

# Post-stroke Depression

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# Halloween Hangover?



# What are the signs and symptoms of depression?

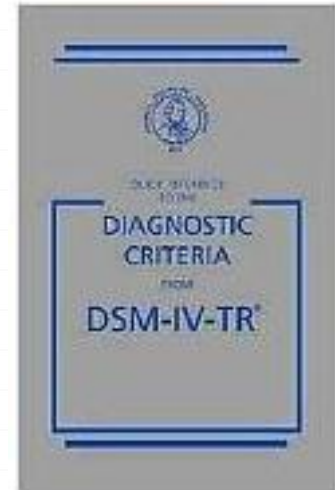


# What is Depression? What is the DSM-IV-TR anyways?

- Major Depression (>5), Minor Depression (2)

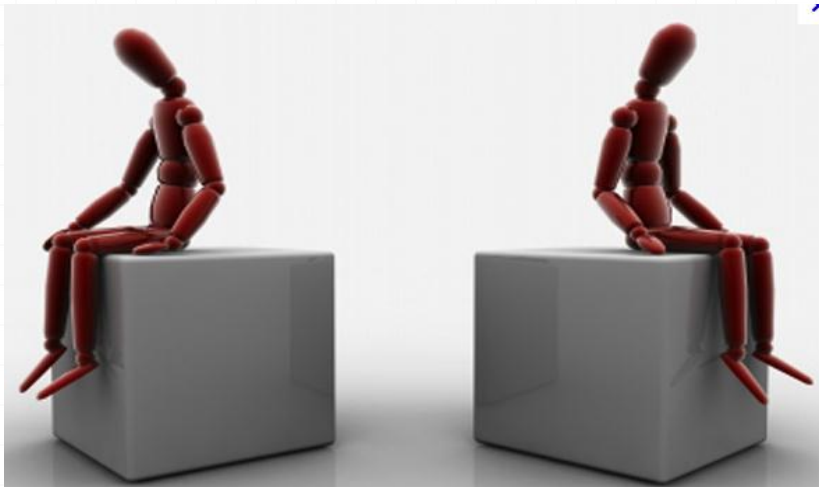
- Lasts longer than two weeks

- Loss of interest and/or pleasure for most of the day, almost everyday.
- Significant weight loss/gain
- Insomnia/Hypersomnia
- Psychomotor agitation/retardation
- Fatigue/loss of energy every day
- Feelings of worthlessness/Guilt
- Diminished ability to think/concentrate/ indecisiveness
- Recurrent thoughts of death



# Depression

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



# Post Stroke Depression

- Prevalence of depression is 29% and remains stable up to 10 years after stroke, with a cumulative incidence of 39-52% within 5 years. (50 Studies; The British Journal of Psychiatry (2013) 202,14-21)
- 5 million stroke survivors in the United States, suggesting 2.5 million stroke survivors would have been depressed sometime since their initial stroke
- Post stroke depression (PSD) is under diagnosed and undertreated



**What is your experience ?**

# Risk Factors

- Over the past 2 decades, more than 80 potential predictors of post-stroke depression have been examined.
- History of depression
- Function impairment
- **Reduce mobility**
- Speech and language dysfunction, apraxia
- **Cognitive impairment**
- Greater dependency with ADL functions
- **Quality of Life**
- **Social Support**
- Sleep Quality
- Location of lesion



# Challenges in Diagnosis

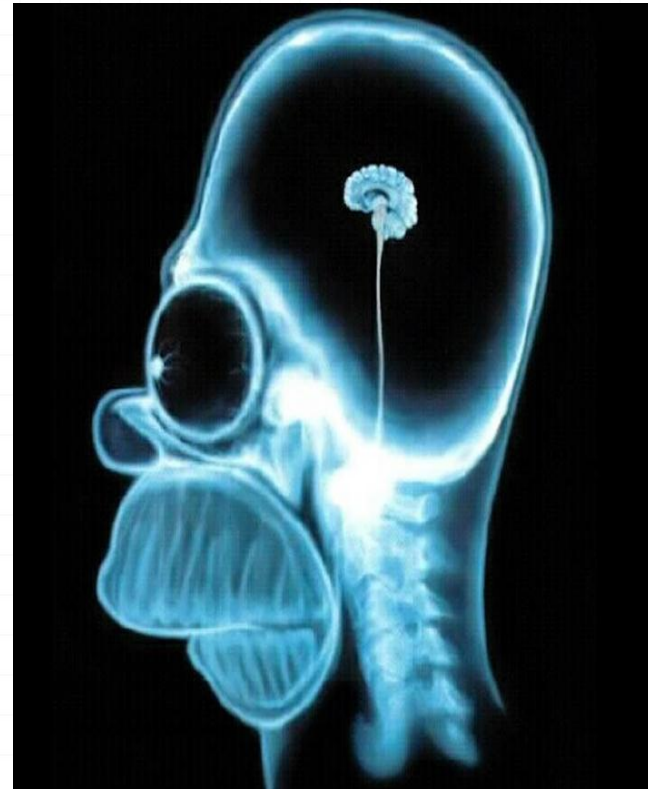
- o Emotional / Behavioral changes after stroke
  - o Pseudobulbar Affect – frequent, usually brief, laughing or crying, not caused by sadness or out of proportion to it.
  - o Apathy – Loss of drive, motivation, interest, low energy, not necessarily related to depression
  - o Aprrosodia – inability of a person to convey or interpret emotional prosody (rhythm, pitch, stress, intonation)
  - o Catastrophic Reaction – intense emotional reaction (tears, aggression, swearing, compensatory boasting)
  - o Anosognosia – denial of impairment, lack of awareness and insight
  - o Anxiety – intense worry, anxious foreboding
  - o Aboulia – lack of will or initiative
  - o Aggression – physical, verbal, directed at self, others





# Challenges in Diagnosis

- Cognitive Deficits
- Fatigue
- Communication Deficits
- Pain
- Delirium
- Dementia



# Causes of Depression - Physiological

o 4 hypothesized mechanisms

- o Lesion Location
- o Neurotransmitter
- o Inflammatory cytokines
- o Gene Polymorphism



Neurological Research 2009, Volume 31, November

# Physiological Contributions

## o Lesion Location

- o Research inconsistent
- o Basal Ganglia or Left Frontal Lobe lesions may play a role in the etiology of PSD

## o Neurotransmitters

- o During an acute brain lesion, there is a decreased monoamine synthesis because of enzyme inhibition during ischemia
- o Injury to the ascending axonal projections to the cortex from the basal ganglia causing a decrease in norepinephrine and serotonin production
- o Neurogenesis impaired, decreased brain derived neurotrophic factor protein

# Physiological Contributions

## ◦ Inflammatory cytokines

- Stroke induces an inflammatory response
- Role of inflammatory cytokines (immune system) resulting from stroke leads a chemical cascade that depletes serotonin
- Serotonergic depletion in paralimbic areas of left frontal and temporal cortex may lead to depression.

## ◦ Gene Polymorphism

- Genetic vulnerability for depression
- Reduction of serotonin reuptake
- Vulnerability to stress reaction in response to stroke deficits resulting in depression

# Causes of Depression - Psychological

- o loss
- o powerlessness
- o grief
- o fear
- o anger
- o shame
- o identity issues
- o dependence, change in roles and relationships,
- o uncertainty about the future. “Will I get better? “Will I be a burden? Can I have a meaningful life?”



# Effect on Recovery

- ◊ Poorer rehabilitative response
- ◊ Reduced social function
- ◊ Greater use of healthcare services
- ◊ Increased risk of subsequent cardiac and stroke events
- ◊ PSD is associated with a higher risk of mortality

# Depression Assessment

Requirement of Comprehensive Stroke Center (CSC) certification to screen all stroke patients for depression

Goal: Utilize a short, simple screening tool for depression. Refer to inpatient psychiatry if appropriate or flag patient at risk and communicate through the discharge summary to providers at the next level of care.



Comprehensive Stroke Center

# Why use as assessment tool?

- **GOLD Standard - Structured Clinical Interview for DSM-IV (SCID)**
  - An Axis I SCID assessment with a psychiatric patient usually takes between 1 and 2 hours, depending on the complexity of the past psychiatric history and the subject's ability to clearly describe episodes of current and past symptoms.
  - The instrument was designed to be administered by a clinician or trained mental health professional, for example a psychologist or medical doctor. This must be someone who has relevant professional training and has had experience performing unstructured, open-ended question, diagnostic evaluations.
- **What about nurses??**
  - Research reveals that non-psychiatric physicians, nurses, and therapists demonstrate poor sensitivity relative to gold standard psychiatric interviews and standardized formal rating scales when using clinical observation to identify depression in individuals who have experienced stroke in both inpatient and community-based settings.



# Depression Screening Tools

- PHQ2, PHQ9
- Geriatric Depression Scale
- Hospital Anxiety and Depression Scale
- Beck Depression Inventory
- Center for Epidemiological Studies Depression Scale
  
- Stroke Aphasia Depression Questionnaire – 10
- Aphasia Depression Rating Scale

Journal of Neurol Neurosurg Psychiatry 2013; 0:1-9

# Challenges of Implementation

- Screening tools are validated in the outpatient environment
- Length of stay
- Short and simple?
- Who will complete the screening?
- EMR/Documentation
- Aphasia/Cognitive Impairment
- Language
- Somatic Complaints



# Hospital Anxiety and Depression Scale (HADS)

## ANXIETY

I feel tense or wound up

I get a sort of frightened feeling as if something bad is about to happen

Worrying thoughts go through my mind

I can sit at ease and feel relaxed

I get a sort of frightened feeling like butterflies in the stomach

I feel restless and have to be on the move

I get sudden feelings of panic

## DEPRESSION

I still enjoy the things I used to enjoy

I can laugh and see the funny side of things

I feel cheerful

I feel as if I am slowed down

I have lost interest in my appearance

I look forward with enjoyment to things

I can enjoy a good book or radio or TV program

**Score 0-3**

**>10 indicates probable  
presence of a mood disorder**

# Hospital Anxiety and Depression Scale (HADS)

Anxiety and Depression Screening Data (September 1 – October 15)

- o 79 patients discharged with primary stroke
- o 47 LOS < 5 days
- o 7 expired
- o 8 non-English speakers
- o 9 cognitive impairment/aphasia
- o 2 missed
- o 1 AMA
- o 5 complete\*\*
- o 1 clinically significant anxiety

\*\* 3 others assessed, final diagnosis was not stroke



# Patient Health Questionnaire

Over the past 2 weeks, how often have you been bothered by any of the following problems?

	Not At all	Several Days	More Than Half the Days	Nearly Every Day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself - or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or, the opposite - being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

# Another approach – Future Research?

- o History of depression
- o Stroke Severity
  - o Difficulty with ADLs
  - o Difficulty communicating
- o Signs of Depression Scale (SDSS)
  1. Does the patient sometimes look sad, miserable or depressed?
  2. Does the patient ever cry or seem weepy?
  3. Does the patient seem agitated, restless or anxious?
  4. Is the patient lethargic or reluctant to mobilize?
  5. Does the patient need a lot of encouragement to do things for him/herself?
  6. The the patient seem withdrawn, showing little interest in the surroundings
- o Patient Health Questionnaire (PHQ-2)
  - o Feeling down, depressed, or hopeless.
    - 0 = Not at all
    - 1 = Several days
    - 2 = More than half the days
    - 3 = Nearly every day

# Prediction Models

Does the patient have a medical history of depression or other psychiatric disorders?	No	<input type="checkbox"/> 0	Total Score	Predicted Risk, %	Observed Risk, % (n/N)*
	Yes	<input type="checkbox"/> 13			
Does the patient have a medical history of hypertension?	No	<input type="checkbox"/> 0	<-10	2	0 (0/32)
	Yes	<input type="checkbox"/> -5	-9 to -5	5	9 (11/127)
Does the patient have a medical history of angina pectoris?	No	<input type="checkbox"/> 0	-4 to 0	11	6 (8/125)
	Yes	<input type="checkbox"/> 7	1 to 5	19	19 (13/67)
To what extent does the patient need help with dressing in the first week after stroke (Barthel Index item dressing)	Completely independent	<input type="checkbox"/> 0	6 to 10	31	33 (8/24)
	Needs help but can do about half unaided	<input type="checkbox"/> -9	11 to 15	49	47 (14/30)
	Dependent	<input type="checkbox"/> 3	16 to 20	67	77 (7/9)
Sum score	Add the item scores to obtain the sum score	—	>21	82	100 (2/2)

In-Hospital Risk Prediction for Post-stroke Depression: Development and Validation of the Post-stroke Depression Prediction Scale Janneke M. de Man-van Ginkel, *Stroke*. 2013;STROKEAHA.111.000304 published online before print July 18 2013,

# Treatment - Pharmacology

- Antidepressants – SSRI, SNRI, TCA
- Stimulants – Methylphenidate
- Herbal supplements





# Treatment - Pharmacology

- Several antidepressants studied (SSRI, TCA, SNRI)
- Antidepressant therapy recommended
- SSRIs have been the most widely studied class of antidepressants
- SSRIs - first line treatment
- >50 studies – antidepressant medication is more effective than placebo in treating depressive symptoms in post stroke patients.
- Improved symptom control results in improved functional recovery and rehabilitative outcomes

# Treatment - Pharmacology

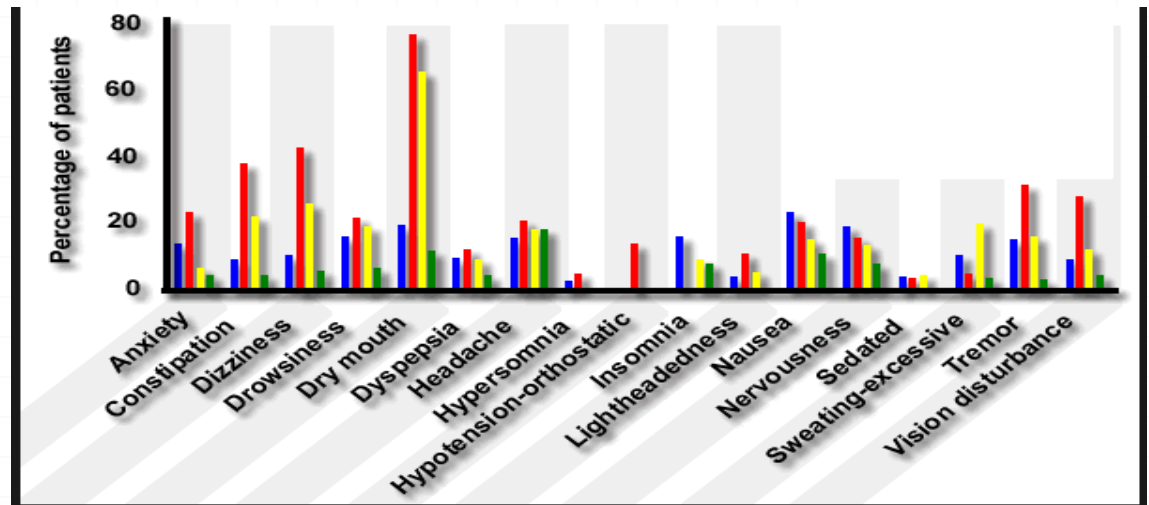
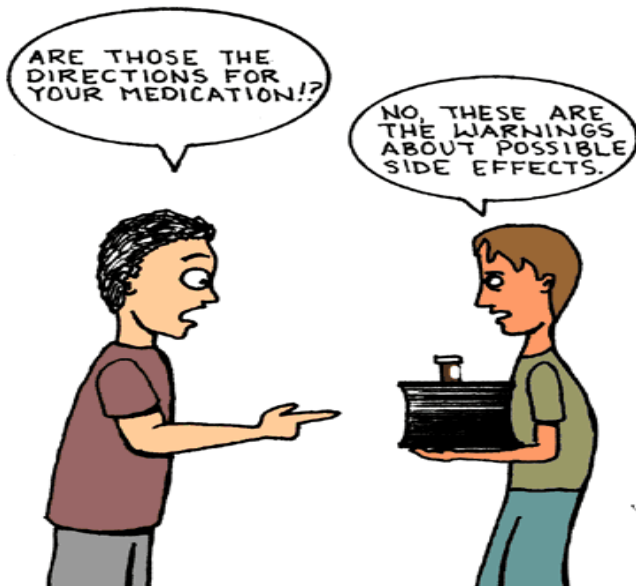
- Emerging support of prophylactic treatment
  - Recent meta-analysis pooling 8 RCT
  - The results of the present review and analysis suggest that, after stroke, individuals without clinical depression who receive prophylactic antidepressant therapy (particularly using an SSRI) may be significantly less likely to develop depression than non-depressed individuals with stroke who do not receive prophylactic therapy.
  - In addition, prophylactic treatment may be most effective when started early and continued over a period of at least 12 months.
  - Improvement in motor recovery, overall recovery, depression



J Stroke Cerebrovas Disease 2012 (in press)  
Topics in Stroke Rehabilitation 2013,20(2):139-150

# Considerations for SSRIs

- Risk of upper GI bleeding
- Hyponatremia
- Anticholinergic side effects
- Complicated medication regimes



# FLAME

Lancet Neurol. 2011 Feb;10(2):123-30. doi: 10.1016/S1474-4422(10)70314-8. Epub 2011 Jan 7.

## **Fluoxetine for motor recovery after acute ischaemic stroke (FLAME): a randomised placebo-controlled trial.**

Chollet F, Tardy J, Albucher JF, Thalamas C, Berard E, Lamy C, Bejot Y, Deltour S, Jaillard A, Niclot P, Guillon B, Moulin T, Marque P, Pariente J, Arnaud C, Loubinoux I.

Neurology Department, Centre Hospitalier Universitaire de Toulouse, Hôpital Purpan, Toulouse, France.

### **Erratum in**

Lancet Neurol. 2011 Mar;10(3):205.

118 patients were randomly assigned to fluoxetine (n=59) or placebo (n=59), and 113 were included in the analysis (57 in the fluoxetine group and 56 in the placebo group). Two patients died before day 90 and three withdrew from the study.

### **INTERPRETATION:**

In patients with ischemic stroke and moderate to severe motor deficit, the early prescription of fluoxetine with physiotherapy enhanced motor recovery after 3 months.

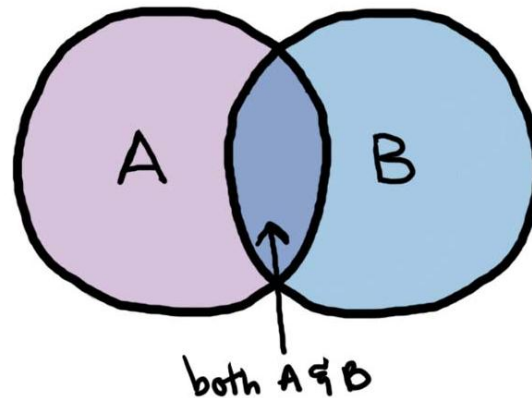
# Non-Pharmacological Treatment

- o ECT
- o Transcranial magnetic stimulation
- o Psychotherapy (individual/group)
- o Cognitive behavioral therapy
- o Problem-solving therapy \*\*
- o Motivational interviewing
- o Community based groups / Support groups
- o Music therapy
- o Ecosystem focused therapy
- o Acupuncture
- o Reiki
- o Exercise

# Best of Both Worlds

o Pharmacology – SSRI

VENN DIAGRAM!



o Therapy

# Conversations at the Bedside

- ◊ Go with your strengths.. active education
- ◊ Educate patient and family
- ◊ Plant the seed.. this is not unusual
- ◊ Good/Bad Days
- ◊ Symptoms..
- ◊ Risk Factors..
- ◊ Where to get help..



# Delivering the Message

## Continuity of Care

### o Patient/Family

- o EDUCATE, EdUcAtE, educate...
- o Listen, Read, Take home
  - o Education Binder
  - o After Visit Summary
  - o 7-day follow-up phone calls



### o Communicate to the next level of care

- o PCP, Neurologist
- o Acute Rehab/SNF/ other facilities
  - o Discharge Summary





# Case Study - Hospitalization

- Mr. L is a 53-year-old gentleman with history of hypertension, diabetes, and coronary artery disease, status post stent to his LAD in 2009, a prior CVA in 2008 who with acute onset of right-sided weakness and confusion while lifting weights at the local gym.
- Imaging demonstrated a L parietal intraparenchymal hemorrhage
- In the ICU he demonstrated right hemiparesis and moderate aphasia, expressive greater than receptive.
- At discharge to acute rehab he demonstrated some signs of right-sided neglect, as well as right arm and leg weakness, fluent speech, with occasional word-finding difficulty.
- HADS Depression subscale = 5
- Patient started on Celexa 20 mg QD “intermittent self report of distress”

# Case Study - 3 months

- Per the patient, he continued to improve throughout rehab and currently is living at home by himself.
- His sister and brother check in on him frequently and help him with many of his daily chores. He is able to bathe and shower and dress without difficulty. His brother helps with his finances. His brother and sister provide him rides to the store. He is able to heat up meals by himself, which his sister and brother plan with him. He does exercise as well as use the internet.
- He can not work as a security guard as he has in the past. He is not driving. He exercises and is able to use the internet.
- He is able to read but not write.
- He continues to have some right-sided numbness. He has noticed increased fatigue.
- He was prescribed Prozac, but did not find this helpful in the hospital and does not take this. He does say his mood, especially at night, is low at times. It has been better over the last few weeks with more visitors.
- One of his major difficulties to date is episodes of urinary incontinence.
- He feels approximately 2-3 days ago, he had increasing right-sided leg weakness and fell at home.

# Case Study - CNS

- o Patient describes being very lonely when he is not around people. “Worries all the time” “Has trouble sleeping”
- o Perception that he will be fine if he just tries harder.
- o He does not want to be “labeled”
- o Minimal problem solving skills
- o Caregiver burnout
- o Family and patient willing to accept help.

# Case Study – Next Steps

- o Community Referrals
  - o Patient support groups
  - o Day Programs/socialization
  - o Sheltered work
  - o Transportation
  - o Low-cost PT/OT/Speech
  - o Caregiver support groups
  - o CNS education/supportive care

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"UH, MR. DANIELS? I SAID I  
WAS A NEUROLOGIST."

# Remember to Laugh Thanks!

