The Effect of Ketamine Infusion Treatment Schedule on Depression Severity

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BACKGROUND

Several meta-analyses have shown that ketamine has robust but transient antidepressant effects. Numerous clinics have begun offering repeated ketamine infusions to sustain these effects. However, due to a lack of evidence to support any particular infusion schedule, there is substantial variability in infusion schedules.

STUDY AIM

Compare outcomes of treatment resistant depressed patients receiving ketamine on a twice-weekly versus once-weekly infusion schedule in a naturalistic outpatient setting.

METHODS

Primary Sample:
Forty-six depressed adults received six infusions of intravenous ketamine (0.5-1.0 mg/kg over 40 minutes) on a twice-weekly (n=25) or once-weekly (n=21) basis depending on patient preference.

Secondary Sample:
A second sensitivity analysis of patients who received 4+ infusions was performed to increase sample size and power (n=63).

Measures:
The Quick Inventory of Depressive Symptomatology-Self Report (QIDS-SR) was used to assess depression severity at baseline and immediately prior to each infusion for a total of 6 observations.

Setting:
Patients received treatment at a private ketamine outpatient clinic. Patients paid for treatment out of pocket and were not compensated for participation in research.

Data Analytic Plan
Repeated measures General Linear Models tested effects of infusion schedule on QIDS-SR scores.

Fisher Exact Test compared infusion schedules in terms of response rates (≥50% reduction from baseline QIDS-SR score) and remission (QIDS-SR ≤5),

RESULTS

Figure 1

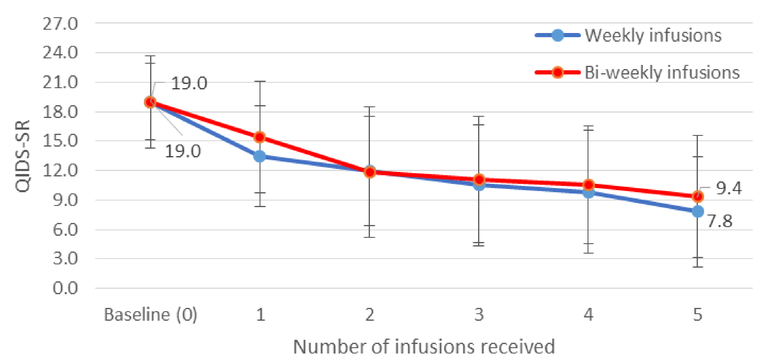


Figure 2

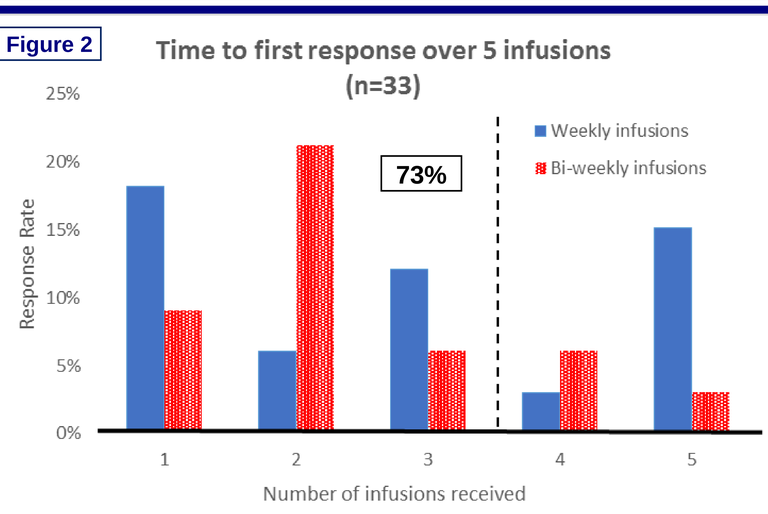
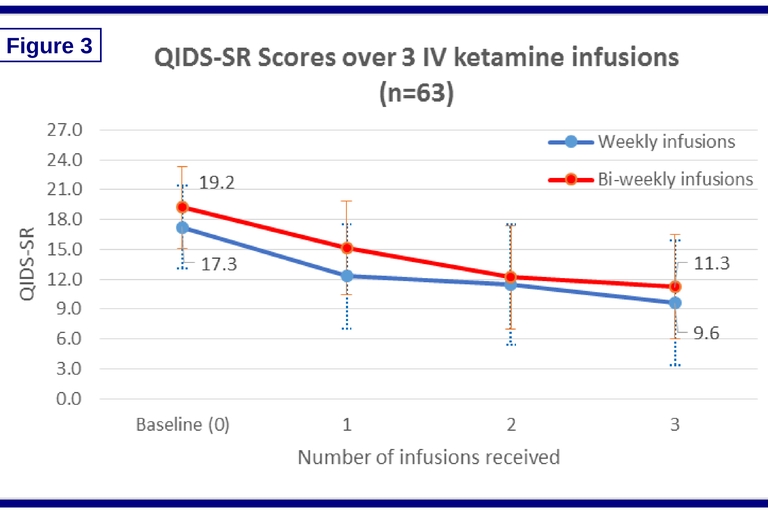


Figure 3



Descriptive data on study samples provided in Table 1.
Gender and age did not impact outcomes in either analysis.

Primary Analysis:
Ketamine was associated with a significant reduction in QIDS-SR scores across infusions with an overall response rate of 72% and overall remission rate of 41% (Overall mean QIDS score change=10.35, SD=5.27, $F(3.35,147.34)=65.97$ $p<.0001$.) There were **no** effects of infusion schedule on decrease in depression severity ($F(1,43)=0.342$, $p=.562$) and no differences in response or remission rates (all p's >0.05) (**Figure 1**).

There was significant improvement in depression after the first infusion, with additional incremental improvements after the second and third infusion, such that 73% of responders achieved response by this latter time point (**Figure 2**).

There were also no between-group differences in the median number of infusions received prior to initial response ($x^2=7.231$, $p=.136$).

Secondary Analysis:
After 3 infusions, overall response rate for the larger sample (N=63) was 54% and 17.5% of patients achieved remission.

The secondary analysis revealed similar lack of differences on improvement between infusion schedule (**Figure 3**).

DISCUSSION

- Once versus twice weekly ketamine infusions did not differ in the overall magnitude of reduction in depressive symptoms
- Twice weekly infusions provide more rapid relief than weekly infusions.
- Patient-related factors, including proximity to infusion center, financial resources, and illness severity may be critical considerations in informing infusion schedules.
- Future research should address the effects of concurrent treatment and previous treatment history.

Table 1. Patient Demographics

	Primary Sample (n=46)		Secondary Sample (n=63)	
Female	**26**	**57%**	**36**	**51%**
Mean Age, SD	**43.5**	**14.4**	**43.5**	**13.7**
Comorbid Pain Disorder*	**5**	**11%**	**8**	**13%**
Comorbid Anxiety Disorder*	**22**	**48%**	**32**	**51%**

* Per patient self-report

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