From the Editor

** August 1, 2011 REMAC Protocol revisions in effect **

Although normally scheduled for April 1, the NYC REMAC protocol update for 2011 was changed to August 1 implementation in the field and on certification exams.

Only the August 1, 2011 protocols are in effect.

Always see nycremsco.org for the current approved protocols.

REMEMBER: the protocols on the street are the protocols on the exam!

Mandatory REMAC Credentialing Fee

A $25 fee has been instituted by NYC REMAC for all new or recertifying paramedic credentials. On successfully completing a REMAC exam, candidates will receive a temporary letter verifying certification. They will soon after be mailed a memo directly from NYC REMSCO requiring a completed application, proof of NY State paramedic certification, and credentialing fee by money order only. On receipt, a permanent NYC REMAC certification card will be issued.

Please direct inquires on this process to NYC REMSCO at 212-870-2301
Outline of August 2011 NYC REMAC protocol changes
see REMAC Advisories 2011-02, 2011-03, 2011-04 at nycremsco.org

**General Operating Procedures**

- **CPR**: clarifies that REMAC follows AHA except as specified
- **Advanced Airway Management**: adds section making use of ETI and alternative airways equal except in non-cardiac arrest situations, limiting ETI to 2 total attempts
- **Definition of Unstable Dysrhythmias**: removes chest pain, SOB, possible MI from definition

**CFR Protocols**

- **300 WMD, 301 Resp Distress/Failure, 320 Traumatic Arrest, 328 Burn**: updated to match BLS protocols
- **304 Non-Traumatic Chest Pain**: removes blood pressure assessment and assistance or patient with NTG admin

**BLS Protocols**

- **403 Non-Traumatic Arrest**: mandates AED availability & use; moves transport order to step 8
- **407 Wheezing**: removes wheezing from list of assessment criteria; mandates OLMC contact for epinephrine to patients over 33 years-old
- **410 Anaphylaxis**: mandates OLMC contact for patients over 33 years-old
- **413 Seizures**: removes list of signs/symptoms
- **414 Poisoning or Drug OD**: removes OLMC contact, information list, & order for dilution
- **426 Soft Tissue Injuries**: adds tourniquet option
- **430 EDP**: removes GCS from assessment

**ALS Protocols**

**“ETI” changed to “Advanced Airway Management”**

- **500-A Smoke Inhalation**: changes dopamine admin to Standing Order
- **500-B Cyanide Exposure**: removes note on indications; changes dopamine admin to Standing Order
- **501 Resp Arrest**: protocol deleted
- **503 Non-traumatic Arrest**: limits switching from AED to ALS monitor only at the end of CPR cycle
- **503-B PEA/Asystole**: removes atropine
- **504-A Suspected MI**: moves aspirin to step1; makes total doses of NTG unlimited under Standing Orders; removes morphine & Medical Control Options
- **504-B Cardiogenic Shock**: moves fluid bolus and dopamine to Standing Order
- **505-A, B & C Dysrhythmias**: adds note: if defibrillator’s maximum joule setting is less than 360, use equivalent cardioversion energies
- **506 APE**: makes total doses of NTG unlimited under Standing Orders
- **507 Asthma & 508 COPD**: makes total doses of albuterol unlimited under Standing Orders; mandates mixing of albuterol & ipratropium, limited to 3 doses
- **510 Anaphylaxis**: changes methylprednisolone and dexamethasone to Standing Orders
- **515 Non-Cardiogenic Shock & 520 Traumatic Arrest**: removes repeat of fluids under Medical Control Options
- **521 Head Injuries**: clarifies indication for advanced airway management & moves it to step 2
- **528 Burns & 529 Pain Management**: adds fentanyl to Medical Control Options
- **531 Severe Nausea/Vomiting**: new protocol
- **543 Neonate Resus**: removes meconium aspiration; moved IV/IO access, epi and fluid bolus admin to Standing Orders; removes Medical Control Options
- **550 Peds Resp Arrest**: adds note referring to Peds AMS protocol; changes naloxone to weight-base dosing with titration; removes ET admin of naloxone
- **551 Peds Obstructed Airway**: clarifies procedure with cuffed ET tube
- **553 Peds Non-Traumatic Arrest**: increases joule settings
- **559 Peds Traumatic Arrest**

**Appendices**

- **Appendix B Patient Assessment**: clarifies transport decision; removes CUPS
- **Appendix D AED Guidelines**: appendix deleted
- **Appendix I Hospital Listing**: adds pediatric ages
- **Appendix T Use of Tourniquets**: appendix added
REMAC Exam Study Tips

REMAC candidates have difficulty with:
- Epinephrine use for peds patients
- 12-lead EKG interpretation
- Ventilation rates for peds & neonates

REMAC Written exams are approximately:
- 15% Protocol GOP
- 10% BLS
- 10% Adult Trauma
- 10% Adult Arrest
- 15% Pediatrics

Certification & CME Information

- **Of the 36 hours of Physician Directed Call Review CME required for REMAC Refresher recertification, at least 18 hours must be ACR/PCR Review (which may include QA/QI Review). The remaining 18 hours may include ED Teaching Rounds and OLMC Rotation.**

- **Failure to maintain a valid NYS EMT-P card will invalidate your REMAC certification.**

- **By the day of their refresher exam all candidates must present a letter from their Medical Director verifying fulfillment of CME requirements. Failure to do so will prevent recertification.**

- **FDNY paramedics, see your ALS coordinator or Division Medical Director for CME letters.**

- **CME letters must indicate the proper number of hours, per REMAC Advisory # 2000-03:**
  - 36 hours - Physician Directed Call Review
    - ACR Review, QA/I Session (minimum 18 hours of ACR/QA review)
    - Emergency Department Teaching Rounds, OLMC Rotation
  - 36 hours - Alternative Source CME - Maximum of 12 hours per venue
    - Online CME - Clinical rotations
    - Lectures / Symposia / Conferences - Associated Certifications: BCLS / ACLS / PALS / NALS / PHTLS

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**REMAC Refresher Written examinations** are held monthly, and may be attended up to 6 months before your expiration date. See the exam calendar at the end of this Journal. To register, call the Registration Hotline @ 718-999-7074 by the last day of the month prior to your exam.

**New 2012: REMAC Basic Written and Oral examinations** are held every January, March, May, July, September & November. Registration is limited to the first 36 applicants. See the exam calendar at the end of this journal.

**REMAC CME and Protocol information** is available, and suggestions or questions about the newsletter are welcome. Call 718-999-2671 or email swansoc@fdny.nyc.gov

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January 2012 Journal CME Article

GERIATRICS: THE GOLDEN YEARS

SCENARIO

You are called to the scene of a 76 year-old woman who has fallen. The patient states she fell but cannot recall what happened. You notice while she is lying on the ground complaining of left hip pain that her left leg is shortened and externally rotated. You also notice a large contusion above her right eye. Her blood pressure is 104/72 mmHg, pulse is 58 beats/minute, and respirations 18 breaths/minute.

What is your impression of the patient? What injuries do you suspect?

What are important questions in the chief complaint and history?

What is the significance of her medications?

What should be the focus of the physical examination? What do her examination findings indicate?

What is important in the treatment of this patient? What comfort measures can be taken?

Older patients represent a special population for the medical provider. The standard approach of focusing on one chief complaint and developing a differential diagnosis based on common disease and life-threatening conditions may miss significant conditions in older persons. They often do not present with the classic patterns and symptoms that are seen in common diseases but instead present with subtle, vague complaints such as weakness, dizziness, diffuse pain, or a family member stating that they are “just not acting right.” The assessment and management of older patients poses a unique challenge. One must understand the physiologic changes that accompany the aging process, the different diseases that commonly present in older patients, the adverse effects and interactions of medications that are often prescribed to older patients (e.g. anticoagulants, beta-blockers, etc.) and the psychosocial issues that directly affect them. Older patients are more time-consuming, more difficult to evaluate, and use more resources than younger patients. Unlike pediatrics which oftentimes have specialized courses that dictate their unique needs as patients, there is a minimal amount of time spent on geriatrics, despite the large percentage of EMS calls for these patients. Now, this growing-older population is getting more attention.

The elderly population represents the fastest growing age-group in the United States. This is due to advances in genetics, medicine and an increasing awareness of healthier lifestyle choices (e.g. smoking cessation, alcohol intake, exercise) but it is largely the aging of the baby-boomer generation (those born post World War II in the period 1946-1964) who make up 22% of the population. Beginning in 2011, the first of the baby boomers will turn 65 years old and over the next 19 years the population of elderly people in the United States will be projected to double while the overall population will grow only by 18%. According to the 2000 U.S. census 12.4% of the U.S. population at the time was 65 years of age or older with more than 8 million older than 80 years of age. In 2030 those 65 years and older will be 72 million or 21.2% of the population (in Europe
it will be 30%). In addition to getting older, this population has a more active life-style than ever before through advances in technology (e.g. joint replacement) and medicine.

These population changes have powerful implications for the costs and utilization of EMS resources. Nationally, elderly patients represent 36% of ambulance transports and this percentage is expected to increase along with the number of EMS runs. They also represent a high percentage of our critical transports. Overall it is unclear what impact this will have on ambulance units, equipment, protocols, and anything else related to geriatric care. In general although the elderly compromise only 12.4% of the population they consume roughly 33% of all health care expenditures, a number that has remained stable since the 1980’s.

PATHOPHYSIOLOGY OF AGING

There is a difference between the chronologic age and the physiologic age. Chronologic age represents the number of years a person has lived whereas physiologic age describes the functional capacity of a person’s organ systems. The term Physiologic Reserve describes the various levels of functioning of a person’s organ systems that allows them to compensate for response to insults such as a illness or trauma. In addition, age-related medical problems such as diabetes, hypertension, coronary artery disease, congestive heart failure and renal disease to name a few, can effect the bodies ability to compensate. Aging is a biologic process that begins after our body has reached maturation in early adulthood. This occurs at the cellular level that is then reflected in both anatomic structure and physiologic function. The rapidity of decline in function varies with an organ system but it is relatively constant within a given system. Thus, the rate of aging is similar for a 40 year-old as it is for an 85 year-old; the difference is that by 85 more age-related changes have accumulated. Different people age at different rates so the timing of specific “physiologic aging” varies from person to person who are at the same chronologic age. As described above this difference is reflected in a person’s genetics, life-style choices, and environment.

In general, tissues throughout the body decrease with age. In fact, body cells decrease up to 30% by the age of 65. To compensate, other remaining cells enlarge (hypertrophy). Below various organ systems and their age-related changes will be reviewed.

RESPIRATORY SYSTEM

There are several changes that occur in the pulmonary system. First, ventilatory function declines partly as a result of the inability of the chest wall to expand and contract and partly from the stiffening of the lung tissue. The chest wall rigidity is due to calcification of the cartilaginous connections to the ribs resulting in stiffening of the chest wall. The lung tissue loses elasticity making it more rigid and thus decreasing its ability to expand. These changes result in a decrease of the tidal volume (amount of air being inhaled and exhaled with each breath) and vital capacity (amount of air that can be forcibly exhaled) and
increase in residual volume (amount of air remaining in the lungs after maximum expiration). At age 20 about 20% of our total lung capacity is residual air and by age 60 it increases to about 35 percent.

The alveolar surface area (where gas exchange occurs) decreases with age. The alveoli lose elasticity over time and gradually increase in size, thus lowering the overall lung surface area for gas exchange. It is estimated that the alveolar surface decreases by 4% for each decade after 30 years of age. The combination of impaired mechanical ventilation and reduced surface area for gas exchange results in an inability of the body to compensate when it is stressed, such as in trauma or during exercise.

Several changes in the airway and lungs of an elderly person make them more prone to infection, particularly pneumonia. The combination of an impaired cough and gag reflex, as well as a diminished esophageal sphincter tone (gastroesophageal reflux) result in a greater risk of aspiration pneumonitis. In addition, there is also a reduction in the number of cilia (hair-like projections that propel foreign particles and mucus from the bronchi) as we grow older. There is also a relative increase in the number of mucus producing cells resulting in mucus “clogging" the airway. These changes make the elderly more vulnerable to respiratory infections.

Another factor that affects the respiratory system is an s-like curvature of the spine called kyphosis which is seen in 50% of the elderly population. This is due to degenerative changes on the spine and can make ventilation more difficult.

The combination of a more rigid rib cage, stiffening of the lungs, and kyphosis result in a greater reliance on the diaphragm to breathe. This makes an elderly person more sensitive to changes in intra-abdominal pressure. This should be considered when transporting an elderly patient is in a supine position which could result in a greater difficulty in breathing.

CARDIOVASCULAR

Cardiovascular disease (CVD), which includes both heart disease and stroke, is the leading cause of death in the United States. Almost 1 million Americans die of CVD each year, which adds up to 42% of all deaths. That equates to one person dying every 30 seconds from heart disease. That’s over 2,600 people every single day.

The heart and blood vessel system, which is responsible for circulating blood throughout the body, relies on its elastic, contractile, and distensible properties to function properly. As a person ages, the heart and blood vessels undergo subtle physiologic changes that diminish these properties leading to a less efficient cardiovascular system.

Blood vessels become more rigid with age due to thickening of the vessel walls from changes in the connective tissue, along with a decrease in elastin in the vessel walls, resulting in a decrease in the vessels’ elasticity by 70 percent. In addition to causing an increase in peripheral vascular resistance this also creates more pressure in the arterial system during systole causing an increase in the systolic blood pressure and therefore widened pulse pressure (difference between systolic and diastolic pressures). These changes are seen in both the large and the peripheral vessels. The vessels in the peripheral vasculature also become less responsive to hormones that
normally relax the blood vessel walls (vasodilation). With chronic elevated blood pressure along with other risk factors (e.g. smoking, hypercholesterolemia, etc) atherosclerosis develops. This is a condition in which the inner layer of the artery wall thickens as fatty deposits, along with calcification, develop within the inner layer of the arterial wall. These deposits are called plaques and protrude into the lumen of the vessel diminishing blood flow.

The left ventricle of the heart becomes thickened and stiff as a result of the normal aging process resulting in a decrease in ventricular compliance. This is a result of a decrease in the number of myocardial cells with enlargement of the remaining ones along with an increase in the amount of connective tissue and fat deposits. This “stiffening” of the heart muscle wall decreases the filling of the ventricular chamber during diastole resulting in a decrease in cardiac output. People with hypertension require their heart to pump against a higher pressure further leading to left ventricular hypertrophy.

The aging heart also becomes less responsive to catecholamines and therefore limits its ability to increase the strength or rate of its contractions during exercise (or other stress) to the same extent it could in youth. We all eventually come to realize that although it may have been easy to jog during PT while you were in your initial class at the EMS Academy it becomes extremely difficult as we get older—the heart just can’t provide enough blood to the muscles to supply them with adequate oxygen. The rate of this decline in cardiovascular function varies greatly among individuals. It is estimated that cardiac output decreases at a rate of 1% per year after the age of thirty.

Arrhythmias or abnormal heart rhythms become more common as aging alters the heart’s electrical system. The number of cells in the sinoatrial (SA) node will decrease by 90% by age 80. Because this is the origin of the normal heart beat, the loss hinders the heart’s ability to produce a normal sinus rhythm. Both the SA node and the atrioventricular (AV) node see decline in the number of pacemaker cells. Over time, the accumulation of fibrosis and fatty deposits along the electrical pathway also add to the risk for an abnormal electrical impulse. This is the reason it has become commonplace to see elderly patients with cardiac pacemakers, which replace these functions for the heart’s abnormal electrical conduction system.

Baroreceptors are sensors located in the blood vessels that are responsible for regulating blood pressure with position changes. This, like other regulatory mechanisms we have already discussed, also become less sensitive with age. For example, when hearing Lou’s (Sluggo) food truck’s horn while in class, the instinct is to immediately stand up. The baroreceptor senses the dropping of blood pressure and sends signals to increase sympathetic and decrease parasympathetic activity. This leads to increased vascular tone, heart rate, and cardiac contractility and thus prevents a drop in blood pressure due to gravity. For elderly patients the baroreceptor is less sensitive, which leads to greater swings in blood pressure and orthostatic hypotension.

The changes discussed above describe the normal changes of the heart which limits its reflexes to compensate for either a decrease in blood pressure or the demands for increased cardiac output. This decrease in the patient’s reserve capacity makes compensation for cardiovascular insults more difficult. The addition of medications and medical diseases further impact these compensatory mechanisms.
NERVOUS SYSTEM

There are several changes that occur in the neurologic system of the elderly. Some of the changes are expected as part of the normal aging process while others represent diseases processes. The weight of the brain peaks around age 20 (~3 lbs) and then a modest decline occurs with age, shrinking 10%-20% by age 80. There is also a selective loss of 5%-50% of neurons and the remaining ones shrink in size. Covered by the meninges the brain takes up most of the space in the skull. Age-related shrinkage (atrophy) produces a void between the brain and the outermost layer of meninges (dura). The body compensates for the increased space with an increase in cerebrospinal fluid. While this may cushion against contusion this still allows for acceleration/deceleration injuries. Specifically this movement of the brain can stretch the bridging veins, which are responsible for returning blood from inside the brain to the dura mater. The bridging veins can tear and bleed into the space between the arachnoid and dura layers (also known as the subdural space). Often these bleeds take some time to present clinically, even by as much as two weeks.

Older cells have fewer dendrites (receptors for cells to receive signals) and some may become demyelinated (lose the electrically-insulating layer of the nerve’s axon, also known as the nerve fiber) which can slow the speed of the electrical conduction. Sensation becomes diminished and misinterpreted. Because of aging and the presence of diseases such as diabetes, nerve endings deteriorate and the ability for the skin to sense surroundings is diminished. Excessive temperatures (hot or cold) become dangerous because they cannot be sensed quickly enough. Reflexes are slower, which affects their ability to respond to an event, like falling.

Approximately 13% of elderly persons have visual impairment. This could lead to dangerous results such as the inability to read directions on a prescription bottle or difficulty seeing signs while driving. In addition to decreased vision, elderly persons experience a decrease in visual acuity, the ability to differentiate colors and night vision. In addition, they are particularly sensitive to glare. There are several structural changes of the eye that occur, most commonly to the lens. It can become cloudy (cataract) or lose its curvature that blocks or distorts the light that enters the eye and causes blurred vision.

Hearing is about four times more common than loss of vision (28% have a hearing impairment). With age there are several changes in the structures of hearing that produce a loss in high-frequency hearing and even deafness. This includes the tympanic membrane (ear drum) becoming less flexible, and the small bones in the ear (ossicles) becoming less mobile. The hearing loss is mainly a conduction hearing loss that can be compensated somewhat by the use of hearing aids. The hearing loss is most pronounced when a person attempts to discriminate complex sounds such as when multiple people are talking or there are loud background noises.

RENAL SYSTEM

The kidneys have several important functions including filtration of the blood, fluid and electrolyte balance, maintaining pH of the blood, and production of hormones such as erythropoietin (responsible for stimulating the production of red blood cells in the bone marrow). Over time the kidneys mass decreases by 20% and lose a significant number of nephrons that are the basic filtering units. Many drugs are eliminated via the kidneys, including those used in cardiac conditions (e.g.
digoxin) and antibiotics. Decreased kidney function results in abnormal levels of the drugs and is the cause of many adverse effects.

**Gastrointestinal System**

Some changes that play a role in decrease oral intake by the elderly include a decrease in taste bud sensitivity to salty and sweet foods as well as a slowing of the intestinal tract leading to a decreased in hunger sensation. The slowing of the intestinal tract also causes constipation, a common problem in the elderly.

The liver plays a large role in the metabolism of medications. This function decreases during aging due to a reduction in blood flow to the liver as well as a reduction in the number and function of the liver enzymes involved in metabolism. This may lead to elevated levels of certain medications, possibly to toxic levels.

**Musculoskeletal System**

The musculoskeletal system undergoes several changes with aging. Muscle mass decreases over time and will be replaced by fat. The muscle fibers become smaller and fewer, leading to a decrease in strength. It is estimated that a person may lose up to 10% of their strength per decade after the age of 40.

The ligaments and cartilage of the joints lose elasticity that reduces their flexibility and range of motion. Cartilage also goes through degenerative changes that contribute to arthritis, a common disabling disorder for many. Joint replacement is often needed to relieve the chronic pain and maintain an active life-style.

Older patients develop osteoporosis, a disease of bones that cause a decrease in bone mass and alters their structure. This creates weaker, more brittle bones that are more prone to fracture. Risk factors besides age are post-menopausal females due to decreases in estrogen, and the chronic use of steroids and tobacco.

**Skin**

The skin undergoes general atrophy with age. It becomes thinner, loses elasticity, and strength. What might seem like a trivial mechanism of injury can cause significant damage. There is also a loss of sweat and sebaceous glands. Loss of sweat glands reduces the body’s ability to regulate temperature, while the loss of sebaceous glands make the skin dry and flaky due to a decreased production of oil. Temperature regulation is further altered by the loss of fatty tissue along with a decrease in vasculature to the skin, predisposing an elderly person to hypothermia.

**Immune**

Elderly peoples’ immune system is less effective with age. This makes them more prone to infections such as pneumonia and urinary tract infections. They also tend to not mount a fever so a lack of an elevated temperature should not exclude the presence of an infection.
POLYPHARMACY

It is not uncommon for elderly patients to be on multiple medications. This is referred to as polypharmacy. On average an elderly person takes more than 4 prescription drugs and more than two over-the-counter drugs each day. The more medications someone takes the greater potential for an adverse drug-related event (ADRE). This may be due to a drug-to-drug interaction from one drug affecting the metabolism or clearance of another drug or additive effects of drugs (e.g. aspirin and Plavix are both antiplatelet agents). An ADRE may also be due to an adverse reaction of the drug itself. Often an elderly person has multiple physicians and is treated at different locales. A physician may prescribe a medication not knowing the patient’s current medications or misinterprets the patient’s symptoms as a worsening or new condition. The term coined for this is “prescribing cascade.” Many of the common ADREs are vague symptoms that make it challenging to differentiate from a disease process. Some of these symptoms include dizziness, weakness, hypotension, confusion, depression, nausea and vomiting.

<table>
<thead>
<tr>
<th>Number of Medications</th>
<th>Risk of ADRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two</td>
<td>&lt; 13%</td>
</tr>
<tr>
<td>Three</td>
<td>30%</td>
</tr>
<tr>
<td>Five</td>
<td>58%</td>
</tr>
<tr>
<td>Seven</td>
<td>82%</td>
</tr>
</tbody>
</table>

*# of medications that a patient takes is directly related to the chance of an ADRE

Certain physiologic changes with aging that alter the metabolism and clearance of drugs:

**Absorption** - the digestive process is slowed secondary to decreased gastric acidity and slowed gastric emptying. This has little effect on speed of absorption of oral medications.

**Distribution** - a combination of a decrease in lean body mass and reduction of body water and the increase in body fat alter the absorption of some medications. The lower water content results in higher blood concentrations of a drug, whereas a higher body fat allows for accumulation of fat-soluble drugs.

**Metabolism and Elimination**

**Kidneys** - reductions in renal blood flow and the size and number of nephrons slow filtration and reduce the elimination of renal excreted drugs.

**Liver** - metabolism is slowed because of a reduction in liver mass and decreased blood flow. Slower metabolism of drugs leads to higher levels of active metabolites.
Some other problems that can lead to ADREs are due to errors in the dose or medication a patient may take. This includes the use of over-the-counter (OTC) medications that may interact with the prescribed medication, and look-alike medications and sound-alike medication names (e.g. Klonopin and Clonidine).

**TRAUMA**

Trauma is a significant cause of morbidity and mortality in the elderly. Traumatic injury is the seventh leading cause of death in the United States for patients over 65 years of age.\(^5\) Trauma affects the elderly differently due to the physiologic changes that occur with aging that were discussed above. What might be considered a minor mechanism of injury for a young person can produce serious injury and complications in an elderly person. Elderly patients also have co-morbidities such as cardiac disease and renal disease that limit their reserve capacity to tolerate an insult along with medications such as anticoagulants (e.g. Coumadin) that further complicate the management of these individuals. Although they account for just 12.4% of the general population they account for one-third of all traumatic deaths in the U.S. There is a three-fold higher rate of mortality than younger patients: 9.2% vs. 3.2%. Falls (40%) are the leading cause of trauma-related death followed by MVCs. Despite this, older trauma patients do benefit from aggressive medical care. In several studies of patients older than 70 with multiple injuries it was found that 89% returned home after the trauma rather than to long-term care facilities.

**GERIATRIC ABUSE**

Though the full extent is not known it is estimated that there are more than 2 million cases of elder abuse in the United States each year and the incidence will grow as our population ages.\(^7\) The reason the true extent of the problem is not known is for the following reasons: elder abuse has largely been hidden from society; abuse and neglect have varying definitions; elderly are uneasy or fearful of reporting the problems; and many jurisdictions lack formal reporting mechanisms. Many of these victims are older, frail and vulnerable and cannot help themselves and depend on others to meet their basic needs. Abusers of older adults are both women and men, and may be family members (74% of abusers are family), friends, or “trusted others.”

In general, elder abuse is a term referring to any knowing, intentional, or negligent act by a caregiver or any other person that causes harm or a serious risk of harm to a vulnerable adult. There are several categories of abuse:\(^8\)

- **Physical Abuse** - inflicting physical pain or injury on a senior, e.g. slapping, bruising, or restraining by physical or chemical means.
- **Sexual Abuse** - non-consensual sexual contact of any kind.
- **Neglect** - the failure by those responsible to provide food, shelter, health care, or protection for a vulnerable elder.
- **Financial and Exploitation** - the illegal taking, misuse, or concealment of funds, property, or assets of a senior for someone else's benefit.
- **Emotional Abuse** - inflicting mental distress on an elder person through verbal or nonverbal acts, e.g. humiliating, intimidating, or threatening.
- **Abandonment** - desertion of a vulnerable elder by anyone who has assumed the responsibility for care or custody of that person.
- **Self-neglect** – the failure of a person to perform essential, self-care tasks that threatens his/her own health or safety.

Financial abuse is the number one form of elder abuse. Public awareness to this issue was brought to light when the son of philanthropist Brooke Astor was found guilty in 2009 of defrauding and physically neglecting her.
Some of the tell-tale physical signs of elderly abuse on examination are similar to signs of pediatric abuse and include the following:
- Neglect: poor hygiene, malnutrition, dehydration, skin breakdown
- Contusions of inner arms, breasts, and genitalia
- Multiple injuries in various stages of healing
- Abrasions from restraints
- Oral injuries
- Burns
- Unexplained fractures and injuries
- Pattern of injury inconsistent with the reported mechanism

The care provider should be aware of any “red flags” suggesting elder abuse. The patient may be reluctant or terrified to report abuse especially in front of the abuser, and may fear removal from their home. If abuse or neglect is suspected, remove the patient from the presence of the potential abuser and ask the patient directly. Only objective information (facts) should be documented on the ePCR including a detailed physical examination. If there is a belief that a life-threatening situation is taking place law enforcement should be requested. On-line Medical Control may be contacted for guidance. For non-life-threatening conditions the adult protective services (APS) referral form should be completed. Immediately fax both the APS referral form and your ePCR to FDOC. Adult Protective Services will respond to the home within 3 working days of referral, or within 24 hours for a life-threatening situation.

**ASSESSMENT / COMMUNICATION**

The assessment of the older patient is challenging and time-consuming relative to the assessment of the younger patient. They tend to withhold information such as serious symptoms and chronic diseases. Several steps can be taken to help effectively communicate with them. Some strategies include:

- Introduce yourself to the patient and ask them questions prior to their family members or other caregivers such as their home health aid.
- Ensure the patient who has eyeglasses or a hearing aid uses it as it may reduce their disorientation and stress.
- Non-verbal cues such as whether you are paying attention while they talk or facial expressions are just as important as the spoken word.
- It is important to explain what and why you are doing something to them. This allows the patient to be informed and have a sense of some level of control. Remember it is somewhat difficult from someone who has been in control most of their adult life to now be dependent on others.
- Most importantly, remember to have patience as older adults take longer to process and respond to questions. It is imperative to simply slow down and allow the patient to present his or her story at their own pace. Also, repeating answers back to them can confirm their response and gives them the opportunity to clarify.
- It is important to obtain the patient’s baseline functioning both mentally and physically. This will allow for a better appreciation of changes from baseline that may have been easily overlooked or that would be attributed to being normal for
As you may know, mental status changes are a frequently encountered call. It is easy to fall into the trap of making an assumption that it is related to their dementia, or thoughts “like they are just old.” It is vital to rule out medical problems such as infection, metabolic disorders such as diabetes, depression, or trauma (e.g. head trauma) before attributing their presentation as secondary to their underlying dementia.

**CONCLUSION**

Unfortunately the fountain of youth has yet to be discovered and a greater percentage of our population is getting older. The geriatric patient poses many challenges due to their physiologic changes, pre-existing medical problems and the medications that they take for them. They frequently present with subtle changes and vague complaints that often can be life-threatening conditions. Appreciating the changes in the older patient and taking the time to thoroughly assess and examine them can lead to improving their outcome. On the humanistic side, as we all want to be treated with respect, we need to be more aware in how we care for this vulnerable population. They certainly have earned that right.

*Written by:* **DOUG ISAACS, MD**  
FDNY EMS Director of Training

**REFERENCES**

8. Administration on Aging
1. The fastest growing age group in the United States is:
   a. 10-20
   b. 20-30
   c. 30-40
   d. 50-60
   e. Over 65

2. As we age the following changes occur in our vital signs:
   a. Pulse tends to decrease, respirations tend to increase, and blood pressure tends to increase.
   b. Pulse tends to decrease, respirations tend to increase, and blood pressure tends to decrease.
   c. Pulse tends to increase, respirations tend to decrease, and blood pressure tends to increase.
   d. Pulse tends to increase, respirations tend to increase, and blood pressure tends to decrease.

3. You are caring for an elderly patient with multiple skin tears. Your partner tells you that changes in the skin of the elderly include all of the following EXCEPT:
   a. Heat regulation is decreased
   b. The skin is drier and flakier
   c. There is more sweat
   d. The skin is thinner and more fragile

4. All of the following are strategies to improving communication with the geriatric patient EXCEPT:
   a. Ensure patient has glasses and/or hearing aid
   b. Asking multiple questions at the same time
   c. Speaking slowly
   d. Repeating patient’s response to questions

5. Adverse drug reactions in elderly people are the result of:
   a. an increase in gastric emptying
   b. an increase in lean muscle mass
   c. changes in drug metabolism due to decrease in liver and kidney function
   d. atrophy of the brain

6. A decreased number of pacemaker cells in the sinoatrial node would MOST likely contribute to a decline in cardiac output secondary to:
   a. heart block
   b. bradycardia
   c. tachycardia
   d. atrial fibrillation

7. Therapeutic doses of certain drugs may reach toxic levels in older people due to decreased function of the:
   a. liver
   b. spleen
   c. gallbladder
   d. intestinal tract

8. Osteoporosis tends to progress more rapidly in:
   a. postmenopausal women
   b. the lower extremity
   c. males over 60 years of age
   d. patients with excess calcium

9. Polypharmacy is MOST accurately defined as:
   a. The prescribing of multiple drugs to treat multiple conditions
   b. The unintentional ingestion of multiple doses of the same drug
   c. Unnecessarily prescribing numerous drugs to prevent disease
   d. The person does not fill a prescription because of insufficient insurance

10. The following changes in the respiratory system result in a decrease in tidal volume EXCEPT:
    a. Decrease in lung tissue elasticity
    b. Decrease alveolar surface area
    c. Stiffening of the chest wall
    d. Kyphosis
Based on the CME article, place your answers to the quiz on this answer sheet. Respondents with a minimum grade of 80% will receive 1 hour of Online/Journal CME.

Please submit this page only once, by one of the following methods:
- FAX to 718-999-0119 or
- MAIL to FDNY OMA, 9 MetroTech Center 4th flr, Brooklyn, NY 11201

Contact the Journal CME Coordinator at 718-999-2790:
- three months before REMAC expiration for a report of your CME hours.
- for all other inquiries.

Monthly receipts are not issued. You are strongly advised to keep a copy for your records.

Note: if your information is illegible, incorrect or omitted you will not receive CME credit.

Check one:  □ EMT □ Paramedic □ other

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Submit answer sheet by the last day of this month.
# Citywide CME - January 2012

*Sessions are subject to change without notice. Please confirm through the listed contact.*

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<td>ED Conference Room</td>
<td>Dr Hew</td>
<td>Manny Delgado 718-363-6644</td>
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<td>Dr Brandler</td>
<td>Aaron Scharf 718-780-1859</td>
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<td>1730-1930</td>
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<td>Dr Chitnis</td>
<td>Dale Garcia 718-630-7230</td>
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<td>RSVP: <a href="mailto:ssamuels@nyp.org">ssamuels@nyp.org</a></td>
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<td>Ana Doulis 212-746-0885 x2</td>
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<td>Schwartz Lecture Hall 401 E 30 Street</td>
<td>TBA</td>
<td>Jessica Kovac 212-263-3293</td>
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<td>Thursdays</td>
<td>0800-0900</td>
<td>Call Review/Trauma Rounds</td>
<td>East bldg, courtyard flr</td>
<td>Dr Sample</td>
<td>Mary Ellen Zimmermann RN</td>
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<td>Mt Sinai Qns</td>
<td>last Tues</td>
<td>1800-2100</td>
<td>Lecture or Call Review</td>
<td>25-10 30 Ave, conf room</td>
<td>Dr Dean</td>
<td>Donna Smith-Jordan 718-267-4390</td>
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<td><a href="mailto:pabruzzino@capitolhealthmgmt.com">pabruzzino@capitolhealthmgmt.com</a></td>
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<td>William Amaniera 718-818-1364</td>
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<td>TBA: call to inquire →</td>
<td>Regina McGinn Center 475 Seaview Ave</td>
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<td>Andrea Kleboe 718-226-7878</td>
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<td>SIUH South</td>
<td>1/13</td>
<td>1500-1600</td>
<td>Lecture: Positive Pressure</td>
<td>346 Seguine Ave</td>
<td>Dr Barbara</td>
<td><a href="mailto:pbarbara.md@gmail.com">pbarbara.md@gmail.com</a></td>
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## 2012 NYC REMAC Examination Schedule

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<th>NYS/DOH Written Exam</th>
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<td>(Written only - CME letter required)</td>
<td>(Written &amp; 3 Orals Scenarios)</td>
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<td>Registration Deadline</td>
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The REMAC Refresher Written examination is offered monthly for paramedics who meet CME requirements and whose REMAC certifications are either current or expired less than 30 days. To enroll, call 718-999-7074 before the register registration deadline above. Candidates may attend an exam no more than 6 months prior to expiration. Refresher exams are held at 07:00 or 18:00 hours at FDNY-EMS Bureau of Training, Fort Totten, Queens.

The REMAC Basic Written & Orals examination is for initial certification, or for inadequate CME, or for certifications expired more than 30 days. Registrations must be postmarked by the deadline above. Email swansoc@fdny.nyc.gov instructions. You are encouraged to register at least 30 days prior to the exam as seating is limited. A $100 exam fee by money order is required.

January 2012 – Journal CME Newsletter