CASE REPORT

Depression in Children with HIV Infection: A Case Series

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About 46,000 individuals younger than 25 years of age currently have a diagnosis of human immunodeficiency virus (HIV) or acquired immunodeficiency syndrome (AIDS). During their lifetime, approximately one-third of patients with HIV may develop depression. While antidepressants have been studied in adults with HIV, no data exist to support the use of antidepressants in children and adolescents with HIV. We report a case series of seven pediatric patients with HIV who were prescribed antidepressants. Six of seven patients had mild to moderate improvements in depressive symptoms. None of our patients experienced any suicidal ideations, and adverse events were minor. No drug-drug interactions were reported, and no significant changes in CD4 counts, CD4 percentages, or viral loads occurred during antidepressant therapy. Placebo-controlled, randomized studies are needed to confirm our results in this patient population.

KEYWORDS: antidepressants, children, depression, HIV

J Pediatr Pharmacol Ther 2005;10:51-60

INTRODUCTION

In the United States, approximately 46,000 individuals ≤ 24 years of age currently have a diagnosis of human immunodeficiency virus (HIV) infection or acquired immunodeficiency syndrome (AIDS).[1] The estimated cumulative incidence of HIV in children < 13 years of age was 4358 in 2002.[1] Despite data suggesting an overall decline of AIDS in adults, the incidence of HIV in adolescents and young adults is increasing as a result of more children living into adolescence.[2] During their lifetime, these patients may experience comorbid diseases such as opportunistic infections and neurological complications.

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Depression is one of the most common psychiatric disorders in patients with HIV. Data show that approximately one-third of individuals with HIV may experience depression.[3] Depression may change the progression of HIV infection by impairing the immune system or contributing to nonadherence of antiretroviral therapy.[4] Adult patients in the early stages of HIV-1 infection have decreased concentrations of serotonin in the cerebrospinal fluid compared to non-HIV patients. The alteration in serotonin may lead to an increased risk of depressive symptoms.[5] Although the treatment of depression in the HIV-positive adult population has been studied, there are no data sup-

ABBREVIATIONS: AIDS, acquired immunodeficiency syndrome; CGI, Clinical Global Impression; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders IV; HIV, human immunodeficiency virus; SSRI, selective serotonin reuptake inhibitors

porting the use of antidepressants in children or adolescents with HIV. It is unknown if adolescents with HIV would respond differently than adults with HIV or other adolescents with different comorbid illnesses. Social stigmas, lack of support groups, and realization that life expectancy may be shortened could play a role in the development of depression.

We have observed a number of pediatric patients at our institution who have HIV and concurrent depressive symptoms. Unfortunately, treatment guidelines for managing these symptoms in this patient population are not adequately specified and controversy persists about an optimal treatment for depression in adolescents. Recently, there have been reports that most SSRIs (selective serotonin reuptake inhibitors) and newer antidepressants are associated with an increased risk of suicidal ideations and behaviors in adolescents.[6] As a result, the Food and Drug Administration will require that product labeling for the antidepressants include a "black box warning" for potential increase in suicidal behaviors. The objective of this article is to describe a case series of children with HIV who were depressed and to review the safety and efficacy of antidepressants used in these patients.

METHODS

The study was approved by the Children's Hospital Human Subjects Research Committee in Columbus, OH. The medical records of all pediatric patients treated at the Immunodeficiency Clinic were retrospectively reviewed from July 1999 to June 2004. Patient demographics including age, gender, and race had been specifically documented in medical records. Psychiatric and cognitive evaluations, past social history, medications, dosage regimens, and laboratory results including blood $CD4^+$ counts, CD4 percentages, and viral loads were also collected. Psychiatric and cognitive evaluations had been performed by a pediatric psychiatrist or patient's physician. Psychiatric evaluations were qualitatively determined by the patient's history of symptoms and behaviors. Subjective findings were assessed by asking the patient or caregiver, and any documentation received from other institutions (e.g., juvenile detention center). Cognitive evaluations were assessed with IQ examinations. Efficacy and safety of antidepressant treatment was determined qualitatively by the patient's primary physician or a psychiatrist according to improvement of symptoms and behaviors.

RESULTS

The medical records of 33 pediatric patients were reviewed. Seven of these patients (mean age, 15.1 years) had depressive symptoms and were treated with antidepressants (Table 1). Medications used to treat depression included sertraline, fluoxetine, paroxetine, citalopram, and mirtazapine. Viral loads, CD4 counts, and CD4 % did not change duuring antidepressant use. Likewise, antidepressants did not appear to cause any prescribing change in antiretroviral therapy. Adherence to antiretrovirals also appeared unchanged. None of our patients experienced any drug-drug interactions between antidepressants and antiretroviral therapy. The antidepressants were generally started at low dosages and seldom titrated, except for one female patient weighing 172 pounds who received mirtazapine 60 mg/day. The details of the cases are presented below.

Patient 1

A 15-year-old Hispanic male with a diagnosis of HIV infection and low normal IQ had aggression, crying spells, and suicidal ideations that were documented during the initial visit. He was started on citalopram 20 mg/day and had a partial response at five weeks. The intensity and frequency of the crying spells and aggressive behaviors decreased, and no suicidal behaviors were reported. The caregiver did not want to administer the medication, and it was discontinued. The depressive symptoms recurred and citalopram was restarted, but the patient did not return for follow-up. Adverse events from citalopram were not reported over a period of three months, and no interactions occurred with concomitant antiretrovirals. CD4 counts, CD4 percentages, and viral loads did not change during antidepressant use.

Patient 2

A 17-year-old white female was diagnosed with HIV at the age of 16.5 years. She had a concurrent Diagnostic and Statistical Manual

Table 1. Case series of pediatric HIV patients with depression and use of antidepressant therapy

Patient	Age (weight)	Comorbid disorders	Concomitant antiretrovirals	Antidepressant (dose)	Duration (weeks)	Adverse events	Efficacy
1	15 yrs (51.4 kg)	Depression, suicidal ideations, intermittent explosive disorder	Lamivudine, Zidovudine, Indinavir	Citalopram (20 mg/day)	10	NR	Mild
2	17 yrs (95 kg)	Depression	Lamivudine, Zidovudine, Nevirapine	Sertraline (50 mg/day)	5	NR	Mild
3	14 yrs (55.9 kg)	Depression	Lamivudine, Zidovudine, Ritonavir, Atazanavir, Efavirenz*	Paroxetine CR (12.5 mg/day)	42	NR	Moderate
4	10 yrs (25.9 kg)	Depression, ADHD, impulsive behaviors	None	Sertraline (50 mg/day)	3	↑ agitation	None
				Paroxetine (10 mg/day)	8	NR	None
5	17 yrs (92.3 kg)	Depression, ADHD, conduct disorder, polysubstance abuse, suicidal/ homicidal ideations	None	Fluoxetine (29 mg/day)	29	Tremors	Moderate
6	16 yrs (78.2 kg)	Depression, polysubstance abuse, intermittent explosive behavior	Lamivudine, Zidovudine, Efavirenz	Mirtazapine (60 mg/day)	6	NR	Mild
7	17 yrs (59 kg)	Depression, anorexia, intermittent explosive behavior	None	Mirtazapine (15 mg/day)	4	NR	Moderate

ADHD, Attention Deficit Hyperactivity Disorder; NR, not reported
**developed rash and drug was discontinued*

of Mental Disorders IV (DSM-IV) diagnosis of major depressive disorder that was accompanied by drug and alcohol dependency. She spent several months at a juvenile detention center. Sertraline (50 mg/day) was begun and continued for approximately five weeks with a mild response in her depressive symptoms. She had less anxiety and aggressive behaviors and reported a slight improvement in mood. No adverse events were reported, and no interactions with concomitant antiretrovirals were noted. CD4 counts, CD4 percentages, and viral loads did not change with the introduction of sertraline. She did not return for a follow-up.

Patient 3

A 15-year-old white female was diagnosed with HIV at 14.2 years. Her depressive symptoms included apathy and decreased energy. She was diagnosed with major depressive disorder at the age of 13 years, started on paroxetine CR 12.5 mg/day, and continued therapy for at least 52 weeks. She remained on therapy and reported no adverse effects. Although efavirenz 600 mg/day was added to her paroxetine regimen, it was discontinued after 3 weeks when she developed a rash. The rash resolved after the medication was stopped. CD4 counts, CD4 percentages, and viral loads did not change during the paroxetine therapy. She did not return for follow-up.

Patient 4

A 10-year-old white male was diagnosed with HIV at six months of age. He was diagnosed with major depressive disorder at the age of

9 years. He also had ADHD and impulsive behaviors. His IQ was 88, which placed him in the 25th percentile. The patient was titrated to 50 mg of sertraline a day, but his mother discontinued therapy after 3 weeks due to increased agitation. Three weeks after sertraline was discontinued, the patient was begun on paroxetine 10 mg/day. Although the medication was taken for approximately 10 weeks, it was discontinued due to a lack of efficacy. The patient also took dextroamphetamine 15 mg each morning and 5 mg at noon concomitantly while on SSRIs. CD4 counts, CD4 percentages, and viral loads did not change with the introduction of either SSRI.

Patient 5

A 17-year-old African American male was diagnosed with HIV infection. He had a DSM-IV diagnosis of major depressive disorder, bipolar without psychotic features, and polysubstance abuse. He was also previously diagnosed with conduct disorder, anxiety, and ADHD. His depressive symptoms included blunt affect and suicidal and homicidal ideations. He was started on fluoxetine 10 mg/day for eight weeks and had moderate improvements in his depressive symptoms. His affect improved and his suicidal behaviors and ideations decreased. Risperidone 1 mg/day and valproic acid 1500 mg/day were added to treat manic symptoms of bipolar disorder. After two weeks, the serum concentration of valproic acid was 34.4 mg/L, and the dose was increased to 2000 mg/day. Fluoxetine, risperidone, benztropine, and valproic acid were continued for 20 weeks. Despite having moderate relief of manic and depressed symptoms, he developed tremors. The four drugs were discontinued and therapy with aripiprazole 15 mg/day was begun. The tremors reduced from moderate to mild intensity and he continued to show response to treatment. He did not receive any antiretroviral therapy during this time. CD4 counts, CD4 percentages, and viral loads did not change in association with any psychotropic medications.

Patient 6

A 16-year-old African American female was diagnosed with HIV and major depressive disorder at 14.8 years of age. The patient was also diagnosed via DSM-IV criteria for polysubstance abuse and displayed aggressive behavior. She had a past history of prostitution and spent time in juvenile detention centers. The patient was started on mirtazapine 60 mg/day. After six weeks she had mild improvements such as increased energy and decreased anxiety, anger, and frustration. She returned to clinic several times, but was eventually lost to follow-up. During the time she was seen at our clinic, no interactions with her antiretrovirals were noted. CD4 counts, CD4 percentages, and viral loads did not change with the use of mirtazapine.

Patient 7

A 17-year-old African American male was diagnosed with HIV at age 16.1 years. He was also diagnosed with major depressive disorder and anorexia at the same age. His symptoms included anxiety, aggression, crying spells, and apathy. Along with psychotherapy, the patient received mirtazapine 15 mg/day. Body weight increased by 2.9 kg in three weeks, and moderate improvements were noted after six weeks. The patient related that he had decreased anxiety, fewer crying spells, and increased interest in activities. He was not on any antiretroviral therapy during antidepressant therapy. CD4 counts, CD4 percentages, and viral loads did not change with the use of any psychotropic medications. The patient also received liquid nutritional supplement (3 cans/day); therefore, weight increases cannot be attributed to mirtazapine alone. He continues to be seen at another facility, and continued improvement is noted.

DISCUSSION

Six of the seven patients who were prescribed an antidepressant experienced some relief of depressive symptoms after at least five weeks of follow-up. Based on qualitative assessments of antidepressant efficacy during clinic visits, three patients experienced mild improvements, and another three patients had moderate improvements in their depressive symptoms. However, it is important to realize there are many complex issues concerning the treatment of depression in the pediatric population. Ethnic differences towards psychiatric illnesses and apprehension of starting antidepressants by the caregivers may make it difficult to start

antidepressant therapy.[7] Comorbid diseases such as bipolar disorders, polysubstance abuse, and ADHD may also make treating the depressive symptoms more difficult. Environmental factors such as caregiver neglect, unstable homes, abusive relationships, and lack of social support may contribute to nonadherence and lack of proper treatment. Social support groups and psychotherapy may be beneficial in some patients who lack social support.

Tricyclic antidepressants (TCAs) in children

While there have been several trials evaluating the use of antidepressants in children, no studies are available in children with HIV. Tricyclic antidepressants such as imipramine, nortriptyline, desipramine, and amitriptyline have shown minimal benefits compared to placebo in children without HIV.[8-11] The adverse effect profile of this drug class includes cardiotoxicity, hypotension, anticholinergic side effects, and death due to overdose. Therefore, the lack of response in placebo controlled trials and the negative adverse effect profile relegate the TCAs to second or third line agents in this patient population.

Selective serotonin reuptake inhibitors (SSRIs) in children

SSRIs may prove to be a more reasonable option. Five of our patients were prescribed an SSRI, and four of the five responded. One patient experienced increased agitation with sertraline that resolved after switching antidepressants. SSRIs have shown efficacy and a good safety profile in children and adolescents with depression. In a double-blind, randomized, controlled trial, Emslie and colleagues demonstrated that fluoxetine (20 mg/day) was significantly better than placebo in Clinical Global Impression (CGI) ($P = .02$) scores after 8 weeks of treatment.[12] Of 48 patients, 4 discontinued fluoxetine due to adverse effects. In another randomized placebo-controlled trial, fluoxetine (20 mg/day) demonstrated greater improvements over placebo in several scores including Children's Depression Rating Scale-Revised (CDRS-R) ($P < .001$), CGI-Improvement ($P = .028$), CGI-Severity ($P < .001$), and Montgomery-Asberg Depression Rating Scale (MADRS) ($P < .001$) after 9 weeks in the treatment of acute major depressive disorder.[13] More patients on fluoxetine completed the acute phase of the trial ($P = .001$); however, no significant difference was noted in the withdrawal rate between drug and placebo. Headache was the only adverse effect, which was significantly higher in the fluoxetine group ($P = .017$).

Several open-label trials have found paroxetine to be effective. At a mean dose of 16 mg/day, CGI-Severity scores decreased from 3.02 to 1.22 after 3 months in patients younger than 14 years of age.[14] At the end of the trial (mean of 8.4 months), all patients had complete remission of their symptoms. Four children complained of experiencing mild to moderate vomiting, abdominal pain, abdominal cramps, anxiety, and nervousness. These adverse effects were transient and resolved following dose adjustment. Keller and colleagues compared paroxetine (20–40 mg/day), imipramine (200–300 mg/day), and placebo in an 8 week double-blind trial.[15] Paroxetine was better than placebo in the Hamilton Rating Scale for Depression (HAM-D) total scores ($P = .001$) and the CGI-Improvement scores ($P = .02$). Somnolence occurred more often with paroxetine than placebo (17.2% vs. 3.4%). While paroxetine and placebo had withdrawal rates of 9.7, and 6.9%, respectively, imipramine had a withdrawal rate of 31.5%. Cardiovascular effects such as tachycardia, hypotension, and elongated QT interval were responsible for about one-third of the cases for imipramine discontinuation.

Newer antidepressants in children

Some of the newer antidepressants such as bupropion, nefazodone, and mirtazapine have been evaluated in open label trials. In an 8-week study, Daviss and colleagues studied bupropion in 24 adolescents with ADHD and depression.[16] Fifty-eight percent of patients had improvements with ADHD and depression, and 87.5% of patients had resolution of depressive symptoms with bupropion (2.2 mg/kg q am and 1.7 mg/kg q pm). Although one patient experienced aggressive behavior leading to hospitalization, none of the other patients withdrew from the study due to adverse effects. Approximately 92% of the patients attended psychotherapy; therefore, these results should be interpreted with caution. Because the antiretrovirals cause nausea and a subsequent decrease in appetite with potential weight loss,

any medication that also negatively contributes to these effects is a concern. Since appetite suppression and weight loss are associated with bupropion, it may not be a favorable option for patients with HIV/AIDS.

A case study demonstrated that nefazodone (3.4 mg/kg/day) improved CGI-Depression score in seven patients (mean age 12.4 years).[17] Two of the seven patients experienced manic activation demonstrating possible intolerable adverse effects. CGI-Improvement scores were assessed as a secondary measure in a pharmacokinetic study of nefazodone in 28 children and adolescents for 8 weeks.[18] Eighty-six percent of children and 69% of adolescents responded to nefazodone at mean doses of 233 mg and 342 mg, respectively. However, nefazodone may have an increased risk for hepatic toxicity and is no longer marketed in the United States; therefore, other safer alternatives should be considered.

In our case reports, two patients received mirtazapine. One patient had minimal response (60 mg/day), but another (15 mg/day) demonstrated moderate response and some weight gain. The response in the patient with the lower dose may have occurred due to a stronger social support and psychotherapy. While the increase in weight may have resulted from nutritional supplements, a potential benefit of mirtazapine is its ability to stimulate appetite. Since there are insufficient data on safety and efficacy of newer antidepressants, these should be used with caution in pediatric patients.

Suicidal behaviors

There were no reports or complaints of patients experiencing an increase in suicidal ideations or behaviors in the patients described in this report. On the contrary, antidepressants may have improved these symptoms to some extent and in one patient, the symptoms returned after the antidepressant was discontinued. The Food and Drug Administration recently requested drug manufacturers to include a black box warning addressing the potential for increased suicidal ideations. While there are data to support that antidepressants decrease suicidal thoughts and behaviors,[19] a recent meta-analysis stated antidepressants such as paroxetine, sertraline, citalopram, and venlafaxine showed an increased relative risk for suicidal ideations or attempts ranging from 1.5 to 13.8.[6] Fluoxetine was the only drug that did not show an increase in relative risk and demonstrated no increase in suicidal behaviors compared to placebo. While theses results are important, the data have limitations since the studies used in the meta-analysis were not intended to identify suicidal behaviors.

As mentioned previously, low starting doses and a slower titration is recommended at this time. Until more studies are conducted, practitioners should consider whether other factors may play a role in the association between antidepressants and suicide. Adherence, dosing, abrupt discontinuation, activating adverse events, and comorbid disorders may exacerbate suicidal thoughts and behaviors. Questions remain concerning appropriate drug class, optimal dosage regimen, efficacy, adverse reactions, and drug-drug interactions with antidepressants in children with HIV. These need to be addressed through well-designed pharmacokinetic, pharmacodynamic, efficacy, and safety studies.

SSRIs in adults with HIV

Several trials have evaluated the efficacy and safety of SSRIs in adult patients with HIV/AIDS. Fluoxetine has been studied most often. Three controlled studies compared fluoxetine with placebo. Doses must be larger than 35 mg/day for fluoxetine to be more effective than placebo in adults.[20,21] Sertraline (50–150 mg/day) and paroxetine (20–40 mg/day) have shown similar benefits when compared to fluoxetine.[22,23] Citalopram (10–40 mg/day) was studied for six weeks in 20 patients using an open label study design.[24] Half the patients responded, and two withdrew due to adverse events (nausea, rash). On the contrary, fluvoxamine at 100 mg/day demonstrated only a 38% response. It also seemed to have a higher dropout rate and more intolerable adverse effects (e.g., excessive sedation, aggressive and impulsive behaviors).[25] The most common adverse effects with fluoxetine, sertraline, citalopram, and paroxetine were anxiety, diarrhea, insomnia, and sexual dysfunction. Based on these studies, SSRIs such as fluoxetine, sertraline, and paroxetine may provide efficacy in depressed adult patients with HIV.

However, children and adolescents may require different dosages due to differences in pharmacokinetics.

Potential drug-drug interactions

Despite the number of potential interactions between antiretrovirals and antidepressants, only a few have been reported in the literature (Table 2). Serotonin syndrome has been described in adults following the concomitant use of ritonavir and fluoxetine.[26] Fluoxetine may increase ritonavir concentrations by 19%, potentially causing cardiac and neurologic complications.[27] The package insert for ritonavir also indicates possible increases of amitriptyline, sertraline, and nefazodone serum concentrations. Therefore, individuals should be monitored for signs/symptoms of serotonin toxicity (e.g., dry mouth, dizziness, nausea, and somnolence). An *in vitro* study showed ritonavir decreased desipramine serum concentrations by 59%, however, the clinical relevance of this interaction in humans is unknown.[28] Product information for delavirdine stated that concomitant use with fluoxetine in 36 patients showed a 50% increase in delavirdine trough serum concentrations, thereby possibly increasing delavirdine adverse effects. Citalopram or escitalopram may have the least effect on the cytochrome P450 enzyme system and may provide a safer alternative.

Newer antidepressants have not been studied in children with HIV. For adults, the product labeling states that nefazodone may increase plasma concentrations of ritonavir, indinavir, and saquinavir. Venlafaxine has been shown to decrease indinavir concentrations by approximately 28%, which may decrease the efficacy of the antiretroviral.[29] Bupropion plasma concentrations may be increased when administered with ritonavir, nelfinavir, or efavirenz; thus, adverse events such as mania or seizures may occur.[30] Trazodone should be judiciously used since its plasma concentrations may be increased and toxicity may occur when administered with several drugs including ritonavir and indinavir.[31]

The insufficient availability of data may be the result of a lack of documentation or the possibility of the interactions being minor. Aside from package insert documentation, few studies exist evaluating the severity of such drug interactions. None of our patients appeared to experience any substantial interactions between antidepressant and antiretroviral therapy. Studies and closer monitoring of these agents are needed to determine if such interactions are insignificant or pose a potential threat to this patient population.

Limitations

There are several limitations to this report. Since this is a case series it is hampered by a small sample size (n = 7). Medication efficacy and safety information may not have been fully documented in the medical records. In addition, four of these patients were lost to follow up; thus, it was difficult to determine the long term efficacy and safety of antidepressant therapy.

CONCLUSIONS and SUMMARY

As children and adolescents with HIV are living longer, some of them may experience depression and need antidepressant therapy. In our clinic, six of seven patients had mild to moderate improvements in depressive symptoms with SSRIs or mirtazapine. However, we could not assess the long-term effects of these agents because most of our patients were lost to follow-up after a few months. None of our patients experienced any suicidal ideations, and adverse events were minor. No drug-drug interactions were reported, and no significant detrimental changes in CD4 counts, CD4 percentages, or viral loads occurred during antidepressant therapy.

SSRIs have fewer potentially life threatening adverse effects than TCAs and have more documentation of efficacy in children than the newer antidepressants. Fluoxetine seems to have more published data in adults with HIV and has the most reported literature in children and adolescents. Dosages should be slowly titrated, and the patient should be monitored closely for adverse effects. A trial of 10 weeks at the maximun tolerated dose may be necessary in children and adolescents before switching antidepressants. If therapy is discontinued, the medications should be tapered to avoid potential withdrawal effects. Finally, patient counseling should be provided for children and their caregivers to explain how antidepressants work, the treatment length

Table 2. Potential antidepressant-antiretroviral interactions involving cytochrome P450 isoforms[4,32,33]

Isoforms	Substrates	Inducers	Inhibitors
CYP1A2	Amitriptyline Clomipramine Desipramine Fluvoxamine Imipramine Nortriptyline Mirtazapine Ritonavir	Ritonavir	Citalopram (weak) Efavirenz Fluoxetine Fluvoxamine Paroxetine (weak) Ritonavir Sertraline (weak)
CYP3A4	Amitriptyline Bupropion Citalopram Clomipramine Delavirdine Desipramine Fluoxetine Imipramine Indinavir Mirtazapine Nefazodone Nelfinavir Nevirapine Ritonavir Saquinavir Sertraline Trazodone Venlafaxine	Efavirenz Nelfinavir Nevirapine Ritonavir	Amprenavir Delavirdine Efavirenz Fluvoxamine Fluoxetine Indinavir Nefazodone Nelfinavir Paroxetine Ritonavir Saquinavir Sertraline
CYP2B6	Bupropion	Unknown	Ritonavir
CYP2C9/10	Amitriptyline Imipramine Mirtazapine Ritonavir	Fluoxetine	Delavirdine Efavirenz Fluoxetine Fluvoxamine (potent) Ritonavir Sertraline
CYP2C19	Amitriptyline Clomipramine Citalopram (weak) Imipramine Nelfinavir	Unknown	Amprenavir Citalopram (weak) Delavirdine Efavirenz Fluoxetine Fluvoxamine Ritonavir Sertraline
CYP2D6	Amitriptyline Citalopram Clomipramine Desipramine Doxepin Fluoxetine Imipramine Maprotiline Nefazodone Mirtazapine Nortriptyline Paroxetine Ritonavir Sertraline Trazodone Trimipramine Venlafaxine	Ritonavir	Bupropion Citalopram Clomipramine Desipramine Efavirenz Fluoxetine (norfluoxetine) Fluvoxamine Paroxetine Ritonavir Sertraline (weak) Venlafaxine (weak)

needed to achieve benefits, and the potential adverse events or drug interactions of SSRIs and HIV medications.

DISCLOSURE: The authors declare no conflicts or financial interest in any product or service mentioned in the manuscript, including grants, equipment, medications, employment, gifts, and honoraria.

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