skin substitute, the product was no longer usable and had to be thrown out.

In contrast, a skin substitute that remains stable in a wound center's refrigeration unit is available when the patient needs it, so treatment can start sooner than with a product that has a narrow window for use. For instance, NEOX can be refrigerated safely at temperatures ranging from -112° to 39° F (-80° to 3.8° C) for up to 2 years without structural or functional compromise. If the product isn't opened, it can be exposed to room temperatures of 68° to 77° F (20° to 25° C) for up to 6 hours

and safely returned to cold storage. NEOX is the only cryopreserved amniotic membrane product that doesn't need to be stored in a deep freezer.

Also, skin substitutes that require extensive preparation consume precious staff resources. One product, for example, needs to be washed in water at a temperature not exceeding 43° F (6.1 °C) before it can be applied to a patient's wound. This requires an extraordinary effort for personnel in a busy wound clinic. Skin substitutes that can be exposed to room temperature before use are much more convenient and eliminate the need for special equipment, such as thawing tubs.

### Disadvantages of skin substitutes

As an advanced tissue treatment modality, skin substitutes are more expensive than conventional wound dressings and may have more complex storage and preparation requirements. To prevent waste, clinicians should choose a product that can be stocked in a range of sizes. Some substitutes are available only in small or very large sizes, which don't conform to most wounds; this means the wound center ends up paying for the excess product it must throw away.

Also consider how many times a skin substitute will need to be placed on a patient's wound before it closes. One that needs to be applied only twice is more cost effective than a less expensive one that requires multiple applications. ■

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tion is offering **free webinars<sup>c</sup>** on effective treatments for opioid use disorders. Target audiences include registered nurses and advanced practice nurses. The webinars are available for nursing education contact hours.

## The Joint Commission and pressure injuries

Access an **advisory on preventing pressure**



**injuries<sup>p</sup>** from The Joint Commission. The advisory discusses the recent change in terminology and tips for prevention. ■

### Online Resources

- A. [jointcommission.org/workplace\\_violence.aspx](http://jointcommission.org/workplace_violence.aspx)
- B. [cdc.gov/flu/index.htm](http://cdc.gov/flu/index.htm)
- C. [apna.org/i4a/pages/index.cfm?pageID=6088](http://apna.org/i4a/pages/index.cfm?pageID=6088)
- D. [https://www.jointcommission.org/assets/1/23/Quick\\_Safety\\_Issue\\_25\\_July\\_20161.PDF](https://www.jointcommission.org/assets/1/23/Quick_Safety_Issue_25_July_20161.PDF)

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Varnado is a primary author of WOCN's guideline for management of wounds in patients with lower-extremity neuropathic disease. She is also a speaker and consultant for Amniox Medical, Inc., which markets the NEOX line of products.

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### Online Resource

- A. [youtube.com/watch?v=iYhCn0jf46U](http://youtube.com/watch?v=iYhCn0jf46U)