Sports Injuries In the Older Athlete

By John E. Morley, M.B., B.Ch.

Athletes are becoming ageless. Recently 69-year-old Al Hanna climbed to the Southern Summit of Mount Everest. While he did not reach the Northern Summit, this represents a spectacular achievement in view of the age-related changes in pulmonary and cardiovascular function that occur with aging. In this year of the 2000 Olympics, it is an opportune time to examine the effects of aging on sports performance. Aging is associated with a marked decline in maximum sports performances. (continued on page 2)

Robert Browning wrote a long time ago, “Grow old along with me. The best is yet to be.” A recent report from the National Center of Health Statistics suggests that, at least over the last century, older Americans are aging better. The numbers of elderly have increased by tenfold and they live longer, in more comfort, and in better health than previously. In 1959, the percentage of older Americans living in poverty was 35%, which then decreased to 11% by 1998. Between 1900 and 1998, there has been a 6-year increase in lifespan beyond the age of 65 years. Chronic disability declined from 24 percent in 1982 to 21 percent in 1994. (continued on page 18)
With aging, there are a variety of changes that result in a decline in the ability of an athlete to perform. There is a decrease in maximum heart rate and an overall decline in maximum achievable cardiac output (1). This is related to some extent to the decreased ability of norepinephrine to activate the post alpha receptor mechanisms. In older persons there is an increase in ventricular muscle mass, and this hypertrophy is accentuated in older athletes. However, older athletes fail to have the left ventricular dilatation that is seen to occur along with the muscle hypertrophy in younger athletes (2).

Residual lung volume increases with aging, leading to a decrease in vital capacity and forced expiratory volume. In addition, there is a decline in diffusing capacity.

With aging, there is a decline in muscle strength and muscle mass. The decline in muscle mass leads to the condition called sarcopenia (“loss of flesh”). The major loss in muscle is in Type II a (“fast-twitch”) fibers (3). With exercise, new muscle fibers do not develop, but rather there is hypertrophy of existing fibers. In addition, there is a loss of endplate muscle units, resulting in more chaotic muscle firing and incoordination of muscles. Exercise in older persons increases the efficiency with which oxygen is extracted from muscle.

The role of declining testosterone and growth hormone in the muscle loss associated with the aging process is under intensive investigation. Both hormones decline dramatically with aging (4). Growth hormone replacement is associated with muscle hypertrophy, but not an increase in strength, in older persons. Testosterone replacement increases both lean mass and upper limb strength. There is incomplete data at present to comment on the effect of testosterone on lower limb strength. Both growth hormone and testosterone increase mixed protein synthesis in muscle. Muscle mixed protein synthesis decreases with aging.

Within the central nervous system there is a decline in cerebral blood flow and metabolism. This is associated with a decrease in reaction time. In addition, balance deteriorates with aging. This is due to a loss of cerebellar fibers and a decline in beta-adrenergic coordinating receptors.

Thus before disease supervenes older persons are at a marked disadvantage when it comes to taking part in the athletic process. Many of these changes result in a decline in the $V_{02 max}$. Thus it is not surprising that the $V_{02 max}$ declines linearly with aging. On average aging $V_{02 max}$ declines at the rate of approximately 1.5% per year. Highly trained older athletes show a decline of 0.5% per year when followed in longitudinal studies. It has been suggested that $V_{02 max}$ is an excellent measure of physiological rather than chronological aging. The rate of decline of maximum athletic performance is at a similar rate to the $V_{02 max}$.

SPORTS INJURIES

Older athletes are more likely to injure themselves than younger athletes while participating in their favorite sport. However, it has been found that despite this, older runners tend to have less functional impairment than does the average older person (5). As with all athletes, a careful warm-up period with stretching exercises is key to reducing injury. This section will discuss some general muscular skeletal problems faced by the older athlete and then examine specific injuries seen in running, swimming, cycling, and golf.

Musculoskeletal Conditions:

Loss of bone is universal with aging. Women tend to have a smaller skeletal mass than men and lose bone faster. At the time following the menopause, women lose bone at the rate of 2 to 3% per year, while men at the same age lose bone at the rate of 0.4% per year. Regular exercise decreases the rate of bone loss. Nevertheless, many older athletes have a degree of osteoporosis or osteopenia that predisposes them to fracture.
Saint Louis University Hospital

Moves Up

Listed Among The Top Ten Hospitals in the United States

On July 17, 2000, US News and World Report issued its eleventh annual rankings of America’s Best Hospitals. This ranking shows where to find the best care in 17 specialties including cardiology, cancer, and geriatrics. Saint Louis University Hospital has moved to 7th place in the national ranking of geriatric care, an improvement over the already impressive ranking of 10th place in 1999. The purpose of the US News and World Report is to assist patients with complex medical conditions that threaten quality of life or life itself by identifying medical centers with unmistakable expertise in various medical specialties. To that end, several criteria are reviewed: membership in the Council of Teaching Hospitals, affiliation with a medical school and the presence of at least 9 out of 17 prescribed technological services. From these criteria, 1,701 hospitals were identified as eligible for further scoring. For geriatrics, these hospitals were then given an institutional ranking, the US News Index, made up of three equal parts relating to quality of care: reputation, mortality, and a group of factors such as technology and nursing care.

Saint Louis University Hospital has a highly successful geriatrics program, not only in clinical care but also in research programs and educational programs. In addition, it has several other supportive care programs including an acute care unit (Acute Care for the Elderly or ACE unit), a sub-acute care unit (LifeCare Center of St. Louis), a nursing home, home care, and outpatient and assisted living programs. Educational programs offered each year to healthcare professionals, as well as to the lay public, by the Division of Geriatric Medicine include conferences, newsletters, newspaper columns, television and radio interviews, workshops and interactive Internet websites. All of these programs help make Saint Louis University Hospital an excellent place to receive geriatric care.

Been Here? Done This?

Offering regular updates on geriatrics, Cyberounds, an internet-based educational program for physicians and other health providers, is edited by Dr. John E. Morley. The internet address for Cyberounds is: www.cyberounds.com

A cybersite for seniors has been developed in collaboration with Saint Louis University and the Missouri Gateway Geriatric Education Center. Besides articles written by geriatric experts, this site provides health updates and an interactive question and answer section. The address for this site is www.thedoctorwillseeyounow. See you in cyberspace!
Cross-linking of collagen fibers results in a decrease in connective tissue extensibility which coupled with arthritis markedly decreases flexibility with aging. Lack of flexibility increases the force experienced by joints during exercise rather than dissipating it to surrounding tissues and can increase the rate of progression of joint destruction.

Back pain occurs in nearly two-thirds of persons during their lifetime. Older athletes need to be cautioned to undertake adequate warm-up and flexibility exercises to prevent injury. Stretching exercises need to be performed gradually and with a smooth motion. Overhead racket sports tend to increase normal lordosis and accentuate lower back symptoms. Cyclists with a high seat may improve symptoms by lowering the seat. Head-up swimming, e.g., breast stroke, arches the spine. Running up hill may aggravate lower back pain compared to running on a flat surface.

Strained back muscles are relieved by rest. Disc pain is made worse by sitting or standing. Night pain suggests an inflammatory or neoplastic process. Sciatica without back pain is due to entrapment of the nerve. Spinal stenosis is worse with walking and when the back is extended. Disc herniation and osteophytes produce worse pain when sitting. Older persons with low back pain or sciatica who develop incontinence need to be investigated for lumbar spinal stenosis. The pyriformis muscle syndrome is a relatively curable cause of sciatica without back pain.

Running:
Over-exercise injuries represent the most common injuries. In one study, increasing age of runners resulted in an increase in the incidence of hip and foot pain and back-related complaints (6). Females are more likely to have stress fractures.
Common over-exercise injuries in older runners include back pain, trochanteric bursitis, stress fractures, hamstring injury, patella femoral dysfunction, periostitis and/or posterior tibial musculotendonitis (shin splints), Achilles tendonitis, plantar fasciitis, Morton’s neuroma, calluses (hyperkeratosis), bunions and tarsal tunnel syndrome.

Treatment for most of these conditions consists of rest, orthotics, non-steroidal anti-inflammatory drugs or other pain medications and physical therapy. In a few situations, surgery may be indicated. Inequality of legs is a known precipitating factor and can be corrected by appropriate orthotics. Appropriate running shoes with good mid-sole cushioning that are changed every 250 to 500 miles are important for preventing injury (7). Grass, dirt or wooden tracks are more compliant and therefore recommended for older runners.

Finally, fall-related injuries can be a major problem in older runners. These may be associated with deteriorating balance and in that case can be decreased by doing balance exercises. New onset falls at times can be associated with delirium in older persons and this should always be considered when an older person falls. Following a fall, older persons are at greater risk for developing subdural hematomas and thus should be assessed for neurological localizing signs and both they and family should be warned to look for changes in mental status. In addition, the development of dehydration during running can precipitate delirium in an older athlete.

Swimming:
Swimmer’s shoulder (repeated rubbing of the rotator cuff muscles against the acromion) occurs in 60% of elite athletes (8). An upper arm strap may relieve some of the pain. Rotator cuff rupture is more common in the older than the younger athlete. Another injury more common in the older than the younger athlete is rupture of the long bicipital tendon. Both of these injuries require surgical repair.

Older swimmers should avoid hand paddles as they increase the risk of impingement syndromes. Fins can be used in all older athletes except those with patellofemoral pain. Older athletes should use swim goggles made by...
Aging Successfully By Exercising

By Margaret Herning, PhD, PT

Well it’s time to take inventory. You hear about the benefits of exercise from all directions. But honestly, what about yourself? Have you persistied in doing a regular physical activity? Or has the going been just a bit too hard?

Motivation appears to be a key factor in continuing exercise at any age. We start out with the best of intentions then find ourselves dropping back. So try to be practical. Choose a few exercises instead of a long list. You’ll remember them better and will probably keep doing them!

You can exercise to improve flexibility, endurance, and strength. You can choose to focus on just one area or do a combination of all three. A stress test is important if you want to start a vigorous training program. But if your intent is to walk or participate in a simple resistance program, this may not be necessary (American College of Sports Medicine, 1998). Check with your doctor to go over any precautions that may be important for you when exercising. Remember to wear comfortable shoes and clothes. Relax and keep breathing while you exercise!

When you do endurance and strength activities you should include time for your muscles to warm up, stretch, do the specific exercises, then cool down. Older adults need to spend adequate time in a warm-up because of age changes in tissue blood supply and tissue compliance. An example of a warm-up is light walking.

I’d like to recommend that you do flexibility (stretching) exercises every day. It is amazing how stiff we get overnight and the mornings are a wonderful time to go through a few good stretches. Remember to do the stretching exercise slowly and hold it for 20-30 seconds. Each of us have particular muscles that are tight. For example, the back of our legs. I do not like to see older adults standing or even sitting and bending to touch their toes. Why? Because many of us already have rounded backs and this exercise increases this. An exercise I like that stretches the back of your legs is to sit tall in a chair (don’t slump) and straighten one knee at a time. When your knee is straight, pull your toes towards you. Another good stretching exercise for your trunk is to stand with your back against the wall and your heels approximately three inches from the wall. Tuck your chin and pull your elbows back while flattening your lower back against the wall.

Endurance-type activities provide cardiovascular benefits and can help individuals lose weight. Such activities include dancing, swimming, bike riding, and fast walking. I don’t recommend running for most older adults as this causes a high impact force on your joints. Endurance training requires that you know your maximum heart rate and then exercise within 60-80% of this for about 20-30 minutes of continuous aerobic activities. The simplest way to determine your maximum heart rate is to subtract your age from 220. The safest way for you to determine your heart rate during exercise is for you to take your radial pulse (at your wrist). Press the tips of your index and middle fingers over your pulse and count the pulsations you feel. Instead of doing this for a full minute, you could count the pulsations for a 10-second period then multiply this number by 6 to estimate your heart rate for a full minute. Remember that both endurance and strength exercises need (continued on page 21)

Resistance Training Reduces Myocardial Ischemia

Am J Cardiol 80:841, 1997
Circulation 59:977, 1979

Oxygen Uptake at Maximum Exercise

Max K. Horwitt, SLU Professor Emeritus

Max Kenneth Horwitt, a professor emeritus at Saint Louis University Medical School, died in St. Louis Tuesday, August 1, 2000 at the age of 92. Dr. Horwitt entered Syracuse University and then transferred to Dartmouth where he graduated with honor. He earned his doctorate at Yale. While an undergraduate, he began his experiments that would lead him to a position of international prominence. He created the Elgin Project and pathfinding research at the University of Illinois Medical School. After retiring from Elgin, he came to St. Louis to continue his work at Saint Louis University. Even after he retired again, and his title became Professor Emeritus, he never retired mentally, just recently finishing a paper clarifying his research and corrected incorrect material published about it. He became one of the key experts in nutrition, metabolism, vitamins, and anti-oxidants, participating in the important work of defining Minimum Daily Requirements. He was honored by his colleagues by being named to leadership positions in many professional societies. The government of the United States asked him to participate in important commissions, standard-setting bodies, and research institutions. He was a member of the World Health Organization Expert Group on Vitamin Requirements. Max was asked to lecture to learned societies throughout the world. He published some two hundred and eleven books and articles, some of which were considered classics. He was listed in many “Who’s Whos” and received prestigious awards. Among the survivors are his wife, Mickey, four daughters, a son, a sister, ten grandchildren, and three great-grandchildren.
Large Audience Attends Saint Louis University Summer Institute

Three hundred and fifty health care providers attended the Eleventh Annual Summer Geriatric Institute, held June 14-16, 2000 at Saint Louis University. All three days had talks and workshops on a variety of topics, ranging from patient care, mental health and elder abuse to spirituality, safety issues, and ethics.

Day 1 of the conference focused on interdisciplinary teambuilding with Dr. Theresa Drinka serving as keynote speaker. In addition, Joseph H. Flaherty, MD and the ACE Unit interdisciplinary team provided a demonstration of an interdisciplinary team in action. The first day of the conference was cosponsored with The Center for Interdisciplinary Geriatric Assessment (CIGA).

Day 2 consisted primarily of workshops. A mini-conference on wound care was hosted by Drs. David R. Thomas of Saint Louis University and Rita Frantz of the University of Iowa.

Friday’s talks concentrated on nutrition and the elderly. Speakers included Professor W.A. van Staveren from the Wageningen University in the Netherlands, who spoke on nutrition in Europe; and Dr. Connie Bales from the Durham, NC GRECC who spoke on the effects of advertising on nutrition in elders. Mark your calendar for next year’s conference: June 13-15, 2001.

Ivan Izquierdo Gives First James Flood Memorial Lecture

Professor Ivan Izquierdo (center) from Brazil gave the first James Flood Memorial Lecture at Saint Louis University on June 16, 2000. He is seen here with Jim’s dad, James Flood, Sr., and John E. Morley. The lecture discussed the importance of working memory and the biochemical changes associated with activation of this memory. James Flood, Jr., affiliated with the St. Louis VA GRECC, was a pioneer in research on the neurotransmitter regulation of memory. James Flood, Jr. died in 1999.
Sports Injuries (continued from page 4)

an optometrist to correct for their visual defects.

Older persons often have dysregulation of body temperature control. This increases their risk of hypothermia when the water temperature is not controlled.

Cycling:
In older persons cycling can result in compressive or inflammatory syndromes, most often involving the upper extremity. This is usually due to overuse. Common cycling injuries include upper limb fractures (wrist, forearm, clavicle), shoulder dislocations, sprains, lacerations and abrasions. Using a seat at the appropriate height, padded gloves and not resting on hands can decrease overuse injuries. Avoiding urethritis and saddle pressure sores requires appropriate padding of both the seat and the shorts. Rider malposition should always be considered as a cause of overuse injuries.

Golf:
The common overuse injuries in golfers include rotator cuff syndromes, cervical discs or osteoarthritic problems, low back pain and epicondylitis (golfer’s elbow). Wrist pain is due to continual extension and radial deviation of the wrist during the golfer’s swing. Many of these can be avoided by appropriately warming up the tissues before starting and carrying out stretching exercises. Appropriate muscle strengthening exercises, particularly of the back muscles are key to decreasing golf injuries. When overuse injuries occur, rest and pain medication are the cornerstones of treatment. However, an older golfer may divert his activities from the driving range to the putting green to obtain adequate rest.

CONCLUSION
Despite this litany of sports injuries that occur more commonly in the mature compared to the younger athlete, almost all studies suggest that active, but not excessive, enjoyment of a variety of exercises in the older person leads to better outcome, at the level of quality of life and possibly in increased longevity.

REFERENCES
<table>
<thead>
<tr>
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<th>ROBUST ELDERLY</th>
<th>FRAIL</th>
<th>MODERATELY DEMENTED</th>
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<tbody>
<tr>
<td></td>
<td>Life Expectancy &gt; 5 Years Functionally Independent</td>
<td>Life Expectancy &lt; 5 Years or Significant Functional Impairment</td>
<td>Life Expectancy Two to Ten Years</td>
<td>Life Expectancy &lt; 2 Years</td>
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<tr>
<td>1. Office visits</td>
<td>Once per year</td>
<td>As needed (1-4 times/yr.)</td>
<td>As needed (1-4 times/yr.)</td>
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<td>2. BP and orthostasis</td>
<td>Each visit</td>
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<td>3. Weight change</td>
<td>Each visit. If &gt; 5 lbs./yr., perform MNA*</td>
<td>Each visit. If &gt; 5 lbs./yr., perform MNA*</td>
<td>Each visit. If &gt; 5 lbs./yr., perform MNA*</td>
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<td>4. Height</td>
<td>Once per year</td>
<td>Once per year</td>
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<tr>
<td>5. Cholesterol Screening</td>
<td>Once per 5 years</td>
<td>Consider screening for patients 65-75 years if they have additional risk factors (e.g., smoking, diabetes, hypertension)</td>
<td>Consider screening for patients 65-75 years if they have additional risk factors (e.g., smoking, diabetes, hypertension)</td>
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<td>6. Breast Exam</td>
<td>Yearly</td>
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<td>7. Mammography</td>
<td>Every 1-2 years up to 80 years</td>
<td>Consider every 1-2 years up to 75 years</td>
<td>Consider every 1-2 years up to 70 years</td>
<td>** **</td>
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<td>8. Pap smear</td>
<td>Consider 1-3 pap smears if patient has never had pap smears</td>
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<td>9. Hemoccult Test</td>
<td>Yearly</td>
<td>Consider yearly</td>
<td>Consider yearly</td>
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<tr>
<td>10. PSA</td>
<td>Discuss pros and cons with patient</td>
<td>Discuss pros and cons with patient</td>
<td>Discuss with caregiver pros and cons</td>
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<td>11. Colonoscopy</td>
<td>Consider every 5 years</td>
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<tr>
<td>12. Influenza Vaccine</td>
<td>Yearly</td>
<td>Yearly</td>
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<td>13. Pneumococcal Vaccine</td>
<td>Once; may repeat every six years for patients with chronic diseases</td>
<td>Once</td>
<td>Once</td>
<td>Consider vaccination once</td>
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<td>14. Tetanus</td>
<td>Primary series if not vaccinated before and booster every 10 years</td>
<td>Primary series if not vaccinated before and booster every 10 years</td>
<td>Primary series if not vaccinated before and booster every 10 years</td>
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<td>Every 3 years</td>
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<tr>
<td>Consider</td>
<td>Discuss periodically with caregiver</td>
<td>Consider if a history of MI or ≥ 2 cardiovascular risk factors</td>
<td>Discuss with caregiver pros and cons</td>
<td>Yearly</td>
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<td>Consider</td>
<td>Discuss with all postmenopausal women with no contraindication</td>
<td>Yearly</td>
<td>Consider every year</td>
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<td>Consider</td>
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<td>25. Cognitive screening</td>
<td>Initially and frequently if symptomatic</td>
<td>Initially and frequently if symptomatic</td>
<td>Initially and frequently if symptomatic</td>
<td>Consider if evidence of cognitive impairment</td>
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<td>26. Depression screening</td>
<td>Initially and frequently if symptomatic</td>
<td>Initially and frequently if symptomatic</td>
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<td>Initially and frequently if symptomatic</td>
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<td>27. Screening for gait and balance</td>
<td>Initially and as needed thereafter</td>
<td>Initially and as needed thereafter</td>
<td>Initially and as needed thereafter</td>
<td>Frequently and as needed thereafter</td>
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<td>28. Sleep apnea</td>
<td>Yearly</td>
<td>Yearly</td>
<td>Consider yearly</td>
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<td>29. Pain assessment</td>
<td>Each visit</td>
<td>Each visit</td>
<td>Each visit</td>
<td>Each visit</td>
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<td>30. Medication review including OTCs and herbal medicines</td>
<td>Each visit</td>
<td>Each visit</td>
<td>Each visit</td>
<td>Each visit</td>
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<td>31. Osteoporosis</td>
<td>At least once and possibly at 2 year intervals</td>
<td>At least once</td>
<td>At least once</td>
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<tr>
<td>32. Advanced directives</td>
<td>Yearly</td>
<td>Yearly and as needed</td>
<td>Yearly</td>
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</table>

* MNA = The Mini-Nutritional Assessment (Guigos, 96). The MNA should be performed at the time of the initial visit in the frail, moderately demented, and end of life patient.

**This GlidePath is based on recommendations by the following organizations:**
- The American College of Physicians
- The United States Preventive Services Task Force (USPSTF)
- The American Cancer Society
- The American Geriatric Society
- The National Cancer Institute
- The American Urologic Association
REFERENCES
9- In addition, a number of geriatric screening tests have been shown to be cheap and can be done by office personnel. Miller DK, et al. Efficiency of geriatric case finding in a private practitioners office. J Am Geriatr Soc 1995 (43):533-7.

HEALTH MAINTENANCE IN THE ELDERLY-GLIDE PATH REFERENCES

2. Screening for hypertension
   ■ There is agreement between organizations on the importance of screening for high blood pressure.
   ■ The ACP recommends blood pressure screening in all adults every 1-2 years during office visits.
   ■ The USPSTF also recommends periodic blood pressure screening, and report that current expert opinion is that adults who are believed to be normotensive should have blood pressure measurement at least once every 2 years if their last BP reading was below 140/85 mm Hg; and screen should be annual if the last diastolic blood pressure was 85-89 mm Hg.

3. Screening for malnutrition
   ■ Screening for malnutrition is recommended in older patients. These can be performed using the SCALES tool (Morley, JAGS, 1991) or the Mini-Nutritional Assessment Tool (Guigos, 96).

5. Cholesterol
   ■ The USPSTF recommends screening healthy men and women up to age 65, and reports that there is insufficient evidence to recommend for or against routine screening for asymptomatic persons over age 65. The USPSTF also reports that clinicians should consider screening for persons aged 65 to 75 who have additional risk factors.
   ■ The ACP recommends screening up to age 65, reports there is insufficient evidence for or against screening for persons aged 65-75, and advises against screening after age 75.
   ■ The most appropriate interval for screening is not known, but every 5 years is often recommended.

6. 7. Screening for breast cancer:
   ■ No agreement between organizations regarding screening.
   ■ The ACP recommends screening mammography up to age 75.
   ■ The AGS recommends screening mammography up to age 85.
   ■ The USPSTF recommend screening mammography up to age 69.
   ■ There is no evidence for or against clinician’s recommending self-examination.
   ■ Evidence is lacking for the benefits of screening women 70 years or older.
8. **Screening for cervical cancer**
   - The ACP and the USPSTF recommend no further Papanicolaou smears for women over age 65 who have had previous regular screening with consistently normal results.
   - The AGS recommends Pap smear every 1-3 years in those without previous regular screening and suggest that asymptomatic women who have had several Pap smears may no longer need them after age 65.

8. **Screening for ovarian cancer**
   - None of the available screening tests is appropriate for screening asymptomatic patients.
   - Ovarian cancer detected by pelvic examination is usually advanced. Pelvic ultrasound is sensitive; the role of the CA125 in screening is not clear; pelvic ultrasound is sensitive and specific, but the prevalence of ovarian cancer in the general population is too low to justify its use as a screening test.
   - The USPSTF recommends examination of the uterine adnexa when performing gynecologic examinations for other reasons, but there are no data to support the use of other screening tests for ovarian cancer.

10. **Screening for prostate cancer**
    - No agreed upon method.
    - Digital rectal examination has not been demonstrated to be an effective screening test for prostate cancer. The American Cancer Society, however, recommends annual digital rectal screening.
    - Neither the ACP nor the USPSTF recommend PSA as a screening test for prostate CA. However the many urologic organizations tend to recommend it.
    - There is insufficient evidence regarding the use of transrectal ultrasonography.

11. **Screening for colorectal cancer**
    - The American Cancer Society recommends either one of the following: total colon examination (air-contrast barium enema or colonoscopy) every 10 years; or fecal occult blood tests annually and flexible sigmoidoscopy every 5 years. No upper age limit.
    - Both the ACP and the USPSTF recommend annual fecal occult blood testing or periodic flexible sigmoidoscopy, or both. The ACP recommends sigmoidoscopy, colonoscopy, or air-contrast barium enema every 10 years from the ages of 50 to 70 years. The USPSTF recommends sigmoidoscopy, but does not recommend an interval for screening. No upper age limit.

12. **Influenza vaccine:**
    - An estimated 10,000 to 40,000 influenza-associated deaths occur annually; the elderly account for 80-90% of these deaths.
    - Influenza vaccination in the elderly has been shown to reduce hospitalization rates, to be cost effective, and to reduce influenza-associated mortality.
    - In the nursing home, the vaccine while only 40% effective in preventing clinical illness, it is more effective in preventing pneumonia, hospitalization, and death. Vaccinating more than 80% of nursing home residents has been shown to prevent influenza outbreaks.
    - There is agreement between the different organizations that annual immunization with 0.5 cc of the current trivalent influenza vaccine is recommended for adults over 65 years and those who live in a chronic care facility. Immunization is also recommended for all adults with chronic medical problems (e.g. COPD, diabetes, cardiac, and renal disease). Caretakers for high-risk patients should also be immunized, including physicians and nurses. Influenza vaccination is contraindicated in persons with allergy to egg. Some authorities recommend not giving the vaccine during febrile illness.
    - Rimantidine or amantadine prophylaxis is recommended as an adjunct to vaccination during outbreaks of influenza A in nursing homes and hospitals. Dose is 100 mg bid for adults less than 65 years and healthy adults over 65 years. A 100 mg per day dose should be considered in frail older adults and those with liver or renal disease. The prophylaxis should be continued for two weeks.
13. **Pneumococcal vaccine:**
- Pneumococcal vaccination increases antibody levels in older adults to a lesser degree than younger adults, and levels decrease more rapidly in the elderly. Vaccination, however, has been shown to be effective in reducing the incidence of pneumococcal bactemia in older, high-risk patients who have good antibody response to the vaccine.
- Most organizations recommend that one dose of the 23-valent pneumococcal vaccine be given for all adults over age 65 years. In addition, it is recommended for all high-risk individuals, including those with chronic lung disease, cardiac disease, renal failure, and those with diabetes. Patients who received the earlier 14-valent vaccine should be revaccinated with the 23-valent vaccine if they fall into any of those two groups.
- The indications for revaccination with pneumococcal vaccine are controversial. The ACP recommends revaccination after 6 years for older patients who received pneumococcal vaccine before age 65 and high-risk patients with asplenia, nephrotic syndrome or renal failure, and renal transplant patients. The ACP reports that there is currently insufficient data on repeated revaccination every 6 years in healthy elderly, and most other organizations do not provide specific recommendations for revaccination.

14. **Tetanus/Diphtheria vaccine:**
- Recommendations regarding adult tetanus/diphtheria vaccination do not vary for older persons from recommendations for younger adults.
- Over half of cases of tetanus occur in persons 60 years or older, and appropriate vaccination is 100% effective.
- All adults should complete a primary series of tetanus/diphtheria toxoid (Td). If an individual had an incomplete series or an uncertain history, it is recommended that the entire primary series be given. Primary series for adults consists of 0.5 cc of Td intramuscularly as the initial dose and at two and six months later. Booster doses need to be given every 10 years for all adults. If the adult sustains a deep wound, a booster dose can be given at 5 years.

15. **Thyroid disease**
- Most organizations have not made specific recommendations regarding screening for thyroid disease, except if there is a personal history of body irradiation.
- Screening all older adults is not currently recommended. However, many geriatricians advocate screening high-risk population such as nursing home population, frail elderly and patients with dementia.
- The ACP recommends thyroid function testing in persons aged 50 or over with symptoms suggestive of thyroid disease.
- The sensitive (TSH) assay is probably the screening test of choice.

16. **Counseling: Exercise**
- Low level of activity is a significant predictor of mortality among older adults.
- Walking can be recommended to most older persons; sustained walking for 30 minutes a day can result in health improvement. Even small increases in exercise can be beneficial in inactive older persons, including wheelchair-bound and institutionalized elderly.
- Exercises should include endurance (walking, climbing stairs), strength, balance, flexibility and posture.

16. **Counseling: Smoking cessation**
- The National Health Interview survey (1990) reported that 18% of men aged 65 to 74 and 8% of men over 74 were smokers. Prevalence rates among women in these age groups were 16% and 6%, respectively; and rates among African Americans were similar to whites.
- Physicians should ask patients about smoking, and should clearly advise all smokers to quit. Patients who want to quit should be assisted with self-help materials, choosing a quit date, nicotine prescription (gum or patches), and possible referral to community programs.
16. **Counseling: Alcohol drinking**
   - 8% of elders have an alcohol problem.
   - Excessive alcohol use is frequently underdiagnosed in the elderly and in women.
   - Either the CAGE questionnaire or the Michigan Alcohol Screening Test should be used.
   - The CAGE: 1) feeling you out to Cut down on drinking, 2) being Annoyed by people criticizing your drinking, 3) feeling Guilty about drinking, 4) having a drink first thing in the morning (Eye-opener).
   - Once an alcohol problem is identified, the physician should counsel patient to quit and provide an appropriate referral.

16. **Counseling: Injury prevention**
   - The USPSTF have made several recommendations in injury prevention.
   - Persons should be encouraged to use seat belts and to be counseled on alcohol-related risks in relation to driving.
   - Patients should be encouraged to be physically active and to evaluate their homes for environmental hazards in order to aid the prevention of falls.
   - Patients should be warned about the dangers of firearms.

17. **Low dose aspirin therapy:**
   - There is no agreement on the use of Low-dose aspirin therapy in the elderly. Aspirin 325 mg every other day or 81 mg every day is recommended in patients with a history of a previous MI and in men over 40 who have 2 or more cardiovascular risk factors.
   - It is not clear whether the risks of low-dose aspirin therapy outweigh the benefits in the very old, and each patient should be evaluated individually.

18. **Hormone replacement therapy:**
   - Hormone replacement therapy in postmenopausal women is estimated to decrease risk for hip fracture by 25% and for vertebral fractures by 50%. It is also estimated to decrease risk of CAD by 35%.
   - Risk of endometrial cancer increased by 8-fold after 10-20 years of use.
   - Most organizations recommend counseling older women regarding hormone replacement therapy, but specific recommendations on whom, when and for how long to treat vary.
   - The ACP recommendation include: 1) considering hormone therapy for all postmenopausal women regardless of race, 2) estrogen without progesterone in women with hysterectomy, 3) women who had CAD are likely to benefit from HRT, 4) the risks of hormonal therapy may outweigh the benefits in women with increased risk of breast cancer.
   - Findings for the Heart and estrogen/progestin Replacement Study (HERS) argue against starting HRT for secondary prevention in older postmenopausal women.

18. **Male screening**
   - Erectile dysfunction is common with multiple treatments available.

19. **Vision**
   - Visual acuity testing is suggested for the elderly every 1-2 years and can be performed by primary care physicians. It is recommended that screening for glaucoma be performed by an eye specialist.
   - Many eye specialists recommend an annual eye examination in older adults and an annual eye examination in all diabetics.
20. **Hearing**
- It is important for primary care physicians to consider screening for hearing impairment in older patients, although guidelines are lacking.
- The portable audioscope may be the screening test of choice. Other tests include whisper test, tuning fork test, and the Hearing Handicap Inventory for the Elderly-Screening Version (HHIE-S).

24. **Screening for diabetes mellitus**
- Most organizations recommend against routine screening in asymptomatic individuals without increased risk of diabetes.
- The ADA has recommended fasting plasma glucose measurement every 3 years in adults with one or more of a long list of risk factors.

25. **Cognitive impairment**
- Screening for depression by either the long or short Yesavage depression scale (*J Psychiatr Res, 1983*) or by applying the DSM IV criteria is recommended in frail elderly and if patient has symptoms suggestive of depression.
- The Cornell Scale for Depression (*Biol Psych, 1988*) is the tool of choice to screen for depression in patients with dementia.
- Many geriatricians include MMSE and/or the clock drawing test, and GDS testing at the initial office visit with repeated testing as indicated.

27. **Screening for gait and balance disorders**
- Is recommended in the initial evaluation of older adults and frequently as indicated. The best validated screening test available is the Tinetti balance and Gait Evaluation tool which has been shown to strongly correlate with fall risk (*Tinetti, JAGS, 86*).

28. **Sleep apnea**
- The Epworth Sleepiness Screening Questionnaire is a good screen (*John MW. Sleep 1994 (17):703*).

29. **Pain**
- Now considered the 5th vital sign. Use of Likert scales (e.g. 1-10) or pictorial scale (e.g. facial expressions) can be useful to quantify pain.

30. **Medications**
- Risk of adverse drug events, compliance problems, and drug-drug interactions are most associated with increased number of drugs, i.e. polypharmacy. Over-the-counter medications and herbal medications need to be considered as active medications.

31. **Osteoporosis**
- All women over 50 years of age and men over 75 years of age should be screened at least once. Heel ultrasound may be a cost effective screening tool. (*Yeap et al. Osteoporosis Int 1998 (8):141; Cartell R. NEJM 1998 (338):736*).

**Screening for oral cancer**
- Most organizations do not make recommendations regarding routine oral examination.
- The USPSTF recommends oral examination in high-risk groups (tobacco or excessive alcohol users or those reporting suspicious lesions).
Geriatric Education Center Expanded and Funded for Five Years

Saint Louis University has received a 5-year grant to provide geriatric education throughout Missouri and Illinois. This was based on a needs assessment of 6 health care disciplines in Missouri and Illinois which was sent to 30,000 physicians, nurses, occupational therapists, physical therapists, chiropractors and nursing home administrators. The subjects which most people wanted education in were hypertension, falls, arthritis, dementia and diabetes. In addition, over 50% of the respondents identified education in TQM/CQI as a major need. Sixty-three percent of the respondents reported that they had improved their patient care as a result of attending continuing education programs provided by the GEC and 93% said that geriatric CME is either very or somewhat important to their professional responsibilities. The grant provides for the creation of a new geriatric education center (GEC) in Missouri and Illinois known as the Gateway GEC. It replaces two GECs that were previously know as the Missouri Gateway GEC and the Illinois GEC. The Gateway GEC is one of 34 federally funded GECs that provide geriatric education to health care professionals in the United States. Those health professionals that are targeted by the Gateway GEC provide care to over 2 million elders in Illinois and Missouri.

The Missouri leadership for the Gateway GEC include Dr. John E. Morley, Director and Dr. Nina Tumosa, Co-Director of the Saint Louis University office and Dr. Martin Gorbien, Director and Dr. Anthony Perry, Co-Director of the Rush-Presbyterian-St. Luke’s Medical Center office. Together with several Illinois and Missouri institutions, these two program offices will develop educational programs for health care providers in the two states. Collaborating institutions in both states include: the Missouri Area Health Education Center at Kirksville College of Osteopathic Medicine, Logan College of Chiropractic, Lewis & Clark Community College, LifeCare Centers of America, GeriMed of America, Inc. of Denver, University of Southern Illinois-Edwardsville, University of Illinois (at the Springfield, Chicago, and Urbana-Champaign campuses).

This consortium of educational institutions will enable faculty to provide multidisciplinary and interdisciplinary geriatric education to health professionals through-
Seventy-six percent of older non-Hispanic whites consider themselves in good or excellent health, though this is only true for 59.3% of non-Hispanic blacks. However, it is important to recognize that America is really not doing as well as it could be. We failed to meet most of the targets of Healthy People 2000 and will require a tremendous effort to meet the targets set by Healthy People 2010.

A recent World Health Organization report placed the United States as 24th in disability-adjusted life expectancy, i.e., the amount of time a person lives without having a functional impairment. Malta was half a year ahead of us and we were only 1˚ years ahead of Chile and Cuba. Disability-adjusted life expectancy beyond 60 years was 15 years for men and 18.4 years for women, compared to 17.5 years for Japanese men and 21.6 years for Japanese women. The United States spends 13.7% of its Gross Domestic Product on health care while Japan spends 7% of its GDP on health care.

If we examine the difference in health expenditures between the 7 countries with the best life expectancy and disability-adjusted life years beyond 60 and the United States we find that they spend 5.4% less of their Gross Domestic Product on health care but that the government pays for 29.3% more of the total amount. Certainly, the time has come for a National Health System in the United States! For the curious, the seven countries with the oldest and most healthy populations are Andorra, Australia, Canada, Italy, Japan, Spain, and Switzerland.

Besides lobbying for a better, cheaper (though perhaps more frustrating) health care system, what else can we do to “grow old better?” Studies on those who live to 100 give us some clues. Genetics certainly plays a major role and it helps to be born female, but the studies of Thomas Perls, M.D. at Harvard, have suggested other ingredients which are easier for us to control. Obviously, not smoking and avoiding overweightness lead the list. A positive attitude and good coping skills seem to be extremely important. Continuing to investigate new challenges and maintaining a support network are also important components of the longevity recipe. Finally, exercise slows muscle loss as we age and decreases the overall workload on the heart. Exercise also boosts the endorphins (the body’s own morphine) and enhances immune function.

A recent centenarian, Queen Elizabeth, the Queen Mother, who was born before the Wright brothers were to take their first flight, clearly demonstrates the importance of a positive attitude. Queen Elizabeth in her pastels and pearls with two hip replacements still carries out 25 royal engagements a year, down from the 100 in her early nineties. She is a true example of aging successfully.

Another example of aging successfully was Max “Mac” Horwitt. “Mac” remained an active member of the geriatric faculty until his death at 92. Two weeks prior to his death, he submitted his last paper. Four days before his death, he was arguing a scientific point with me. Not only did “Mac” age successfully, but he also died successfully, the perfect combination for life’s journey. I will miss you, “Mac”.

So, for those of you who wish to age successfully or have the temerity to tell our older friends how to do it, what is the recipe? It seems easy! Just have a positive attitude, see the humor in life, exercise in moderation, and turn our health care system from an overpriced “high tech” system to a moderately priced “high touch” system.
New Book Being Published: The Science of Geriatricics

This book, coming in September from Serdi, covers the interface between the basic scientific knowledge of aging and clinical geriatrics. The 55 chapters stretch from the “Theories of Aging” through the “Aging Urinary Bladder.” Genetic Determinants of Aging are reviewed by George Martin and Ric Weindruch discusses the role of caloric restriction in aging. Len Hayflick sheds light on the role of telomeres in cellular aging. Vince Cristafalo overviews cellular senescence. The roles of hormones and nutrition in aging are covered in 15 chapters. A full section is devoted to the Aging Brain, including information on the genetics of Alzheimer’s disease, Prion diseases, age-related changes in learning and memory processing, and the role of the blood brain barrier in aging. The aging immune system is covered in detail with a special chapter on the emerging field of psychoneuroimmunology. A final section concentrates on the aging physiology of specific organ systems, such as the heart, muscle, the gut, and adipose tissue.

This blockbuster book containing 760 pages is heavily illustrated. It was developed as a collaborative project of Saint Louis University, the Missouri Gateway Geriatric Education Center, and the Geriatric Research, Education, and Clinical Center of the St. Louis VA Medical Center. The editors are John E. Morley, H. James Armbrecht, Rodney Coe from Saint Louis University and Professor Bruno Vellas from the University of Toulouse in France. The authors come not only from the United States, but also Europe, Japan, and Australia, providing a broad, international viewpoint on the Science of Geriatrics. The book may be ordered from Serdi.

GEC Funded (continued from page 17)

out both states. Training programs will be designed to reach about 22 separate health care disciplines. The teaching methods will vary. Some people will receive individualized, hands-on training in a Geriatric Scholars program, others will attend special workshops or conferences. Some geriatric training programs will be published on the Internet for both health care professionals and care givers. Many people will be educated through newsletters, games, and specialized workbooks. Special training programs in elder abuse and total quality management are priorities for this new grant. Elder abuse has been identified as a major problem in both Missouri and Illinois.
Maintaining Your Health

ACROSS

1. Older persons often don’t volunteer to their physicians information about this embarrassing condition
5. This study suggested that estrogen may increase the death rate in the first year following myocardial infarction
7. The most commonly written prescription in the United States
9. Weightlifting is a form of this kind of exercise
11. This vaccination decreases the mortality from pneumonia
13. This 30-point questionnaire, originally developed by Yesavage and derived from the Beck ___ Inventory screens for ___ (same word)
15. The major source of carotenes in the American diet
17. Older persons need this vaccination every ten years to prevent injury-associated disease
19. Targets for health maintenance in Americans are set for the year 2010 by the Department of Health and Human Services in the document called “___ People 2010”
21. A blood test used to screen for prostate cancer
22. Women over the age of 65 should consume 1500 mg of this mineral daily
23. This American study showed that reducing systolic blood pressure below 160 mmHg decreased stroke risk
24. This tool is a well-validated screen for malnutrition in older persons
25. The ___ sleepiness questionnaire can be used to suggest the need for a work-up for sleep apnea

DOWN

2. The 4S trial showed that lowering ___ in persons over 65 years who had a myocardial infarction decreased the death rate
3. This questionnaire, developed at Saint Louis University, is used to screen for the male menopause
4. This vitamin is made in skin and is essential for preventing bone loss
6. It is important to remind older persons to use these when in a motor vehicle
8. A fasting blood sugar above 126 mg/dl makes the diagnosis of this condition
10. Having this vaccination yearly decreases mortality
12. I wrote “Grow old along with me. The best is yet to be.”
14. Tai Chi is the ancient Chinese basis of the martial arts and is particularly good for improving ___ in older persons
16. Health professionals should ask about the presence of these weapons in the house when one of the occupants has dementia
18. Evidence of this kind of abuse must be disclosed to the appropriate state agency
20. This test screens for hypothyroidism
21. The fifth vital sign
22. This questionnaire is used to screen for alcoholism

Puzzle answer is on page 23.
to be done 3 times a week to maintain their benefits, but daily would be even better!

Strength exercises help improve the maximum force your muscles can produce. This is important as older adults lose strength by not using their muscles. Shoulder weakness is a particular problem. As many as 45% of older women in their sixties may not be able to lift 10 pounds! 65% may not be able to do this in their seventies! As muscles weaken, it becomes more difficult to do household chores. You can do simple strengthening exercises with free weights or elastic bands and some can be done with just lifting your weight against gravity. The strengthening exercises you do should be repeated 10 times in a row. Then rest and repeat this set of ten for two more times. One of my favorite strengthening exercises is what I call the “sit-to-stand.” You sit towards the front of a chair and fold your arms across your chest. Keeping your back and shoulders straight, you then slowly stand up using your legs. Another exercise I like is the “push-up” from the chair. You use your arms and not your legs. Grasping the arms of the chair, you slowly push your body off of the chair, hold your weight, then slowly lower your body to sit down. The elastic bands, used with exercises, usually come in different colors to indicate different strengths. The great feature of these bands is that they are lightweight, can tuck in your pocket, and can be used in any setting. You can stretch the band with your hands and use it for arm exercises. You can also tie the band around your ankles and use it for leg exercises. Or one end of the band may be fastened to a piece of furniture and you can pull in different directions for arm or leg exercises. The best way to learn how to use these bands is to join a senior exercise class and get specific directions for all the creative ways it can be used and when to progress to a different (more resistance) band.

There is a wonderful 1999 publication called Exercise: A Guide from the National Institute on Aging (Publication #NIH 99-4258). It will give you lots of descriptive information about exercises and it is free. You may request a copy from the National Institute on Aging, The National Institutes of Health, Building 31, Room 5C27, 31 Center Drive, MSC 2292, Bethesda, MD 20892-2292.

I hope this brief article helps you start or continue with your own fitness program.

About the Author...

Margaret Herning, PhD, PT is an Associate Professor with the Department of Physical Therapy in the School of Allied Health Professions at Saint Louis University. She has over twenty-five years of clinical experience working with older adults and serves as a consultant with the St. Louis Senior Olympics and with fitness programs for seniors living in retirement apartments.

Questions? FAX: (314) 909-0443 • email: agingsuccess@slu.edu
Coming CME Programs

The 20th Annual GRECC Symposium on Pain Management
December 8, 2000
Call 314-894-6510 for more information.

The Twelfth Annual Saint Louis University Symposium for Medical Directors in Nursing Homes
December 9, 2000
For more information or to be added to the mailing list, please call (314) 577-8462.

Conquering Incontinence Across the Continent Conference
January 19, 2001
For more information, please call (314) 577-8462.

Call For Assistance in Creating TQM/CQI Database

The Gateway Geriatric Education Center (GEC) has been funded to create a National GEC Clearing House for total quality management (TQM) or continuous quality improvement (CQI). TQM/CQI has been shown to be an excellent approach to improving health outcomes for older persons (JAGS 41:60, 1994). We would appreciate your help in completing this daunting task.

An initial step in the creation of the clearing house will be to do a complete literature review of key articles on TQM/CQI with a particular focus on those with geriatric content and to identify key textbooks. Once copies of all of these materials are accumulated, we will develop an annotated bibliography of key articles and books on TQM/CQI. Additionally, we will provide both hard copies and an Internet-based copy with appropriate search features to everyone who participates in its creation. Finally, we will publish a review on the role of TQM/CQI in Geriatrics. If you are an author of a paper or book on TQM/CQI or if you have a favorite reference in the field, please fax the front page to (314) 894-6614.

If you wish to provide input into the creation of the database, please contact Dr. Nina Tumosa by calling (314) 894-6510 between 8 AM and 4:30 PM.

Have you just been caught reading someone else’s mail?

If you are reading someone else’s copy of this newsletter, don’t panic. We won’t call the police, notify the post office, or haul you off to jail. Now that you know there’s no penalty, if you wish to receive your own copy of Aging Successfully, we’re happy to oblige. Please fax or mail your name and address (complete with ZIP code) to: Carolyn Phelps, 1025 Windemere Ave., St. Louis, MO 63131 (FAX: 314-909-0443).

Visiting Scientist from China Examines Blood Brain Barrier in Diabetes

Hai-peng Xiao, an associate professor from Guang Zhou (Canton) in China, pictured here with Dr. Morley, completed a six-month sabbatical in the Geriatric Division at Saint Louis University. Together with William Banks, MD, he studied the role of diabetes in the disruption of the blood-brain barrier. In a clinical study working with Mike Perry, MD, he also found a circannual rhythm of the fat hormone, leptin, in older persons.
VA Funds St. Louis Fellowship Program

Dr. David W. Bentley, of the St. Louis VAMC, has received notification that the St. Louis VAMC GRECC was chosen as one of seven national sites for the Department of Veterans Affairs (VA) Special Fellowship Program in Advanced Geriatrics. Other centers have been chosen at Ann Arbor, MI; Durham, NC; Little Rock, AR; San Antonio, TX; Seattle, WA; and Sepulveda/West Los Angeles, CA. During year one of the four-year grant, directors at each of these sites will work together to develop a national curriculum in advanced geriatrics, a recruitment strategy for fellows, an evaluation plan, and any needed local infrastructure. In 2001, the Fellowship will provide subspecialty training for outstanding geriatricians who have completed their Accreditation Council for Graduate Medical Education (ACGME) subspecialty training. The grant will provide the stipends and fringe benefits for one fellow in FY 2001 and for two fellows each year during the remaining two years of the grant.

This program allows fellows to spend the majority of time receiving training in geriatric research. In addition, the program has a featured focus on telemedicine. The St. Louis VA Fellows will be eligible for tuition waivers to the MPH program at the Saint Louis University School of Public Health. Interested applicants should contact Dr. Bentley at the St. Louis VAMC GRECC at 11G JB, St. Louis, MO 63125.

Questions? FAX: (314) 909-0443 • email: agingsuccess@slu.edu

Endocrinology of Aging Receives Positive Reviews

“Although it is unlikely that wholesale testosterone replacement will result in 80-year olds forming gangs to roam the streets and beat up on seniors, it is possible that testosterone will enhance lesser levels of aggressive behavior.” Morley, Endocrinology of Aging

Anton Luger in The Lancet (June 3, 2000) wrote: “It is an easy-to-read, well-structured and informative book which overall gives a well-balanced view of this increasingly important topic. It should find its place in bookshelves not only of geriatricians and endocrinologists, but also of internists, gynecologists, and all the people who are confronted with elderly people searching for the fountain of youth.”

Gerhard Baumann in The New England Journal of Medicine (June 1, 2000) wrote: “Overall the book provides a useful overview of what is known about normal and abnormal changes in the endocrine system in the elderly, their clinical manifestations, and appropriate therapy...Endocrinology of Aging, by its very heterogeneity, aptly illustrates the continuum between health and disease and provides some practical advice on the way. I recommend it to general internists and practicing geriatricians.”


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Maintaining Your Health
(Answer to crossword puzzle from page 21)