

# ECT as a Therapeutic Option in Older Adults

Dr. Mark Strazisar  
March 1, 2018



LECOM HEALTH

## Public Perception of ECT



LECOM HEALTH

## The Reality of ECT



LIGHT  
LECOM HEALTH

LECOM HEALTH

## Objectives

- By the end of this lecture, the medical professional shall demonstrate an understanding of:
  - 1) The prevalence of depression in the geriatric population along with suicide in the elderly
  - 2) Diagnosing depression in the geriatric population
  - 3) Treatment options for geriatric patients with depression with an emphasis on ECT
  - 4) Risks and benefits of ECT

LIGHT  
LECOM HEALTH

LECOM HEALTH

## An Aging Population

- It is estimated that the current population of the United States (per the last census) stands at around 320 million people
  - Of those 320 million, about 44.7 million are considered to be geriatric (65 years or older)
  - This represents about 14% of the population (1:7) as of 2013
  - It is estimated that by 2060 the number will grow to 98 million geriatric patients (roughly 1:4)
  -



## A Depressed Population

- 5.2% of the US population over the age of 50y may suffer from major depression within a 12 month period
  - This equates to over 2 million geriatric patients with depression symptoms
  - Put another way, that's 20 Erie sized cities-worth of people with major depression



## A Suicidal Population

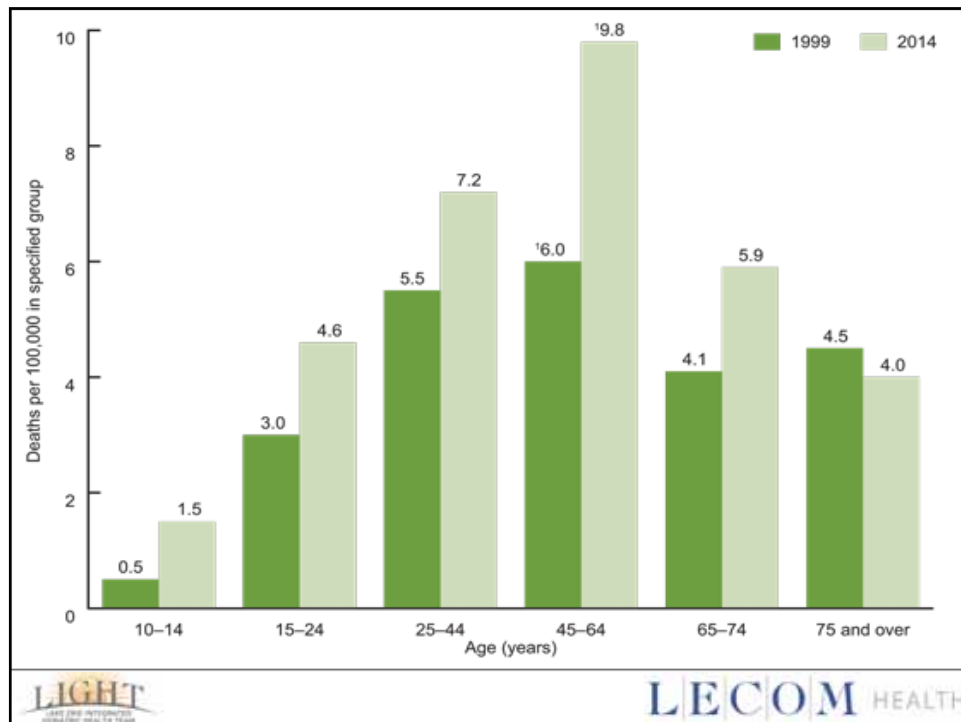
- Approximately 37,000 people in the United States and one million worldwide die by suicide each year
  - 650,000 people in the United States receive emergency treatment each year after attempting suicide
  - Suicide rates are highest in the under 25yo population and the over 50yo population



## Suicide in the Elderly

- Suicide in the United States of persons  $\geq 65$  years of age decreased 6 percent as compared to 10 years ago (1999 versus 2010)
  - Nonetheless, white males over the age of 50 remain the most likely to complete suicide among depressed individuals.
  - Overall the rate of suicide in the 50y and older population is increasing...





## Depression in the Elderly

- Diagnosing depression in the elderly is not significantly different than it is in the general adult population.
  - The presentation and interview of geriatric depressed patients may be significantly changed though.

**Major Depressive Episode**

A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure. (Note: Do not include symptoms that are clearly due to a general medical condition, or mood-incongruent delusions or hallucinations.)



1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: in children and adolescents, can be irritable mood
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)
3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. Note: in children, consider failure to make expected weight gains.
4. Insomnia or hypersomnia nearly every day
5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)
6. Fatigue or loss of energy nearly every day
7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)
8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms do not meet criteria for a Mixed Episode.

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

## Assessing Depression in the Elderly

- Geriatric patients are less likely to admit to “classic” signs of depression – anhedonia, poor energy, poor sleep.
  - May see such symptoms as “signs of weakness”
  - Relating their current emotional state to their Erikson’s developmental state can open the door to dialog

## Erikson's Stages

Stage	Psychosocial Crisis	Basic Virtue	Age
1	Trust vs. mistrust	Hope	Infancy ( 0 to 1 ½)
2	Autonomy vs. shame	Will	Early Childhood ( 1 ½ to 3)
3	Initiative vs. guilt	Purpose	Play Age ( 3 to 5)
4	Industry vs. inferiority	Competency	School Age ( 5 to 12)
5	Ego identity vs. Role Confusion	Fidelity	Adolescence (12 to 18)
6	Intimacy vs. isolation	Love	Young Adult ( 18 to 40)
7	Generativity vs. stagnation	Care	Adult hood( 40 to 65)
8	Ego integrity vs. despair	Wisdom	Maturity ( 65+)



## Assessing Depression in the Elderly

- Geriatric patients have some similar risk factors towards developing depression compared to adults aged 25-50 but there are a few additional ones.



## Risk Factors

- Female sex
- Social isolation
- Marital status changes (widowed, separated, divorced)
- Lower socioeconomic status
- Comorbid medical conditions (very common in the elderly)
- Uncontrolled pain
- Insomnia
- Functional impairment
- Cognitive impairment



## Risk Factor – Functional Impairment

- With medical comorbidities there are several clues that may allow the clinician to hone in on a diagnosis of depression
  - Somatic or mood complaints out of proportion to what is expected
  - Poor response to standard treatments
  - Poor motivation to participate in treatment
  - Lack of engagement with care providers





## Risk Factor – Cognitive Impairment

- Geriatric depression is also associated with an increased risk of dementia
  - A retrospective study of 13,500 patients without dementia at baseline were followed over 6 years and the risk of all-cause dementia was increased 70% with associated depression



## Screening for Depression

- Several scales/tools exist to determine severity or presence of depression
  - Many are not unique to the geriatric population but still possess clinical utility
  - These include PHQ2 and PHQ9, BDI and HAM-D
- There are specific geriatric depression scales that may be more specific and sensitive for this population
  - Geriatric Depression Scale
  - Cornell Scale for Depression in Dementia



### Geriatric Depression Scale (Short Form)

Patient's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Choose the best answer for how you felt over the past week.

No.	Question	Answer	Score
1.	Are you basically satisfied with your life?	YES / NO	
2.	Have you dropped many of your activities and interests?	YES / NO	
3.	Do you feel that your life is empty?	YES / NO	
4.	Do you often get bored?	YES / NO	
5.	Are you in good spirits most of the time?	YES / NO	
6.	Are you afraid that something bad is going to happen to you?	YES / NO	
7.	Do you feel happy most of the time?	YES / NO	
8.	Do you often feel helpless?	YES / NO	
9.	Do you prefer to stay at home, rather than going out and doing new things?	YES / NO	
10.	Do you feel you have more problems with memory than most?	YES / NO	
11.	Do you think it is wonderful to be alive?	YES / NO	
12.	Do you feel pretty worthless the way you are now?	YES / NO	
13.	Do you feel full of energy?	YES / NO	
14.	Do you feel that your situation is hopeless?	YES / NO	
15.	Do you think that most people are better off than you are?	YES / NO	
TOTAL			



**Scoring:**  
Assign one point for each of these answers:

1. No	4. Yes	7. No	10. Yes	13. No
2. Yes	5. No	8. Yes	11. No	14. Yes
3. Yes	6. Yes	9. Yes	12. Yes	15. Yes

A score of 0 to 5 is normal. A score above 5 suggests depression.

**Source:**

- Yesavage J.A., Brink T.L., Rose T.L. et al. Development and validation of a geriatric depression screening scale: a preliminary report. J. Psychiatr. Res. 1983; 17:37-49.

Name: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_ Date: \_\_\_\_\_



## Cornell Scale for Depression in Dementia

Ratings should be based on symptoms and signs occurring during the week before interview. No score should be given if symptoms result from physical disability or illness.

**SCORING SYSTEM**  
a = Unable to evaluate    0 = Absent    1 = Mild to Intermittent    2 = Severe

**Score greater than 12 = Probable Depression**

	a	0	1	2
<b>A. MOOD-RELATED SIGNS</b>				
1. Anxiety; anxious expression, rumination, worrying				
2. Sadness; sad expression, sad voice, tearfulness				
3. Lack of reaction to pleasant events				
4. Irritability; annoyed, short tempered				
<b>B. BEHAVIORAL DISTURBANCE</b>				
5. Agitation; restlessness, hand wringing, hair pulling				
6. Retardation; slow movements, slow speech, slow reactions				
7. Multiple physical complaints (score 0 if gastrointestinal symptoms only)				
8. Loss of interest; less involved in usual activities (score 0 only if change occurred acutely, i.e., in less than one month)				
<b>C. PHYSICAL SIGNS</b>				
9. Appetite loss; eating less than usual				
10. Weight loss (score 2 if greater than 5 pounds in one month)				
11. Lack of energy; fatigues easily, unable to sustain activities				
<b>D. CYCLIC FUNCTIONS</b>				
12. Diurnal variation of mood; symptoms worse in the morning				
13. Difficulty falling asleep; later than usual for this individual				
14. Multiple awakenings during sleep				
15. Early morning awakening; earlier than usual for this individual				
<b>E. IDEATIONAL DISTURBANCE</b>				
16. Suicidal; feels life is not worth living				
17. Poor self-esteem; self-blame, self-depreciation, feelings of failure				
18. Pessimism; anticipation of the worst				
19. Mood congruent delusions; delusions of poverty, illness or loss				

## Comparing the Scales

### Geriatric Depression Scale

- Sensitivity = 94%
- Specificity = 81%
- Can be used in inpatient/outpatient settings and with the physically ill
- Unclear with dementia

### Cornell Depression Scale

- Sensitivity = 90%
- Specificity = 75%
- Can be used in inpatient/outpatient settings and with dementia
- Unclear with physical illness



## Clinical Interview

- Along with scales a full clinical interview should be performed
  - Assessment for suicidality
  - Assessment for psychosis
  - Review of medications with depressant side-effects (e.g. opiates, beta-blockers, steroids, benzodiazepines)
  - Consideration of other medical conditions (e.g. thyroid disease, diabetes)



## Treatment

- Once the diagnosis of depression has been made the decision now falls to treatment
- There are multiple options for the adult population but several of these may not be as useful or may be potentially harmful in the elderly population
  - Antidepressants
  - Psychotherapy
  - ECT



## Antidepressants

- Includes medication classes such as the SSRIs, SNRIs, TCAs, MAOIs and orphan medications (those with novel mechanisms of action)
- SSRIs are the best tolerated but four of them have significant drug-drug interactions
  - Fluoxetine, sertraline, paroxetine and fluvoxamine all are highly protein bound and interfere with CYP450 3A4 and 2D6
  - Citalopram and escitalopram are less protein bound and have minimal to no CYP450 inhibition



## Antidepressants

- SNRIs have fewer drug interactions but more side effects
  - Venlafaxine/desvenlafaxine increase diastolic blood pressure
  - Duloxetine increases urinary retention, cannot be used with a moderately impaired liver
- TCAs generally have too many side effects to be considered for first line treatment but can still be utilized in select patients (those with limited cardiac history, low fall risk or cognitive intactness)



## Antidepressants

- MAOIs also have significant restrictions (dietary concerns, avoidance of serotonergic drugs) but again can be used in select patients
- Orphan by and large can be used in the elderly with one notable exception:
  - Trazodone prolongs QT interval and increases fall risks



## Antidepressant Resistance

- Many elderly patients are reluctant to take medications for depression partly due to the stigma associated with this disease state
  - Previous bad experiences with medications may put them off from trying again
  - Starting a medication at a lower dose can lessen side-effects
  - Talking to the patient about their concerns can also lessen resistance



## Psychotherapies

- Cognitive behavioral therapy is the most widely utilized therapy
  - Involves changing one's thoughts and attitudes by identifying mental roadblocks
  - Considered to be nearly as effective as medications alone in the elderly
- Interpersonal psychotherapy is considered equally useful but less utilized



## Electroconvulsive Therapy

- Began in 1939 in Italy with treatment on a catatonic patient
  - Patient was elderly, had not responded to other therapies such as insulin-shock
  - Catatonia resolved after several treatments
- Fell out of favor in the 1950s and 1960s due to the emergence of new medications (Thorazine, Lithium, Haldol)
- Came back in the 1970s and 1980s as resistance and side-effects to medications became more prominent



## ECT – Theories on Efficacy

ECT is believed to work by increasing monoamine concentrations and improves receptor sensitivity

ECT affects the hypothalamic-pituitary-adrenal (HPA) axis by decreasing cortisol response (normalizes the dexamethasone suppression test)

- It also releases central neuropeptides like CRF, somatostatin, and neuropeptide Y



## ECT – Theories on Efficacy

Several human and animal studies indicate that ECT has trophic effects on the CNS

- Increases BDNF (brain derived neurotrophic factor) in humans
  - May stimulate regrowth of synapses and receptors
- Induces neurogenesis and mossy fiber sprouting from granule cells in hippocampal regions; seen best in rat studies



## ECT Course of Treatment

- Involves 6-12 sessions of electrically induced, controlled seizures to provoke the release of BDNF within the brain
- Procedures are done under general anesthesia and with a muscle relaxant to lessen risks of injury during the seizure
- ECT may be done up to 3 times a week initially with spacing out of treatments later in the course





## ECT Indications

- Indicated and demonstrated to treat:
  - 1) Major Depression – w/ or w/o psychosis
  - 2) Catatonia
  - 3) Mania
  - 4) Self-injurious thoughts/suicidal thoughts
  - 5) Neuroleptic malignant syndrome
  - 6) Intractable epilepsy



## ECT Contraindications

- Has no absolute contraindications
- Relative contraindications include:
  - 1) Severe aortic stenosis
  - 2) Recent MI within past 6 months
  - 3) Recent stroke within past 6 months of either type (ischemic or hemorrhagic)
  - 4) ASA 4 or 5 classification (severe risk of injury following administration of anesthesia)



## ECT Workup

- Involves a preoperative workup before treatment can begin
  - Includes an EKG, echocardiogram, EEG, CMP/CBC and may include a chest X-ray or head CT/MRI.
  - Results should be shared with the anesthesiologist before proceeding, may need additional clearances from cardiology or neurology



## ECT Efficacy in the General Population

- For those with major depression, the response rate (a 10%-49% reduction in symptoms) is approximately 70-90% with a remission rate (greater than 50% reduction in symptoms) between 55-65%
  - Medications tend to “top out” at 35% remission rate though response rate can be much higher



## ECT in the Geriatric Population

- Often better tolerated than medications
- A large body of literature indicates that ECT is an effective and safe treatment option for elderly patients with major depression, even in very old-old age (>85 years).
- Efficacy of ECT is markedly greater in older patients as compared with younger patients
  - ▣ Higher remission rate but may have a slower course



## ECT in the Geriatric Population

- Case study:
  - ▣ Mr. F is a 70yo WM who presents to Millcreek at the behest of his wife for acute psychosis associated with a long standing depression. He is mostly mute at time of presentation. His wife recounts that starting 4 months before his presentation to the hospital he expressed to her his belief that their computer was being hacked by Russians and their monies were being stolen.



## ECT in the Geriatric Population

- Mr. F had been diagnosed with MDD when he was about 19yo and had symptoms of psychosis with catatonia. He was hospitalized at Warren State Hospital for approximately 1 year with several courses of ECT being utilized to remit his symptoms. His wife notes that from 20yo to about 65yo he was “symptom free”.



## ECT in the Geriatric Population

- At 65yo he retired and his wife noticed some decline in his moods with more periods of fatigue and anhedonia. He was started on Zoloft 50mg which was titrated up to 100mg. He appeared to respond well to this medication.
- He remained on Zoloft for about 4y before attempting to take himself off of it but developed some anxious symptoms and stayed on it.



## ECT in the Geriatric Population

- In June 2017 his mother died and he was close with her. His wife recommended he increase his Zoloft as his depression seemed to increase but he opted to try another agent, Remeron
- In July 2017 he had a lipoma removed and had knee surgery. At that time he was found to have atrial fibrillation and was started on Xarelto and Cardizem.



## ECT in the Geriatric Population

- He required cardioversion in September for prolonged atrial fibrillation and stopped his Remeron, being placed on Lexapro instead.
- In the middle of September he began to develop elaborate delusions that ISIS and Russia had planted a virus in his computer to steal his money and were bugging his place of residence. He believed that carbon monoxide was being pumped into his house via his CPAP machine.



## ECT in the Geriatric Population

- He was admitted to St. Vincent Hospital for 3 weeks for these symptoms and Risperdal 3mg was used to attempt a reduction in these symptoms; while well tolerated, his symptoms did not abate. In place of Remeron, Effexor was used for his anxiety that had emerged secondary to his delusions but he did not respond to this medication. His treating psychiatrist then recommended attempting a new course of ECT. His diagnosis at that time was major depressive disorder, severe with psychotic features.



## ECT in the Geriatric Population

- He was medically cleared for ECT by cardiology as it was determined that his atrial fibrillation was coagulation controlled and his EEG and head CT showed no evidence of stroke or seizure and his echocardiogram no evidence of aortic stenosis.
- After discussion with him and his wife he was agreeable to a retriial.



## ECT in the Geriatric Population

- His initial Hamilton Depression Scale score was 26 indicating severe depression. A Montreal Cognitive Assessment was performed and he scored a 27/30 indicating a low likelihood of dementia.
- He began a twice weekly course of ECT with a bifrontal modality being used to lessen the risks of cognitive side effects.



## ECT in the Geriatric Population

- After his 4<sup>th</sup> treatment he began to notice a decline in his depression and he started to question his delusional beliefs. His Hamilton score dropped to 12 indicating a marked reduction in symptoms.
- By the 6<sup>th</sup> treatment he had improved to the point that he could now undergo once weekly rather than twice weekly treatments.
- By the 10<sup>th</sup> treatment he was no longer reporting any signs of depression and his Hamilton score had dropped to 1.



## ECT in the Geriatric Population

- He stated that at the end of the 10<sup>th</sup> treatment he no longer wished to continue them as he believed he could get no further improvements. There was a mutual decision that given his rapid response to treatment and his previous success 50y ago with ECT that additional treatments would likely add little to his recovery.



## Conclusions

- Depression in the elderly remains an ongoing concern as more elderly are experiencing depression and are at higher risk for suicide or dementia as a consequence.
- Medications can be used to modify depression but there are drawbacks with medication interactions and tolerability.
- ECT remains a viable option for treatment of depression in the elderly, being both well tolerated and having a higher success rate in remission than medications.





## Resources

- The Practice of Electroconvulsive Therapy: Recommendations for Treatment, Training, and Privileging, 2<sup>nd</sup> Edition. APA 2001
- Clinical Manual of Electroconvulsive Therapy. Mehul Mankad *et al.* 2010
- Electroconvulsive Therapy: A Guide for Professionals and Their Patients. Max Fink 2009



## Questions?

