

# Terminal Lucidity in Patients With Chronic Schizophrenia and Dementia

## *A Survey of the Literature*

Michael Nahm, PhD,\* and Bruce Greyson, MD†

**Abstract:** In this article, we present the results of a literature survey on case reports of the unexpected return of mental clarity and memory shortly before death, which we have called “terminal lucidity.” We focus specifically on terminal lucidity in mental disorders, of which we have found 81 case references. Of these, we were able to retrieve 49 case reports, most of which had been recorded before 1849. Thereafter, comparatively few reports of terminal lucidity have been published. Some more recent publications referred to terminal lucidity in patients suffering from schizophrenia and dementia. We draw parallels and distinctions between terminal lucidity and remissions attributable to febrile illness in neurosyphilis. We recommend in-depth studies on the psychopathology and neuropathology involved in terminal lucidity, since they might enable the development of both improved therapies and a better understanding of unresolved aspects of cognition and memory processing.

**Key Words:** Terminal illness, memory, dementia, remission, schizophrenia.

(*J Nerv Ment Dis* 2009;197: 942–944)

The unexpected return of mental clarity and memory shortly before death is a curious phenomenon that has so far not received much attention from psychiatrists or other physicians. We refer to such cases as “terminal lucidity.” The most remarkable cases involve patients who were mentally ill but seemed to recover shortly before death. Despite their potential to trigger the development of new forms of therapies and to contribute to an enhanced understanding of cognition and memory processing, terminal lucidity in mental disorders was largely ignored by psychiatrists and other physicians during the 20th century. In this article, we present results of a literature survey regarding terminal lucidity in mental disorders.

### THE LITERATURE ON TERMINAL LUCIDITY

#### Historical Reports of Terminal Lucidity

We found 81 references to terminal lucidity cases in mental disorders, which were reported by 51 different authors, mostly psychiatrists and other physicians. Of these 81 case references, we were able to track down 49 case reports, mostly the original publications. These cases involve 20 female and 29 male terminally ill patients. Additionally, we found 17 general statements by psychiatrists, other physicians, or caregivers who reported that they had

observed several examples of terminal lucidity in mental disorders, but without giving concrete details of the cases.

Column 2 of Table 1 shows the total number of references to cases of terminal lucidity in mental disorders, listed in chronological order of the date of their occurrence or publication. Column 3 lists the number of cases of which we were able to obtain a description. Most of the terminal lucidity cases were reported before 1849, several of them in considerable detail. Among the early authors who reported or discussed terminal lucidity were prominent physicians such as Benjamin Rush (1746–1813) in the United States; Andrew Marshal (1742–1813) and John Abercrombie (1780–1844) in the United Kingdom; Alexandre Brierre de Boismont (1797–1881) in France, and Karl Friedrich Burdach (1776–1847), Johann Baptist Friedreich (1796–1862), and Wilhelm Griesinger (1817–1868) in Germany.

Many psychiatrists studying cases of terminal lucidity assumed that the improvement of brain disorders or dysfunctions was caused by the altered brain physiology of the dying. Some authors put forward speculations about the physiological processes involved (Friedreich, 1839), but these speculations are rather general and seem inadequate from a modern medical perspective. After the mid-19th century, academic interest in terminal lucidity decreased. Accounts of terminal lucidity were published most often by authors interested in the philosophy of mind and brain, not necessarily physicians. Because these terminal lucidity reports mirrored the cases described earlier by physicians, we assume that they generally constitute reliable case reports.

It was not until 1975 that another detailed article on terminal lucidity was published in a medical journal, this one concerning 3 cases of chronic schizophrenia (Turetskaia and Romanenko, 1975). That article is the only publication on terminal lucidity in mental disorders we could find in medical journals during the 20th century. Because it was published in Russian and is therefore not available for the majority of Westerners, we will briefly sketch the cases described therein. Given that the onset of symptom remission started more than 30 days before death in these cases, one might wonder whether they should be classified as terminal lucidity. Yet, this designation seems appropriate, as all 3 cases involved patients with chronic schizophrenia without prior lucid intervals, living in seemingly stable psychotic states for many years.

The mental condition of the first patient started to improve one and a half months before his death, after 27 years in an unremitting schizophrenic state, of which he spent the last 17 years in a profoundly regressed catatonic state. The second patient likewise started to recover mentally one and a half months before his death due to stomach cancer, after 20 years in psychiatric hospitals. The third patient spent 11 years in an asylum before he fell sick with 2 different diseases and the remission of schizophrenic symptoms began. His mental improvement was remarkable, and 2 days before his death he was taken to his brother's home. Although all 3 patients showed some residual mental idiosyncrasies, their overall behavior became almost normal.

\*Freiburg, Germany; and †Division of Perceptual Studies, Department of Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA.

Send reprint requests to Bruce Greyson, MD, Division of Perceptual Studies, Department of Psychiatry and Neurobehavioral Sciences, University of Virginia Health System, 210 10th St NE, Suite 100, Charlottesville, VA 22902. E-mail: cbg4d@virginia.edu.

Copyright © 2009 by Lippincott Williams & Wilkins

ISSN: 0022-3018/09/19712-0942

DOI: 10.1097/NMD.0b013e3181c22583

**TABLE 1.** Chronological Distribution of Reports of Terminal Lucidity in Mental Disorders

Publication Date	No. Cases Referred	No. Reports Retrieved
Before 1800	16	9
1800–1849	41	16
1850–1899	5	5
1900–1949	8	8
1950–1999	6	6
2000–present	5	5
Total	81	49

This article by Turetskaia and Romanenko is not the only source highlighting the possibility of unexpected terminal lucidity in chronic schizophrenia. Several of the older terminal lucidity cases reported in the 19th century appear to match the disease pattern of schizophrenia. Moreover, psychiatrists in the United States and Europe had noted that patients with chronic schizophrenia sometimes showed unexpected remission of their psychosis shortly before death, including Maudsley (1899), Mayer-Gross (1932), and Kübler-Ross (Osis and Haraldsson, 1977, 2006). Similarly, Vedensky and Aseeva observed the disappearance of schizophrenic symptoms shortly before death in patients whose recovery had been considered impossible (Turetskaia and Romanenko, 1975). One more report of terminal lucidity in a patient with schizophrenia who had been completely out of touch with reality until shortly before death was briefly sketched by Osis (1961).

Within the last few years, interest in terminal lucidity in mental disorders has increased again, as indicated in the publication of cases by Brayne et al. (2008) and by Grosso (2004), and the brief review of terminal lucidity in mentally disorders included in Kelly et al. (2007). Most of these recent cases involved terminally ill patients who suffered from severe dementia. In one study of end-of-life experiences, 70% of caregivers in a nursing home reported that during the past 5 years, they had observed patients with dementia becoming lucid a few days before death (Brayne et al., 2008). Members of another palliative care team confirmed that such incidents happen regularly, and one interviewee also reported that her own mother had dementia and could not recognize her family until her last day (Brayne et al., 2008). Similarly, a woman aged 92 who had been diagnosed with Alzheimer’s disease for 9 years and did not recognize close family members, including her son, recognized them again 24 hours before she died. Moreover, she knew how old she was and where she was, which she had not known for many years (Grosso, 2004).

**Temporal Aspects of Terminal Lucidity**

As far back as the early 19th century, Burdach (1826) noted that there are 2 ways in which terminal lucidity may manifest. First, the severity of mental derangement can improve slowly in conjunction with the decline of bodily vitality. The cases of schizophrenia reported by Turetskaia and Romanenko (1975) fall into this category. Second, full mental clarity can appear quite abruptly and unexpectedly shortly before death. Many of the cases involving dementia can be filed in this second category.

Table 2 shows the onset of terminal lucidity as described in the 49 case reports we were able to trace, separated into 4 clusters according to their timing. In 84% of the cases, terminal lucidity seems to occur within the last week before death, with 43% occurring within the last day of life.

**TABLE 2.** Onset Before Death of Terminal Lucidity in Mental Disorders in 49 Case Reports

Publication Date	Onset Before Death of Terminal Lucidity			
	≤1 d	2–7 d	8–30 d	>30 d
Before 1800	3	5	1	0
1800–1849	6	6	4	0
1850–1899	1	4	0	0
1900–1949	5	3	0	0
1950–1999	1	2	0	3
2000–present	5	0	0	0
Total	21 (43%)	20 (41%)	5 (10%)	3 (6%)

**Diagnoses and Causes of the Mental Disorders**

Unfortunately, the psychiatric diagnoses of the dying patients were often antiquated, poor, or not given at all in many of the 49 retrieved terminal lucidity reports. When diagnoses were given in the older case reports of the 19th century, they usually referred to “mania” or “melancholia,” although some of these patients would likely be diagnosed with schizophrenia today. Among these older cases, tumors and severe brain injuries were also listed as causes of the mental illness. Besides schizophrenia and dementia, there is one terminal lucidity report of a patient with meningitis in the more recent literature (Osis and Haraldsson, 1977/2006).

**DISCUSSION**

Terminal lucidity in mental disorders has been reported by American, British, French, German, and Russian psychiatrists and other physicians for the past 2 centuries. Previously, Cicero, Plutarch, Avicenna, Hippocrates, Galen, Sydenham, Boerhaave, and Pinel had noted that mental confusion, epilepsy, and melancholia may all improve at the approach of death (du Prel, 1888, 1971; Whitrow, 1990). Moreover, those clinicians who have described general observations of terminal lucidity in mental disorders usually claimed to have observed several cases, and those who have reported specific cases often presented only 1 or 2 cases out of many others they claimed to have witnessed. Despite the comparably few cases published in the 20th century, it seems likely that such terminal lucidity can easily be found when it is specifically sought (Turetskaia and Romanenko, 1975; Brayne et al., 2008). In sum, terminal lucidity in mental disorders seems to be more common than usually assumed, and reflects more than just a collection of anecdotes that on closer scrutiny emerge as wishful thinking.

Terminal lucidity in mental disorders displays a considerable range of degree and variety, but it is always characterized by an unexpected return of long lost mental faculties. Yet, there are only preliminary data regarding its prevalence (Brayne et al., 2008), and none concerning an evaluation of the psychological and physiological conditions that might favor it. From a medical perspective, terminal lucidity in patients suffering from schizophrenia and dementia is of primordial importance due to its potential to improve the mental conditions of chronic patients by a deeper understanding of the psychopathology and neuropathology involved. Yet, it is rarely if ever mentioned in scholarly books on schizophrenia or dementia and their treatment. Thus, the recommendation of Turetskaia and Romanenko (1975) for conducting deep and systematic studies of the predeath conditions in different forms of schizophrenia retains its importance. The possibility of predeath remissions in seemingly hopeless cases calls for intense psychiatric therapeutic research.

The same applies for patients suffering from the various forms of advanced dementia. Here, it is additionally intriguing that

several forms of dementia, notably Alzheimer's disease, are largely caused by degeneration and irreversible degradation of the cerebral cortex and the hippocampus, resulting among other symptoms in confusion, disorientation, and memory loss (Wenk, 2003). It is unclear how severely demented patients can sometimes recognize their family members and remember their lives again shortly before death, suggesting that the memories in these cases had been rendered inaccessible but not entirely deleted.

### Fever Therapy in General Paresis

We have limited our literature review to cases of terminal lucidity in mental illness that were not satisfactorily explained in medical terms. Most often, a medical explanation was not even attempted. However, some authors suggested that high fever prior to dying might induce terminal lucidity (Freidreich, 1839), a mechanism that was at one time used in a treatment for one specific mental illness.

In 1883, Wagner-Jauregg encountered a patient who contracted erysipelas, a streptococcal infection, and then experienced a remission of her psychosis, which was secondary to general paresis of the insane or paralytic dementia, one manifestation of tertiary neurosyphilis. He tried injecting streptococci into other patients with paralytic dementia, and shortly thereafter, when Koch developed tuberculin, Wagner-Jauregg injected tuberculin into several patients with paralytic dementia, hoping that the tuberculosis fever would kill the heat-sensitive spirochete. Although he did obtain long-term remission with several patients, the toxicity of tuberculin led him to abandon that agent in favor of injecting them with typhus vaccine and then with malaria-infected blood (Braslow, 1997). Despite an occasional death from malaria, he reported 83% remission and in 1927 he was awarded the Nobel Prize for this work treating paralytic dementia, or general paresis of the insane, with malaria (Shorter, 1997). Subsequent investigators induced remission in neurosyphilis by raising body temperature through hot baths, electrically induced heat, and a variety of other biological and physical means, documenting marked improvement not only in psychotic symptoms, but also in serologic and electroencephalographic evidence of illness (Bennett et al., 1941).

Despite the phenomenological parallels to terminal lucidity in other conditions, the specific mechanism of fever-induced remission of paralytic dementia is not applicable to mental disorders with different etiologies. Indeed, although Wagner-Jauregg proposed that fevers might restore lucidity in a variety of psychiatric disorders, including mania and melancholia (Braslow, 1997), fever cure was tried by other investigators on patients with schizophrenia and other psychoses, without any positive results (Shorter, 1997). However, the example of malarial therapy for paralytic dementia suggests that greater attention to unexplained terminal lucidity in mental disorders

and investigation of the conditions under which it occurs may lead to a deeper understanding of cognition and memory processing in relation to the underlying physiology, neurology, and anatomy of the brain. Most importantly, it might enable the development of therapies helping to keep personal memories alive in patients suffering from dementia.

### ACKNOWLEDGMENTS

The authors gratefully acknowledge the English translation by the late Margaret Pertzoff and Turetskaia of Romanenko, 1975.

### REFERENCES

- Bennett AE, Cash PT, Hoekstra CS (1941) Artificial fever in general paresis with electroencephalographic studies. *Psychiatr Q.* 15:750–771.
- Braslow J (1997) *Mental Ills and Bodily Cures: Psychiatric Treatment in the First-Half of the Twentieth Century*. Berkeley (CA): University of California Press.
- Brayne S, Lovelace H, Fenwick P (2008) End-of-life experiences and the dying process in a Gloucestershire nursing home as reported by nurses and care assistants. *Am J Hosp Palliat Care.* 25:195–206.
- Burdach KF (1826) *Vom Baue und Leben des Gehirns* (Vol 3). Leipzig (Germany): Dyk'sche Buchhandlung.
- du Prel C (1888) Die monistische Seelenlehre. Reproduced in C du Prel (1971) *Die Psyche und das Ewige*. Pforzheim (Germany): Rudolf Fischer.
- Friedreich JB (1839) *Handbuch der Allgemeinen Pathologie der Psychischen Krankheiten*. Erlangen (Germany): JJ Palm und Ernst Enke.
- Grosso M (2004) *Experiencing the Next World Now*. New York: Paraview Pocket Books.
- Kelly EW, Greyson B, Kelly EF (2007) Unusual experiences near death and related phenomena. In EF Kelly, EW Kelly (Eds), *Irreducible Mind: Toward a Psychology for the 21st Century* (pp 367–421). Lanham (MD): Rowman and Littlefield.
- Maudsley H (1899) The causation and prevention of insanity. Reproduced in C Thompson (Ed) (1987) *The Origins of Modern Psychiatry*. Chichester (England): John Wiley.
- Mayer-Gross W (1932) Die klinik. In O Bumke (Ed), *Handbuch der Geisteskrankheiten* (Vol 9, Special Part 5, pp 578). Berlin (Germany): Julius Springer.
- Osis K (1961) *Deathbed Observations by Physicians and Nurses*. New York: Parapsychological Foundation.
- Osis K, Haraldsson E (2006) *At the Hour of Death*. Norwalk (CT): Hastings House (original work published in 1977).
- Shorter E (1997) *A History of Psychiatry: From the Era of the Asylum to the Age of Prozac*. New York: John Wiley.
- Turetskaia BE, Romanenko AA (1975) Agonal remission in the terminal stages of schizophrenia [in Russian]. *Zh Nevropatol Psikhiatr Im S S Korsakova.* 75: 559–562.
- Wenk GL (2003) Neuropathologic changes in Alzheimer's disease. *J Clin Psychiatry.* 64(suppl 9):7–10.
- Whitrow M (1990) Wagner-Jauregg and fever therapy. *Med History.* 34: 294–310.