Improving Outcomes in Major Depression: The Impact of Cognitive Dysfunction

"Major depression effects our friends, our neighbors and our patients- it robs us of who we are and our ability to cherish the ones we hold most dearly."

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Top 3: Sleep, mood and concentration
Prevalence of Symptoms During MDD Episodes

- 13-year NIMH Study of 1,920 Individuals in the Baltimore Epidemiologic Catchment Area

Sadness, Depression and Recovery:
Reciprocal Limbic-Cortical Function and Mood

Most Patients Fail to Achieve Remission

Sequenced Treatment Alternatives to Relieve Depression (STAR*D)

- 2,876 patients with MDD treated in primary care and psychiatric settings
  - 80% of patients had chronic or recurrent depression
- First-line treatment
  - Flexible dose of citalopram for up to 14 weeks (mean dose 42 mg/day)

Remission rate: 28%
Response rate: 47%

STAR*D, Sequenced Treatment Alternatives to Relieve Depression; MDD, major depressive disorder; SSRI, selective serotonin reuptake inhibitor.

Depressive symptoms persist during periods of remission and subsequent depressive episodes

Mean proportion of time DSM-IV symptoms are present during 3-year follow-up period (n=267)

- Lack of energy
- Worthlessness/guilt
- Eating problems
- Psychomotor problems
- Death ideations
- Cognitive problems
- Core symptoms: depressed mood/diminished interest
- Lack of energy
- Sleeping problems

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th edition

Cognitive dysfunction of depression impacts on functionality

In MDD, cognitive impairments in information processing, memory, and verbal fluency may impact upon educational, occupational, and daily functioning.

Workplace functionality

- Government-commissioned research in 2010 found that people unable to work because of depression lose £8.97 billion of potential earnings per year in England.
- In the United States, the costs related to both absenteeism from work and presenteeism due to untreated depression are over $51 billion per year.


MDD, major depressive disorder.
Cognitive Symptoms in Depression Are Highly Prevalent and Persistent, Even After Treatment

**ACUTE**
In one study, cognitive problems dominated the course of depression and were present for up to 94% of the time during depressive episodes.

**REMISSION**
Even in patients thought to be in remission, cognitive symptoms were shown to be present in depressed patients for an average of 44% of the time during periods of remission.

Evaluating Cognitive Performance
Digit Symbol Substitution Test (DSST)

DSST³

• Measure of processing speed, working memory and attention
• The number of correct symbols substituted for digits during a test period is measured
• Timed- Processing Speed
• Involves the substitution of simple symbols for digits - Working Memory

Digit Symbol Substitution Test (DSST)

- The strategy to solve the DSST consists of sequential encoding and retrieval of numbers and matching symbols.
- The score is the number of correct number–symbol matches (maximum number of correct, 133).
- Time given is 90 seconds.

1. First, the subtest (the squares to the left of the heavy black line) is encoded in short-term memory and temporarily stored (the test should not proceed until the patient has clearly understood the subtest).
2. Then the number is repeatedly retrieved and compared with the numbers of the key grid.
3. Once the number is recognised, the matching symbol is encoded and attention is turned to the test session, the symbol retrieved from the short-term memory and copied below the number.

- Incidental memory
- Perceptual organisation
- Visuomotor coordination
- Selective attention
- Ability to filter out irrelevant information (e.g., symbols which may look alike)

Remission Status of MDD Patients Has Significant Effects on Family Members

**Decrease in Problem Behaviors and Symptoms for Children of Depressed Mothers, by Maternal Remission Status (N=80)**

- Children of early- and late-remitting mothers significantly improved compared with those of nonremitting mothers (early vs nonremitting: \( P=0.005 \); late vs nonremitting: \( P=0.002 \))

**Graph Notes**
- Only data for the 9 months following remission is shown, due to high dropout rate among non-remitters prior to month 12.
- Child Behavior Checklist was used; higher scores = greater number or severity of symptoms.