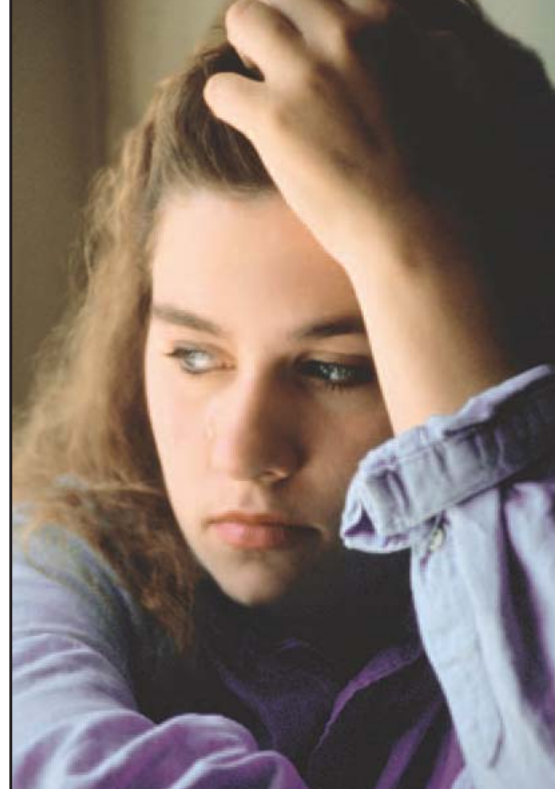


Not Just the Teenage Blues: Adolescent Depression and Suicidality



By Brian Greenfield, MD, FRCP, ABPN

In this article:

1. How do I recognise depression?
2. What conditions accompany depression?
3. Is it genetic?
4. What is the role of biologic factors?
5. How do I treat pediatric depression?

Case Study

Melanie, 15, lives with her parents. The school guidance counsellor brought her to the emergency room, having been told Melanie was thinking about suicide. Melanie complained of feeling depressed for seven months, since her parents began arguing.

Her grades have declined since she started Grade 10. She spoke of not wanting to live anymore, but has no plans to hurt herself, and has never made a suicide attempt. Her concentration is impaired, she cannot fall asleep at night, she is fatigued, lacks energy, cries at night before going to sleep, lacks initiative, and has a decreased appetite. She has lost seven pounds in four months.

How do I recognise depression?

Melanie presents with the classical signs of depression (Table 1). As reviewed by Harrington, adult criteria is used to make the diagnosis.¹ As in Melanie's case, several criteria must be met to achieve this diagnosis.

According to both the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10), and the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, (DSM IV), depression is an episodic disorder lasting several weeks, charac-

Adolescent Depression/Suicidality

Table 1

Signs of Depression

- Feeling “down” or agitated
- Decreased concentration
- Insomnia (initial or terminal)
- Change in energy level
- Feeling fatigued
- Change in appetite and weight
- Feeling suicidal
- Poor self-esteem
- Anhedonia

Table 2

Co-Morbid Conditions

- Anxiety disorder
- Conduct disorder
- Family dysfunction
- Attention deficit hyperactivity disorder
- Learning disorder
- Neurologic conditions

Dr. Greenfield is an assistant professor of psychiatry, McGill University School of Medicine, and director, emergency room followup team, Montreal Children's Hospital, Montreal, Quebec.

terised by depressive mood, and a loss of enjoyment.^{2,3} The individual also experiences depressive thinking or pessimism about the future or suicidal ideas, and suffers from such biologic symptoms as early waking, reduced appetite, and weight loss. The DSM IV adds that irritable mood may replace depressive feelings, and that depressed youth may suffer somatic complaints and social withdrawal. As well, depressed youth often have decreased self-esteem, cognitive distortions, and low perceived academic and social competence. They selectively attend to negative features of an event, and attribute the cause of positive events to unstable external causes, rather than to their own endeavours. There is a trend to consider the disorder from the perspective of a continuum of symptoms, rather than as an entity for which one is either depressed or not. Some clinicians reserve the diagnosis for those who experience profound suffering, social dysfunction, or severe suicidality.

What conditions accompany depression?

Melanie stated that anxiety prevented her from falling asleep, and attributes her insomnia to concerns that her parents will separate. Her mother often criticises her father, and the arguing has diminished Melanie's ability to concentrate when studying. Although Melanie has no symptoms of conduct disorder (CD), anxiety disorders and CD are the most common co-morbid conditions (Table 2). Depression can also be associated with physical disorders, such that 7% of general pediatric inpatients has depression, and 40% of patients on a neurologic ward with unexplained headaches, suffer from depression.^{4,5} As well, restlessness may be seen in agitated depression, hypo-mania, and attention deficit hyperactivity disorder.

There is also great variability with respect to an adolescent's response to stressful life events (*i.e.*, abuse, bullying,

Adolescent Depression/Suicidality

parental discord), although the context of the event, its meaning, and the events before and after are probably significant.

Is it genetic?

Melanie's paternal grandfather had a "nervous breakdown," her maternal grandmother experienced depressive episodes, and her mother has taken antidepressants during the past eight months. During examination, the mother cried when talking about her own depression, and expressed sadness that her disorder probably affected her daughter. Melanie was sad, and appeared anxious while observing her mother's tears. She spoke of having a poor self-image, which she attributed to her mother's criticisms.

Genetic studies report that the offspring of depressed parents are at increased risk of depressive psychopathology, panic disorder, and medical problems in childhood and early adult life. Very often, at least one parent of a depressed child is also depressed.⁶ Genetic factors might act by increasing vulnerability to adverse life events (Table 3).

The family environment may act as a mediator of the child's depression, as children with problems may be a source of stress for their parents, and vice versa.

It may be that temperamental features, such as emotionality, are associated with depression, as may a child's cognitive or behavioural style, such as a ten-

Table 3

Genetic Risk Factors

- Current or past parental depression
- History of depression in previous generations
- Family stress as a mediator of genetic factors
- Temperament

Bone up on the evidence.

[†]FOSAMAX® (alendronate sodium) — Demonstrated efficacy in the treatment of postmenopausal osteoporosis

As early as 12 months,^{*}

FOSAMAX® significantly reduced the risk of clinical vertebral fractures by 59%

(absolute risk: alendronate[†], 0.43%; placebo, 1.05%; $p=0.03$)^{1,2,***}

[†] Alendronate 5 mg daily for 2 years, followed by alendronate 10 mg daily thereafter

^{*} After initiation of the study

^{***} Randomized, double-blind, placebo-controlled trial (n=3854) to compare the effect of treatment with alendronate on fracture risk reduction in women with recent vertebral fracture (n=232). Treated with alendronate-5/10; treated with placebo (0/5; average duration of study, 3 years) with 1011 women without existing vertebral fracture but with femoral neck T-scores ≤ -2.5 (n=163); treated with alendronate-5/10; treated with placebo-5/10; average duration of study, 4 years), to assess the effect of alendronate in a controlled treatment group compared to the women not taking study and to examine the time course of the effect of alendronate on clinical fracture risk in these women with osteoporosis. Patients were randomized to placebo or 5 mg alendronate daily for 2 years, then 10 mg daily. Daily supplements of 500 mg elemental calcium and 250 IU Vitamin D were given if calcium intake was estimated to be <1000 mg daily.

PLEASE CONSULT THE ENCLOSED PRESCRIBING INFORMATION.



MERCK FROSST

Discovering today
for a better tomorrow.

Merck Frosst Canada Ltd., Kirkland, Quebec

[™] Trademark of Merck & Co., Inc. Used under license.

[®] Registered Trademark of Merck & Co., Inc.
Used under license.

FOSAMAX[™]
alendronate sodium

Build and Protect Bone



FSM-C3-COM-34360621-JA

Adolescent Depression/Suicidality

Table 4

Biological Factors Associated With Pediatric Depression

- Positive response to fluoxetine
- Reduced levels of the 5-HT transporter protein
- Reduced suppression of the DST
- MRI and EEG findings

5-HT = 5-hydroxytryptamine, DST = Dexamethasone suppression test, MRI = Magnetic resonance imaging, EEG = Electroencephalogram

dency to blame oneself rather than other people. As well, anxiety tends to precede depression in children and adults, suggesting that depression is secondary to anxiety, and the two disorders share a common temperamental basis.

What is the role of biology?

Weller gives a useful overview of the biology of adolescent depression, as can be found in Table 4.⁷ For example, growth hormone hyper-secretion has been reported during the sleep of depressed youth, as well as reduced

levels of the transporter protein of the monoamine neurotransmitter 5-hydroxytryptamine (*i.e.* serotonin) in their blood platelets. Depressed adolescents have responded favourably to the selective serotonin reuptake inhibitor (SSRI), fluoxetine. Also, depressed youth are less likely to show suppression of cortisol secretion when administering the exogenous corticosteroid dexamethasone, during the dexamethasone suppression test (DST). Youth with normal DST at five-month followup tend to be clinically well, whereas those with an abnormal DST at five months tend to be depressed. Abnormalities of cortisol metabolism are not specific, however, and are seen in other psychiatric disorders and stressful situations.

Although there have been few neuro-imaging studies on depressed youth, alterations in the frontal lobe and the lateral ventricle, and regional cerebral blood flow deficits, have been observed on magnetic resonance imaging, as well as electroencephalogram abnormalities of alpha asymmetry. Sleep studies have shown contradictory findings.

It has been further suggested that a first episode of depression may sensitise the youth to subsequent episodes, a mechanism named “scarring.”⁸

Table 5

How Many Young People are Depressed?

- 0.9% of pre-schoolers
- 1.9% of school-age children
- 4.7% of adolescents
- More common in adolescent females than males
- One year relapse rate of 18.4%

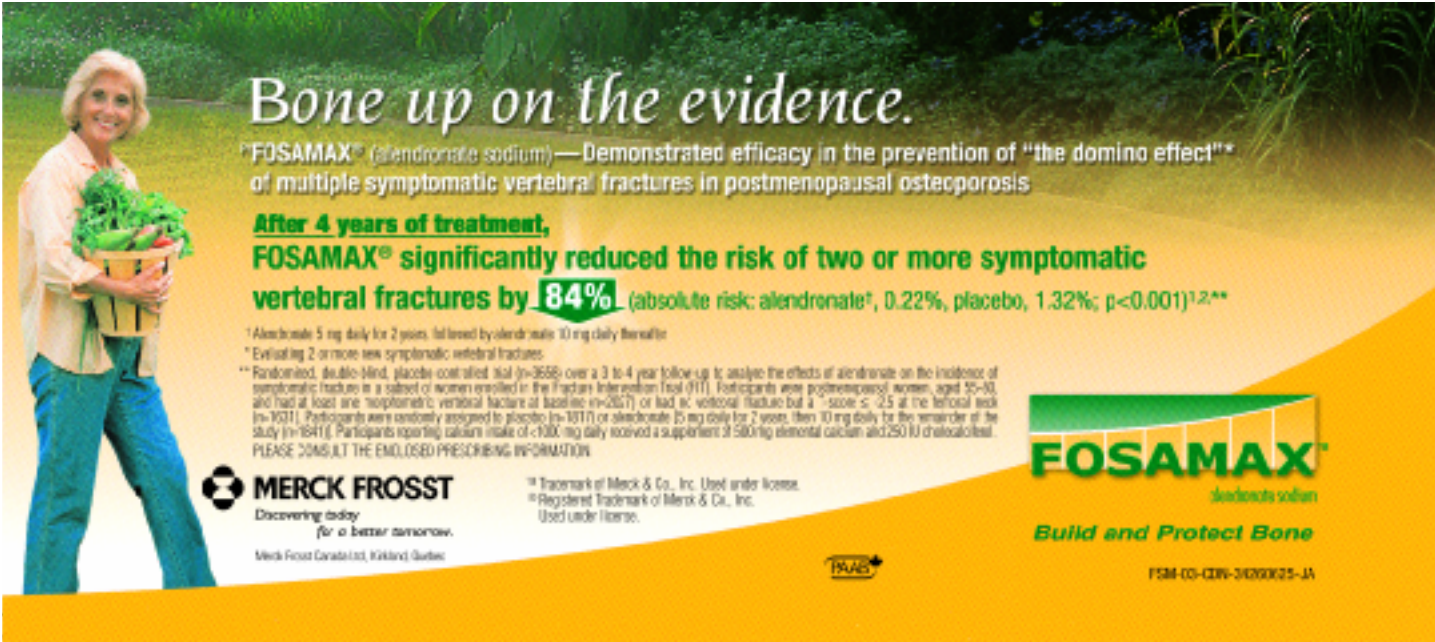
Adolescent Depression/Suicidality

Is pediatric depression common?

It has been estimated that 0.9% of pre-schoolers, 1.9% of school-age children, and 4.7% of adolescents suffer from major depression with impairment, and the cumulative probability of having a depressive disorder by late adolescence is 10% to 20%.^{9,10} This disorder can contribute to the incidence of suicide, which claimed 12.5 of 100,000 Canadian lives in the 15 to 19-year-old population during 1998.¹¹

Pre-adolescent depression is less prevalent, may show a male predominance, and is more associated with family dysfunction, than adolescent depression. There is a female preponderance by late adolescence, perhaps because of an interaction between adolescent, hormonal, and social conditions.¹² There may also have been a slight increase in depression during the last century, the result of earlier onset of puberty, and increased family conflict, or a refinement in the diagnostic measures (Table 5).

The cumulative probability of having a depressive disorder by late adolescence is 10% to 20%.



Bone up on the evidence.

FOSAMAX® (alendronate sodium) — Demonstrated efficacy in the prevention of “the domino effect”[†] of multiple symptomatic vertebral fractures in postmenopausal osteoporosis

After 4 years of treatment, FOSAMAX® significantly reduced the risk of two or more symptomatic vertebral fractures by 84% (absolute risk: alendronate[†], 0.22%, placebo, 1.32%; $p < 0.001$)^{1,2}**

[†] Alendronate 5 mg daily for 2 years, followed by alendronate 10 mg daily thereafter.
^{**} Evaluating 2 or more new symptomatic vertebral fractures.
^{††} Randomized, double-blind, placebo-controlled trial (n=3658) over a 3 to 4 year follow-up to analyze the effects of alendronate on the incidence of symptomatic fracture in a subset of women enrolled in the Fracture Intervention Trial (FIT). Participants were postmenopausal women, aged 50-80, and had at least one symptomatic vertebral fracture at baseline (n=2677) or had at least one vertebral fracture but a T-score ≤ -2.5 at the lumbar spine (n=1071). Participants were randomly assigned to placebo (n=1071) or alendronate 5 mg daily for 2 years, then 10 mg daily for the remainder of the study (n=1641). Participants reporting calcium intake of <1000 mg daily received a supplement of 500mg elemental calcium and 250 IU cholecalciferol. PLEASE CONSULT THE ENCLOSED PRESCRIBING INFORMATION.

MERCK FROSST
Discovering today for a better tomorrow.
Merck Frosst Canada Ltd, Kirkland, Quebec

[®] Trademark of Merck & Co., Inc. Used under license.
[®] Registered Trademark of Merck & Co., Inc. Used under license.

FOSAMAX®
alendronate sodium
Build and Protect Bone

FSM-00-CIR-31020025-JA

Adolescent Depression/Suicidality

Take-home message

- Teenagers often come to the attention of health professionals when they reveal to friends or school authorities that they have contemplated or attempted suicide. As with Melanie, they complain of several signs of depression.
- The adolescent's parents are often aware of treatment possibilities through the Internet, and need further coaching and reassurance with respect to the potential side effects and treatment profile of medication. It is common that the parents need encouragement to seek counselling and medication, not only for the identified patient, but for themselves as well.
- Simple gestures can be very supportive, such as the availability of someone to call in the event of clinical deterioration, as are followup appointments to monitor the progress of the medication and prescribed therapies.

How should we treat pediatric depression?

A biopsychosocial approach has been advocated for the treatment of depressed youth, as has a pharmacologic approach, but no definitive strategy has been proposed.^{13,14} The biopsychosocial approach includes psychotherapy (individual, family, and/or group), social skills training, medication when needed, assessment of academic strengths, weaknesses, and placement. Cognitive behavioural therapy is a possibility for individual therapy, as are interpersonal therapy, psychodynamic therapy, and group cognitive therapy. SSRIs are a pharmacologic option. If the child is obsessed with suicide and/or has definite plans, hospitalisation should be considered.

SSRIs may cause nausea, vomiting, diarrhea, agitation, disinhibition, jitteriness, headache, insomnia, and tremors, but they have fewer anti-cholinergic side effects, limited cardiovascular toxicity, and a wider therapeutic index than the tricyclic antidepressants. Recovery from a depression disorder may be prolonged in

Adolescent Depression/Suicidality

the presence of a co-morbid externalising disorder, poor peer relations, a conflictual family environment, and absence of a confiding relationship with the mother. \mathcal{D}_x

References

- Harrington R: Affective disorders. *Child and Adolescent Psychiatry*. Fourth Edition. Blackwell Science, Oxford, 2002; 463-85.
- American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders: DSM-III-R. Third Edition Revised. American Psychiatric Association, Washington D.C., 1987.
- World Health Organization: ICD-10, the ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines. World Health Organization, Geneva, 1992.
- Kashani JH, Barbero GJ, Bolander FD: Depression in hospitalized pediatric patients. *J Am Acad Child Psychiatry* 1981; 20:123-34.
- Ling W, Oftedal G, Weinberg W: Depressive illness in childhood presenting as severe headache. *Am J Dis Child* 1970; 120:122-4.
- Weller EB, Weller RA: Depressive disorders in children and adolescents. In: Garfinkel BD, Carlson GA, Weller EB (eds): *Psychiatric Disorders in Children and Adolescents*. Saunders, Philadelphia, 1990, pp. 3-20.
- Weller B, Weller RA, Rowan A, et al: Depressive disorders in children and adolescents. In: Lewis M (ed.): *Child and Adolescent Psychiatry: A Comprehensive Textbook*. Third Edition. Williams & Wilkins Lippincott, Philadelphia, 2002, pp. 767-81.
- Post RM, Weiss SR: Sensitization and kindling phenomena in mood, anxiety, and obsessive-compulsive disorders: The role of serotonergic mechanisms in illness progression. *Biol Psychiatry* 1998; 44:193-206.
- Kashani JH, Sherman DD: Childhood depression: Epidemiology, etiological models, and treatment implications. *Integr Psychiatry* 1988; 6:1-21.
- Lewinsohn PM, Hops H, Roberts RE, et al: Adolescent psychopathology: Prevalence and incidence of depression and other DSM-III-R disorders in high school students. *J Abnorm Psychol* 1993; 102:133-44.
- Statistics Canada, Health Reports, Vol. 13, No. 2, January, 2002, Catalogue 82-003, Table B, "Age-specific suicide rate, by sex, Canada, 1998.
- Weller EB, Weller RA: Clinical aspects of childhood depression. *Pediatr Ann* 1986; 15:843-7.
- American Academy of Child and Adolescent Psychiatry: Practice parameters for the assessment and treatment of children and adolescents with depressive disorders. *J Am Acad Child Adolesc Psychiatry* 1998; 37(10S):63S-83S.
- Hughes CW, Emslie GJ, Crismon ML, et al: The Texas Children's Medication Algorithm Project: report the Texas consensus conference panel on medication treatment of childhood major depressive disorder. *J Am Acad Child Adolesc Psychiatry* 1999; 38:1442-54.

Bone up on the evidence.

FOSAMAX® (alendronate sodium)—Demonstrated efficacy in the treatment of male osteoporosis

At 24 months of study,

FOSAMAX® significantly reduced the risk of new vertebral fractures in men with osteoporosis by 89% (absolute risk: alendronate 10 mg once daily, 0.8%, placebo, 7.1%; $p=0.02$)^{1,2,3,4}

* Randomized, double-blind trial (n=347) studying the effect of alendronate 10 mg or placebo, given daily, on bone mineral density (BMD) in men aged 51-87 years; mean age 63 years. Entry criteria: 1) BMD at the lumbar neck and lumbar spine at least 2 standard deviations (SD) and 1 SD, respectively, below the mean values in normal young men; or 2) BMD at the lumbar spine that was at least 1 SD below the mean at normal young men, and at least one vertebral deformity or history of an osteoporotic fracture. Patients were randomized to placebo (n=169) or 10 mg alendronate once daily (n=178). All patients received daily supplements of 500 mg calcium, in the form of calcium carbonate, and 800 IU supplements (400 IU daily in the United States and 400-450 IU daily in other countries). Duration of study: 2 years.

** Using quantitative methods.

PLEASE CONSULT THE ENC. OSED PRESCRIBING INFORMATION.



MERCK FROSST

Discovering today
for a better tomorrow.

Merck Frosst Canada Ltd., Kirkland, Quebec

™ Trademark of Merck & Co., Inc. Used under license.

® Registered Trademark of Merck & Co., Inc.
Used under license.

FOSAMAX®
alendronate sodium

Build and Protect Bone



FSM 02-03N-04280023-1A