



## “Releasing a lot of poisons from my mind”: Patients’ delusional memories of intensive care



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### ABSTRACT

**Objectives:** To describe intensive care unit (ICU) patients’ delusional memories and interpretations of those memories.

**Background:** Delusional memories of the ICU are distressing for patients and may impact psychological recovery.

**Methods:** This is a secondary analysis from a study of mechanically ventilated patients’ recall in relation to sedation. Subjects, recruited from one medical-surgical ICU, participated in structured interviews after extubation.

**Results:** Subjects ( $n = 35$ ) with a mean age of 66 (SD 12.9) and on the ventilator a median of 4.5 days provided detailed descriptions of delusional memories of being shackled, caged, strangled, or being in a foreign country. Delusions were very real and frightening in the moment. Subjects had difficulty connecting to reality to allow processing of the delusions.

**Conclusions:** Patients’ delusional memories of ICU share common distressing themes. Assisting patients’ to connect to real ICU events and process delusional memories may help with psychological recovery after critical illness.

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### Introduction

Delusional or unreal memories of the intensive care unit (ICU) are common, occurring for 26–75% of patients after critical illness.<sup>1–3</sup> Patients report hallucinations,<sup>4–7</sup> nightmares,<sup>4,6,7</sup> and disorientation.<sup>8,9</sup> Delusional memories of hallucinations and nightmares are some of the most troubling for patients. Indeed, of patients recalling nightmares in ICU, 85–88% were bothered moderately to extremely by them<sup>10,11</sup> and hallucinations were recalled as a source of discomfort by 32% of patients.<sup>12</sup>

Delusional memories of ICU are associated with an increased incidence of post-traumatic stress disorder (PTSD) symptoms,<sup>2,13,14</sup> anxiety,<sup>15</sup> and depression.<sup>15</sup> It has been proposed that the presence of factual memories may have some protective effect against the development of PTSD,<sup>2</sup> however this has not been consistent across other studies. In a study by Myhren et al<sup>16</sup> memories of pain and factual recall were independent predictors of PTSD symptoms. While memory of traumatic events—a mixture of real and delusional memories including respiratory distress, anxiety/panic, pain,

and nightmares—have also been linked to increased PTSD.<sup>17</sup> The presence of delusional memories may suggest ICU delirium however, a systematic review found no relationship between delirium and PTSD.<sup>18</sup>

Delusional memories—nightmares, hallucinations, or dreams<sup>19</sup>—are common and may contribute to psychological morbidity after critical illness. The purpose of this study is to describe patients’ delusional memories of ICU and patients’ interpretations of those memories.

### Methods

This descriptive study is a secondary analysis of data from a study of the relationship between sedation and the mechanically ventilated patients’ recall of the ICU.<sup>20</sup> Although not one of the primary aims of the overall study, delusional memories were some of the most frequent and detailed descriptions provided during interviews and therefore emerged as a part of the ICU experience that is of importance to patients.

### Setting and participants

A convenience sample of patients was enrolled over 18 months from a 24-bed medical-surgical ICU in a suburban community

Abbreviations: ICU, intensive care unit; MAAS, Motor Activity Assessment Scale; PTSD, post-traumatic stress disorder.

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hospital in the Midwest United States. The unit was staffed 24/7 by university affiliated intensivists. Patient to registered nurse staffing ratios were 2:1 or 1:1. The unit utilized the Motor Activity Assessment Scale (MAAS)<sup>21</sup> however, no formal delirium assessment was in place on the unit at the time of data collection (2009–2010). Patients were eligible for the study if they were greater than 18 years old, spoke English, had an anticipated duration of mechanical ventilation greater than 24 h, and had no documented mental incompetence. Patients on a ventilator in a long-term care unit or at home prior to ICU admission were not eligible.

#### *Ethical considerations*

All aspects of this study were approved by the principal investigator's University Institutional Review Board (IRB) which serves as the IRB for the primary study site and by the IRB for the acute care rehabilitation hospital where some post-ICU interviews were also conducted. If the initial study consent was obtained from a patient's proxy, the informed consent process was repeated with patients prior to the post-ICU interview.

#### *Data collection*

Structured interviews, conducted with subjects after extubation and transfer from ICU, included the Intensive Care Experience Questionnaire (ICEQ),<sup>22</sup> the Intensive Care Unit Memory Tool (ICUM),<sup>23</sup> and follow-up questions related to patient comments during instrument completion. Interviews were conducted after ICU discharge either on the hospital ward or on a long term ventilator unit in a rehabilitation hospital. All interviews were recorded and transcribed. Sedative and analgesic medication received, level of arousal, and restraint use was abstracted from the medical record.

#### *Measures*

##### *ICEQ*

The ICEQ provides a global evaluation of the subject's experience and consists of 24 items in four domains: awareness of surroundings, frequency of frightening experiences, recall of experience, and satisfaction with care. Items are closed questions with a 5-point Likert response indicating level of agreement (strongly disagree to strongly agree) or measuring frequency of an event (never to all of the time).<sup>24</sup> All items are scored on a 1 to 5 point scale.<sup>22</sup> Two individual ICEQ items were included in this analysis: frequency of seeing strange things and frequency of having bad dreams.

##### *ICUM*

The ICUM asks patients to indicate yes or no to a twenty item checklist that includes factual memories, memories of feelings, and delusional memories. Items are scored as 0 (not remembered) or 1 (remembered).<sup>2,23</sup> The delusional memories subscale was used for this analysis. Items include: recall of hallucinations, nightmares, dreams, and patients' memories of someone trying to hurt them.

#### *Data analysis*

Quantitative data were analyzed with SPSS version 19. Descriptive statistics were used to summarize sample characteristics and ICEQ and ICUM item responses.

Interview transcripts were analyzed using a qualitative content analysis: the interpretation of data through systematic identification of patterns or themes.<sup>25</sup> Analysis began with repeated reading of the transcripts.<sup>25,26</sup> Transcripts were then open coded using words, phrases, or sections of text to capture meaningful units or

themes related to delusional memories.<sup>25,27</sup> The themes were then grouped or collapsed into categories based on commonalities.<sup>25</sup> Validity was enhanced by the immersion of the author into the data, with repeated readings of transcripts during all phases of analysis.

#### **Results**

Sixty-nine subjects were enrolled into the study of whom 35 (50.7%) completed a post-ICU interview. Reasons interviews were not completed included transfer to another facility directly from ICU (32.4%), post-ICU confusion (29.4%), deceased in ICU (26.5%), hospital discharge prior to interview (5.9%), and ICU-acquired weakness with patient unable to physically sign consent form (2.9%). One subject declined to participate in the interview stating that they had "too much going on."

Subjects completing interviews and included in this analysis ( $N = 35$ ) had a mean age of 66 years (S.D. 12.9) and were 51.4% female. Subjects were on the ventilator a median of 4.5 days (range 2–26) and in the ICU a median of 7.4 days (range 2–34). Admission diagnoses were primarily pulmonary (57.1%) and medical-cardiac (22.9%) followed by sepsis/severe infection (8.6%), cardiac-surgical (5.7%), non-cardiac surgical (2.9%), and neuromuscular (2.9%). Although not routinely assessed on the unit, none of the patients included in this analysis had a documented diagnosis of delirium in their medical record. Individuals able to complete the post-ICU interview spent less time on the ventilator and in the ICU and were more frequently admitted to ICU with a pulmonary diagnosis and less frequently admitted with sepsis/severe infection or shock. Characteristics of the study sample and comparison of those completing interviews to those unable to complete interviews are presented in [Table 1](#). Sedative and analgesic medications received, level of arousal, and restraint use for interviewed subjects is summarized in [Table 2](#).

#### *Frequency of delusional memories*

Sixty-three percent of patients reported at least one delusional memory on the ICUM tool. The most common delusional memory was hallucinations (42.9% of patients) while 34.3% of patients recalled having dreams, and 31% recalled having nightmares. The least common memory was of someone trying to hurt them (14.3% of patients).

In response to ICEQ items which use broader descriptive terms, 70.3% of patients recalled seeing strange things and 53.5% of patients recalled having bad dreams at least some of the time.

#### *Content of delusional memories*

The content of delusional memories fell into three main themes: being held prisoner, being strangled or held underwater, and being in a foreign country or other world. Patients also described seeing disturbing or strange things such as walls moving or blood on surfaces in the room.

Patients' memories of being held prisoner remained quite vivid and they were able to describe them in great detail.

"I dreamed I was in a little car, like a roller coaster, and I was being pulled... by this engine. And we were shackled down, with our wrists tied, feet tied. And this went on for several days it seemed to me" (Subject 3, 87 year-old-male admitted with pneumonia on the ventilator for 9 days).

In addition to memories of being locked up or caged, some patients also recalled people guarding or hurting them.

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