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Psychiatric Management of HIV/HCV-Co-Infected Patients Beginning Treatment for Hepatitis C Virus Infection: Survey of Provider Practices

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Abstract

Objective—To determine expert clinical practice in the management of psychiatric status of HIV/HCV-co-infected patients initiating pegylated interferon/ribavirin for the treatment of Hepatitis C.

Method—Two hundred and thirty-six expert providers were identified and invited by email to complete an online anonymous survey.

Results—Ninety-two providers (39%) completed the survey; 24 (26%) of whom are psychiatrists. More than one-third of providers indicate that they use or offer the option of antidepressant use prophylactically in HIV-positive patients with no past or current depression beginning HCV treatment and more than three-quarters do so in patients with a history of depression, but no current symptoms of depression. The most experienced non-psychiatrist providers were more likely to use antidepressants prior to the start of treatment in HIV-co-infected patients as compared to in HCV mono-infected patients. There is consensus among providers to leave psychiatric medication unchanged in patients currently treated for unipolar depression.

Conclusions—Many expert providers prescribe antidepressants to HIV/HCV-co-infected patients initiating Hepatitis C treatment in the absence of symptoms of depression, despite the lack of data supporting this approach in this population. Research is needed to provide an evidence base to guide the optimal psychiatric management of HIV/HCV-co-infected patients beginning Hepatitis C treatment.

Keywords

HIV/HCV coinfection; depression; interferon; ribavirin

1. Introduction

In the era of highly effective antiretroviral therapy, infection with Hepatitis C virus (HCV) resulting in end-stage liver disease is one of the leading causes of mortality for HIV-infected

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persons in the developed world [1–3]. Given the potential to eradicate HCV with antiviral therapy, HIV/HCV-co-infected persons are increasingly being treated for Hepatitis C.

Treatment outcomes are worse in HIV/HCV-co-infected patients as compared to HCV mono-infected patients: sustained virologic response (SVR) is achieved in up to 55% of HCV mono-infected and in up to 40% of HCV/HIV-co-infected patients [4–9]. A research synthesis using meta-regression of seven PEG-IFN/RBV treatment studies in a total of 784 HCV/HIV-co-infected patients reported an overall SVR rate of 33% [10].

There are high rates of current and past psychiatric and substance use disorders in the HIV/HCV-co-infected population [11]. This substantively complicates the treatment of HCV with pegylated interferon alfa and ribavirin (PEG-IFN/RBV), as the therapy causes neuro-psychiatric side effects (depression, anxiety, emotional lability, irritability, insomnia) in a large percentage of patients [12,13]. While the potential for HCV treatment to cause more severe neuropsychiatric side effects such as new onset psychosis [14] and suicidal ideation [15] is much smaller, these risks warrant careful clinical monitoring. The treatment side effects present a barrier for providers and patients to initiate treatment, and once treatment is begun, these symptoms can result in dose reductions and early treatment discontinuation leading to reduced treatment efficacy [9,16].

There is evidence that the mechanism underlying interferon-induced depression is mediated by deficiency of serotonin in the brain [17] and selective serotonin reuptake inhibitors are therefore a logical treatment choice. Based largely on findings from a study done with malignant melanoma patients treated with interferon alfa-2b [18], some clinicians prescribe antidepressants prophylactically prior to beginning patients on HCV treatment. However, neither of the two published double-blind, placebo-controlled randomized clinical trials addressing the use of antidepressants prophylactically during HCV treatment in HCV mono-infected patients [19,20] found differences in the rates of development of major depression during HCV treatment between treatment groups (placebo and paroxetine).

In contrast, Kraus and colleagues [21] conducted a randomized, double-blind, placebo-controlled study to investigate the use of citalopram to treat interferon-induced depression in HCV mono-infected patients already on PEG-IFN/RBV. The findings demonstrated a clear advantage of citalopram over placebo to treat depression which developed during treatment and the study was terminated prematurely. All citalopram patients were able to complete interferon therapy as planned. The authors conclude that a prophylaxis strategy is not necessary but recommend close monitoring of patients during HCV treatment and initiation of antidepressant treatment after the onset of clinically significant depressive symptoms. In addition to the lack of data supporting antidepressant prophylaxis, the potential for antidepressants to cause unwanted side effects in addition to those caused by HCV treatment further argues against this strategy in a mono-infected population with compromised liver function.

Psychiatric stabilization of the patient prior to initiating HCV treatment is critical to successful treatment in terms of reducing adverse neuro-psychiatric events and early treatment discontinuation [22,23]. Hepatitis C treatment is therefore ideally conducted in an integrated care setting in which medical, psychiatric, and substance use care is available during the pre-treatment evaluation as well as during HCV treatment [24,25]. With the appropriate level of integrated care, the treatment of Hepatitis C can be well managed in populations with very challenging comorbid psychiatric conditions [26], such as those with bipolar disorder [27], schizophrenia [28], and active intravenous drug users [29,30].

In contrast to the literature on therapy of HCV mono-infected patients, there are no completed randomized, controlled trials in co-infected HCV/HIV patients to address whether the use of

prophylactic treatment with antidepressants prevents the development of depressive side effects during HCV treatment; while one such study of citalopram is currently underway in Canada, its results are not yet available [31]. The high prevalence of psychiatric and substance use disorders in the medically eligible HIV-co-infected population leaves open the question of how best to manage these patients when initiating PEG-IFN/RBV, and currently no standard of clinical practice exists.

Individuals with HIV infection are more susceptible to drug-drug interactions and may be more sensitive to the side effects of medication than those without HIV infection [32]. In addition, studies demonstrate that the effect of HIV on the brain is independent from that of HCV and results in a negative impact on neuro-cognitive functioning beyond that of HCV alone [33–36]. For these reasons, the psychiatric management of HCV therapy in HIV-co-infected persons may require a different strategy than in HCV mono-infected persons and warrants dedicated study.

Despite the potential for psychiatric side-effects of PEG-IFN/RBV therapy to contribute to treatment failure, a standardized approach to managing them has yet to be universally adopted in practice. Studies have consistently established that patients who have higher levels of depression at the time of starting treatment with interferon-alfa are more likely than others to develop significant depression during treatment, but the vast majority of studies have not found a relationship between a history of depression in the absence of current depression and development of depressive symtpoms during HCV treatment [37].

In the absence of established guidelines for the management of psychiatric status of HIV/HCV-co-infected patients initiating PEG-IFN/RBV therapy, the current study sought to determine what the state of practice is for providers actively engaged in the care of these patients. Herein, the results are reported of a provider survey designed to determine whether consensus exists in the management of these patients, and what factors might impact differing treatment approaches taken by health care providers.

2. Methods

2.1. Study design

Two hundred and thirty-six expert providers were identified through a review of the published literature on PubMed and an extensive search of the internet using combinations of the combined search terms: Hepatitis C, HIV, Psychiatry, Antidepressants. Each identified expert provider was emailed individually by the first author and invited to complete an anonymous online survey and asked to forward the email invitation to other colleagues with expertise in this area. In addition, a description of the survey with a link to the survey was featured on the public web site HIVandHepatitis.com which is largely viewed by clinicians and researchers with a specific interest in HIV and Hepatitis. All data analysis was performed using SPSS version 14.0 (SPSS Inc., Chicago, IL). Categorical variables were examined using chi-square tests and continuous variables were examined using t-tests.

2.2 Survey instrument

The web-based survey was designed and implemented using QuestionPro (www.questionpro.com). The survey was developed and piloted at Mount Sinai School of Medicine in New York City and conducted between July 2006 and May 2007. All survey responses were anonymous; the study was exempt from Mount Sinai Institutional Review Board approval.

The survey questions were designed to assess provider demographics, practice characteristics, observed treatment outcomes, and prescribing practice in managing the psychiatric aspects of

HCV treatment in HIV/HCV-co-infected patients. The provider characteristics include gender, age, and discipline. The practice characteristics include setting, location, number of years working with HIV-positive patients post-training, number of HIV-positive patients seen per month, and number of HIV-positive patients on HCV treatment seen in career. The treatment outcomes assessed are the percent of patients that develop depression during HCV treatment, the percent that stop treatment due to psychiatric side effects, and the percent that achieve SVR. Prescribing practice is assessed by asking if providers take a different approach in general to the psychiatric management of HIV-co-infected patients as compared to HCV mono-infected patients and asking about the management of psychotropic medication prior to initiating HCV treatment for the first time in four specific clinical scenarios: (1) an HIV-positive patient with no past or current depression; (2) an HIV-positive patient with history of depression but no current symptoms of depression, not on antidepressants; (3) an HIV-positive patient currently treated with antidepressant(s) for unipolar depression; (4) an HIV-positive patient currently treated with mood stabilizer(s) for bipolar depression.

3. Results

3.1. Respondent characteristics

A total of ninety-two providers (39% of the targeted sample) completed the survey. The clinician characteristics, practice profile and observed outcomes of these providers are in Table 1. Fifty-nine percent of the providers are male and 86% are physicians. The provider groups most highly represented are infectious disease specialists (37%), followed by psychiatrists (26%), internists (15%), nurse practitioners (10%), and hepatologists/gastroenterologists (8%).

The providers practice primarily in the United States (78%) either in hospital (62%) or clinic (29%) settings. Forty-one percent of providers have been working with HIV-positive patients for more than 10 years post-training; 62% of providers see more than 40 HIV-positive patients per month; 57% of providers have treated more than 40 HIV-positive patients for HCV in their career. Providers vary in their report of the percentage of HIV-positive patients who develop depression during HCV treatment with the largest percent of providers (46%) reporting the rates to be between 20–40% which is consistent with the report of depressive adverse events ranging from 11% to 37% in the largest HCV/HIV-coinfection treatment trials [23]. Seventy-five percent of providers report that less than 20% of HIV-positive patients stop treatment early due to psychiatric side effects. Providers report a wide range of observed SVRs in their HIV-positive patients with the largest group of providers (46%) reporting the range seen in reported studies (20–40%). The variation of reported SVR rates may in part be due to the differing prevalence of HCV genotypes in the countries surveyed providers practice in.

Ten of the 92 respondents are solely responsible for the prescription of PEG-IFN/RBV therapy and always refer to others to evaluate the need for psychotropic medication. The other 82 providers manage the psychotropic medication of HIV/HCV-co-infected patients on PEG-IFN/RBV some or all of the time. Twenty-four (29%) of the providers are psychiatrists and 58 (71%) are not. Psychiatrists do not differ from non-psychiatrists in terms of age, gender, or number of years working with HIV-positive patients post-training. Psychiatrists do report seeing fewer HIV-positive patients per month than non-psychiatrists (58% of psychiatrists see fewer than 40 HIV-positive patients per month, whereas only 33% of non-psychiatrists do, $p = 0.03$). Psychiatrists also report having seen fewer HIV-positive patients treated for HCV in their career than non-psychiatrists (63% of psychiatrists have seen less than 40 HIV-positive patients treated for HCV in their career, whereas only 36% of non-psychiatrists reported that, $p = 0.03$).

3.2. Prescribing practice

A comparison of the prescribing approach taken with HIV-co-infected patients to that taken with HCV mono-infected patients is given in Table 2. Twenty-three percent of the providers do not treat HCV mono-infected patients and therefore could not answer this question. Fifty-seven percent said that their approach to HIV-co-infected patients does not differ from that taken with HCV-mono-infected, 9.8% said they are more likely to use antidepressants prior to starting treatment in HIV-co-infected patients, and 2.4% said that the approach differs in another way ('depends on stage of HIV illness' and 'more likely to monitor closely with more frequent visits'). Seven percent of providers did not answer this question. The percentage of non-psychiatrists who do not treat HCV mono-infected patients (29.3) was significantly higher than that of psychiatrists (8.3) [p=0.05].

The responses of the psychiatrists who treat HCV mono-infected patients do differ from that of the non-psychiatrists who treat HCV mono-infected patients (p=0.02). Psychiatrists who also manage the HCV care of HCV mono-infected patients almost unanimously report no difference in approach in general to HIV-co-infected patients. Only non-psychiatrists indicate that they are more likely to use antidepressants prior to starting treatment in HIV-co-infected patients. While all eight of the non-psychiatrists who endorse this approach are highly experienced and had treated at least forty HIV-co-infected patients for HCV in their career, there is no data to support taking this prescribing approach in these patients.

The prescribing practice of the providers in the four clinical scenarios surveyed is presented in Tables 3 and 4. In the case of an HIV-positive patient with no past or current depression (No Depression Scenario), while only 3.7% of providers would recommend use of an antidepressant prophylactically, 32.9% of the providers would present this option to the patient and let him or her choose (Table 3). In the case of an HIV-positive patient with a history of depression, but no current symptoms of depression who is not on antidepressants (History Scenario), 23.2% of providers would recommend use of an antidepressant prophylactically and 51.2% would give this option to the patient and let him or her choose (Table 3). In these two scenarios, the prescribing practice does not differ between psychiatrists and non-psychiatrists and is not related to the level of observed depression during HCV treatment reported by providers.

In the case of an HIV-positive patient currently treated with antidepressants for unipolar depression (Unipolar Scenario), 92.6% of providers would make no changes in the patient's current medication (Table 4). Less than four percent indicate that they would never begin HCV treatment in this patient. In the case of an HIV-positive patient currently treated with mood stabilizers for bipolar depression (Bipolar Scenario), 85.4% of providers would make no changes in the patient's current medication (Table 4). Six percent indicate that they would never begin HCV treatment in this patient. In the Unipolar Scenario, the prescribing practice does not differ between psychiatrists and non-psychiatrists. In the Bipolar Scenario, the prescribing practice does differ between psychiatrists and non-psychiatrists (p=0.05), with non-psychiatrists being more likely to increase the dose or add additional medication (12.1% vs. 0%) and more likely to refuse to treat this patient (8.6% vs. 0%).

There is consensus among providers that the best approach to an HIV-positive patient currently treated with antidepressants for unipolar depression is to make no change in the psychotropic medication. In the case of the HIV-positive patient treated with mood stabilizers for bipolar depression, there is consensus among psychiatrists to leave the medication unchanged. While most non-psychiatrists agree with this, twelve percent of them would make medication changes by either increasing the dose of the mood stabilizer or adding an addition medication. None of the psychiatrists would refuse to treat the patient with unipolar or bipolar disorder based on these psychiatric diagnoses, whereas a small group of non-psychiatrists would do so, indicating

greater hesitancy on the part of non-psychiatrists to treat patients with currently treated psychiatric disorders.

When the sample is dichotomized into providers who have been treating HIV-positive patients for less than 10 years post-training (59%) and more than 10 years post-training (41%), there are no differences in terms of prescribing practices in the four case examples between these two groups or in whether the prescribing practice differs between HIV-co-infected and HCV mono-infected patients. When the sample is dichotomized into those who treat 40 or less HIV-positive patients per month (40%) and those who treat more than 40 HIV-positive patients per month (60%), there are no differences in terms of prescribing practices in the four case examples between these two groups or in whether the prescribing practice differs between HIV-co-infected and HCV mono-infected patients. When the sample is dichotomized into those providers who have evaluated 40 or less co-infected patients starting HCV treatment in their career (44%) and those who have evaluated more than 40 co-infected patients (56%), there is no difference in terms of prescribing practices in the four case examples between these two groups but there is a difference in their general approach to co-infected patients ($p=0.04$). All those who state that they are more likely to use antidepressants in HIV-co-infected patients prior to the start of treatment as compared to in HCV mono-infected patients (n=8) have evaluated more than 40 such patients in their career and are all non-psychiatrists.

4. Discussion

The results of this provider survey make clear that the psychiatric management of HIV-co-infected patients being treated for HCV occurs in multiple contexts (varying from comprehensive integrated clinics to individual practices) and is done by providers from a wide range of disciplines (infectious disease, psychiatry, internal medicine, nurse practitioner). The survey was able to establish the practice patterns of expert providers who are predominantly physicians working in varied practice settings internationally.

The psychiatrists who participated in this survey are by definition working in or collaborating to create integrated medical and psychiatric care settings for the treatment of HCV. Only ten of the 68 non-psychiatrists surveyed are working in an integrated care setting by indicating that they always refer patients for their psychiatric management. The majority of the non-psychiatrist respondents (85%) does not ever or does not always have access to psychiatric services in the treatment setting. There is clearly very limited access to psychiatric consultation even among expert HCV providers.

There was consensus among all providers regarding the management of patients treated for unipolar depression and among psychiatrists regarding the management of patients treated for bipolar depression. The most striking finding of the survey is that despite the lack of evidence-based data in this population, more than one-third of the expert providers surveyed indicate that they would recommend use or offer the option of antidepressants prophylactically in HCV treatment to HIV-positive patients with no past or current depression. This pattern of prescribing was not related to the level of depression providers reported observing during HCV treatment but may be related to the limited access to psychiatric consultation, with providers viewing the prophylactic use of antidepressants as the safest and most cautious treatment approach.

In patients with a history of depression, but with no current symptoms of depression, a very high proportion of providers (over three-quarters), would recommend or offer the option of use of antidepressants. The survey did not ask providers what percent of the HIV-positive patients they provide HCV treatment for present to them without symptoms of depression at

the time of treatment initiation. This data would have been helpful in order to examine whether differences in rates influence the prescribing practices of the surveyed providers.

The finding that it was the non-psychiatrists with the most HCV treatment experience who were more likely to use anti-depressants in the HIV/HCV-co-infected population than in the HCV mono-infected population warrants further investigation as it is these providers who are likely to be in positions of supervising and training other practitioners.

The findings of this survey are limited by the non-representativeness of the provider sample given that only 39% of the targeted providers responded. Firstly, there may have been bias in which targeted expert providers responded to the request for participation in the survey. Secondly, the practices of these expert providers likely differ from those providers without specific expertise in this area who are treating this population. Given the lack of expert provider consensus and the high rates of antidepressant use in the absence of data supporting this approach in this population, research is needed to provide an evidence base to guide the optimal psychiatric management of HIV/HCV-co-infected patients beginning treatment for Hepatitis C.

Given the limited access to psychiatric consultation available to the majority of non-psychiatrist expert HCV providers treating HIV/HCV-co-infected patients, specialized training programs should are needed to increase the skills of these providers to assess and manage psychiatric symptoms which HIV/HCV-co-infected patients present with prior to HCV treatment initiation and develop during treatment. Increasing provider skills and competence through advanced training in psychiatric assessment and management would likely reduce the extent to which these providers use antidepressants prophylactically and could potentially lead to better HCV treatment outcomes.

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References

1. Bica I, McGovern B, Dhar R, et al. Increasing mortality due to end-stage liver disease in patients with human immunodeficiency virus infection. Clin Infect Dis 2001;32:492–7. [PubMed: 11170959]
2. Rosenthal E, Pialoux G, Bernard N, et al. Liver-related mortality in human-immunodeficiency-virus-infected patients between 1995 and 2003 in the French GERMIVIC Joint Study Group Network (MORTAVIC 2003 Study). J Viral Hepat 2007;14:183–8. [PubMed: 17305884]
3. Weber R, Sabin CA, Friis-Moller N, et al. Liver-related deaths in persons infected with the human immunodeficiency virus: the D:A:D study. Arch Intern Med 2006;166:1632–41. [PubMed: 16908797]
4. Carrat F, Bani-Sadr F, Pol S, et al. Pegylated interferon alfa-2b vs standard interferon alfa-2b, plus ribavirin, for chronic hepatitis C in HIV-infected patients: a randomized controlled trial. JAMA 2004;292:2839–48. [PubMed: 15598915]
5. Chung RT, Andersen J, Volberding P, et al. Peginterferon Alfa-2a plus ribavirin versus interferon alfa-2a plus ribavirin for chronic hepatitis C in HIV-coinfected persons. N Engl J Med 2004;351:451–9. [PubMed: 15282352]
6. Fried MW, Shiffman ML, Reddy KR, et al. Peginterferon alfa-2a plus ribavirin for chronic hepatitis C virus infection. N Engl J Med 2002;347:975–82. [PubMed: 12324553]

7. Hadziyannis SJ, Sette H Jr, Morgan TR, et al. Peginterferon-alpha2a and ribavirin combination therapy in chronic hepatitis C: a randomized study of treatment duration and ribavirin dose. Ann Intern Med 2004;140:346–55. [PubMed: 14996676]
8. Manns MP, McHutchison JG, Gordon SC, et al. Peginterferon alfa-2b plus ribavirin compared with interferon alfa-2b plus ribavirin for initial treatment of chronic hepatitis C: a randomised trial. Lancet 2001;358:958–65. [PubMed: 11583749]
9. Torriani FJ, Rodriguez-Torres M, Rockstroh JK, et al. Peginterferon Alfa-2a plus ribavirin for chronic hepatitis C virus infection in HIV-infected patients. N Engl J Med 2004;351:438–50. [PubMed: 15282351]
10. Shire NJ, Welge JA, Sherman KE. Response rates to pegylated interferon and ribavirin in HCV/HIV coinfection: a research synthesis. J Viral Hepat 2007;14:239–48. [PubMed: 17381715]
11. Goulet JL, Fultz SL, McGinnis KA, et al. Relative prevalence of comorbidities and treatment contraindications in HIV-mono-infected and HIV/HCV-co-infected veterans. AIDS 2005;19(Suppl 3):S99–105. [PubMed: 16251836]
12. Raison CL, Broadwell SD, Borisov AS, et al. Depressive symptoms and viral clearance in patients receiving interferon-alpha and ribavirin for hepatitis C. Brain Behav Immun 2005;19:23–7. [PubMed: 15581735]
13. Reichenberg A, Gorman JM, Dieterich DT. Interferon-induced depression and cognitive impairment in hepatitis C virus patients: a 72 week prospective study. AIDS 2005;19(Suppl 3):S174–8. [PubMed: 16251815]
14. Hoffman RG, Cohen MA, Alfonso CA, et al. Treatment of interferon-induced psychosis in patients with comorbid hepatitis C and HIV. Psychosomatics 2003;44:417–20. [PubMed: 12954918]
15. Dieperink E, Ho SB, Tetrick L, et al. Suicidal ideation during interferon-alpha2b and ribavirin treatment of patients with chronic hepatitis C. Gen Hosp Psychiatry 2004;26:237–40. [PubMed: 15121353]
16. Sola R, Galeras JA, Montoliu S, et al. Poor response to hepatitis C virus (HCV) therapy in HIV- and HCV-coinfected patients is not due to lower adherence to treatment. AIDS Res Hum Retroviruses 2006;22:393–400. [PubMed: 16706615]
17. Malek-Ahmadi P, Hilsabeck RC. Neuropsychiatric complications of interferons: classification, neurochemical bases, and management. Ann Clin Psychiatry 2007;19:113–23. [PubMed: 17612851]
18. Musselman DL, Lawson DH, Gumnick JF, et al. Paroxetine for the prevention of depression induced by high-dose interferon alfa. N Engl J Med 2001;344:961–6. [PubMed: 11274622]
19. Morasco BJ, Rifai MA, Loftis JM, et al. A randomized trial of paroxetine to prevent interferon-alpha-induced depression in patients with hepatitis C. J Affect Disord 2007;103:83–90. [PubMed: 17292481]
20. Raison CL, Woolwine BJ, Demetrashvili MF, et al. Paroxetine for prevention of depressive symptoms induced by interferon-alpha and ribavirin for hepatitis C. Aliment Pharmacol Ther 2007;25:1163–74. [PubMed: 17451562]
21. Kraus MR, Schafer A, Schottker K, et al. Therapy of interferon-induced depression in chronic hepatitis C with citalopram: a randomised, double-blind, placebo-controlled study. Gut 2008;57:531–6. [PubMed: 18079286]
22. Loftis JM, Matthews AM, Hauser P. Psychiatric and substance use disorders in individuals with hepatitis C: epidemiology and management. Drugs 2006;66:155–74. [PubMed: 16451091]
23. Weiss JJ, Gorman JM. Psychiatric behavioral aspects of comanagement of hepatitis C virus and HIV. Curr HIV/AIDS Rep 2006;3:176–81. [PubMed: 17032577]
24. Ho SB, Groessl E, Dollarhide A, et al. Management of chronic hepatitis C in veterans: the potential of integrated care models. Am J Gastroenterol 2008;103:1810–23. [PubMed: 18564122]
25. Sylvestre DL, Loftis JM, Hauser P, et al. Co-occurring Hepatitis C, substance use, and psychiatric illness: treatment issues and developing integrated models of care. J Urban Health 2004;81:719–34. [PubMed: 15466851]
26. Schaefer M, Hinzpeter A, Mohmand A, et al. Hepatitis C treatment in “difficult-to-treat” psychiatric patients with pegylated interferon-alpha and ribavirin: response and psychiatric side effects. Hepatology 2007;46:991–8. [PubMed: 17668880]

27. Rifai MA. Hepatitis C treatment of patients with bipolar disorder: a case series. Prim Care Companion J Clin Psychiatry 2006;8:361–6. [PubMed: 17245458]

28. Huckans M, Mitchell A, Ruimy S, et al. Antiviral Therapy Completion and Response Rates Among Hepatitis C Patients With and Without Schizophrenia. Schizophr Bull. 2008epub Jun 17

29. Bruggmann P, Falcato L, Dober S, et al. Active intravenous drug use during chronic hepatitis C therapy does not reduce sustained virological response rates in adherent patients. J Viral Hepat 2008;15:747–52. [PubMed: 18637072]

30. Taylor LE. Delivering care to injection drug users coinfected with HIV and hepatitis C virus. Clin Infect Dis 2005;40(Suppl 5):S355–61. [PubMed: 15768348]

31. Klein MB, Cooper C, Brouillette MJ, et al. CTN-194 (PICCO): design of a trial of citalopram for the prevention of depression and its consequences in HIV-hepatitis C co-infected individuals initiating pegylated interferon/ribavirin therapy. Contemp Clin Trials 2008;29:617–30. [PubMed: 18262853]

32. Cozza, KLWS.; Wynn, GH. Psychopharmacologic Treatment Issues in AIDS Psychiatry. In: Cohen, MA.; Gorman, JM., editors. Comprehensive Textbook of AIDS Psychiatry. New York: Oxford University Press; 2008. p. 455-485.

33. Douaihy A, Hilsabeck RC, Azzam P, et al. Neuropsychiatric aspects of coinfection with HIV and hepatitis C virus. AIDS Read 2008;18:425–32. 438–9. [PubMed: 18770900]

34. Letendre S, Paulino AD, Rockenstein E, et al. Pathogenesis of hepatitis C virus coinfection in the brains of patients infected with HIV. J Infect Dis 2007;196:361–70. [PubMed: 17597450]

35. Morgello S, Estanislao L, Ryan E, et al. Effects of hepatic function and hepatitis C virus on the nervous system assessment of advanced-stage HIV-infected individuals. AIDS 2005;19(Suppl 3):S116–22. [PubMed: 16251806]

36. Ryan EL, Morgello S, Isaacs K, et al. Neuropsychiatric impact of hepatitis C on advanced HIV. Neurology 2004;62:957–62. [PubMed: 15037699]

37. Raison CL, Demetrashvili M, Capuron L, et al. Neuropsychiatric adverse effects of interferon-alpha: recognition and management. CNS Drugs 2005;19:105–23. [PubMed: 15697325]

Table 1

Characteristics of Survey Participants (n=92)

Clinician Characteristics		
Gender	Male	59%
	Female	41%
Age	35 years or younger	17%
	36–50 years	62%
	51 years or older	21%
Discipline	Infectious Disease	37%
	Psychiatry	26%
	Internal Medicine	15%
	Nurse Practitioner	10%
	Hepatology/GI	8%
	Physician Asst.	2%
	Other	2%
Practice Profile		
Practice Setting	Hospital	62%
	Clinic	29%
	Private practice	9%
Location	USA	78%
	Europe	15%
	Canada	3%
	Other	3%
# years working with HIV pts post-training	less than 3	10%
	4–6	22%
	7–10	27%
	more than 10	41%
# HIV pts treat per month	less than 40 pts	38%
	41–70 pts	25%
	71–100 pts	16%
	more than 100 pts	21%
# HIV pts treated for HCV in career	less than 40 pts	43%
	41–70 pts	22%
	71–100 pts	12%
	more than 100 pts	23%
Observed Outcomes in HIV patients treated for HCV		
Develop depression during HCV treatment	less than 20%	15%
	20–40%	46%
	40–60%	23%
	more than 60%	9%
	Unsure	8%
Stop treatment early due to psychiatric side effects	less than 20%	75%
	20–40%	14%
	40–60%	3%
	Unsure	8%
Achieve SVR	less than 20%	19%
	20–40%	46%
	40–60%	19%
	more than 80%	2%
	unknown	15%

Table 2
Comparison to Prescribing Approach Taken With HCV Mono-infected Patients

Survey Question: Does your approach to the management of depressive side effects of pegylated interferon/ribavirin treatment in HIV/HCV-co-infected patients differ from your approach in HCV mono-infected patients?

	All (n=82)	Non-psychiatrists* (n=58)	Psychiatrists* (n=24)
Does not differ	57.3%	51.7%	70.8%
More likely to use antidepressants prior to starting treatment in HIV-co-infected	9.8%	13.8%	0%
Differs in another way	2.4%	0%	8.3%
Never treated HCV mono-infected	23.2%	29.3%	8.3%
Missing	7.3%	5.2%	12.5%

* Prescribing Practice Differs Between Non-Psychiatrists and Psychiatrists ($p<0.05$)

Table 3
Prescribing Practices in 'No Depression' and 'History of Depression' Scenarios

Survey question: Please indicate what you would be most likely to do in each of the following situations of treating an HIV/HCV-co-infected patient beginning on pegylated interferon/ribavirin treatment for the first time:
No Depression Scenario - Patient with no past or current depression
History Depression Scenario - Patient with history of depression, but with no current symptoms of depression, not on antidepressants

Scenario	Respondents	Begin on PAD	Give option of PAD	Leave off PAD and monitor
No Depression	All (n=82)	3.7%	32.9%	63.4%
No Depression	Non-psychiatrists† (n=58)	1.7%	29.3%	69.0%
No Depression	Psychiatrists† (n=24)	8.3%	41.7%	50.0%
History Depression	All (n=82)	23.2%	51.2%	25.6%
History Depression	Non-psychiatrists† (n=58)	20.7%	51.7%	27.6%
History Depression	Psychiatrists† (n=24)	29.2%	50.0%	20.8%

PAD = Prophylactic antidepressant

† Prescribing Practices of Non-Psychiatrists and Psychiatrists do not differ

Table 4
Prescribing Practices in 'Unipolar Depression' and 'Bipolar Depression' Scenarios

Survey question: Please indicate what you would be most likely to do in each of the following situations of treating an HIV/HCV-co-infected patient beginning on pegylated interferon/ribavirin treatment for the first time:
Unipolar Scenario - Patient currently treated with antidepressants for unipolar depression
Bipolar Scenario - Patient currently treated with mood stabilizers for bipolar depression

Scenario	Respondents	Leave current medication alone	Increase dose or add additional medication	Would never begin patient on HCV treatment
Unipolar	All (n=82)	92.6%	3.7%	3.7%
Unipolar	Non-psychiatrists† (n=58)	91.4%	3.4%	5.2%
Unipolar	Psychiatrists† (n=24)	95.8%	4.2%	0%
Bipolar	All (n=82)	85.4%	8.5%	6.1%
Bipolar	Non-psychiatrists* (n=58)	79.3%	12.1%	8.6%
Bipolar	Psychiatrists* (n=24)	100%	0%	0%

*Prescribing Practice Differs Between Non-Psychiatrists and Psychiatrists ($p<0.05$)

†Prescribing Practices of Non-Psychiatrists and Psychiatrists do not differ