



The Importance of an Accurate Last Known Well and Symptom Onset Time

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Purpose: Correct documentation of Last Known Well (LKW) and Symptom Onset Time are essential to identify the earliest possible time that stroke symptoms began. If a patient experiences the onset of their symptoms in the company of another individual who can verify that the patient was functioning normally up until the time of the start of symptoms, then in this patient, the time LKW is also the time of symptom onset. In many cases, however, no one is present at the exact start of symptoms. In this situation, we need to document the time when symptoms were first discovered, as well as the time that the patient was LKW or at their baseline, and record both of these.

Correctly identifying a patient's LKW time is critical for determining a patient's eligibility for time-dependent acute ischemic stroke treatments such as IV Alteplase (also known as IV tPA) and mechanical intervention. Here are the definitions for Last Known Well and Symptom Onset from the Get With the Guidelines—stroke abstraction rules.¹

Last Known Well Definition:

The date and time at which the patient was last known to be without the signs and symptoms of the current stroke or at their prior baseline.

Symptom Onset Definition:

The date and time of discovery of patient's symptoms (i.e., when the patient was found with symptoms). This should be the earliest time that patient was known to have symptoms. If the event was witnessed, then the last known well date and time and the discovery date and time will be identical. Record both, even if identical.

Here are some examples for correct reporting by Emergency Medical Services (EMS) personnel:

Examples for correct reporting:

1. EMS arrived to AB's residence on 7/10/2019 at 2:10 p.m. Her daughter was present and states she found AB at 2:00 p.m. "in her chair slumped over. I couldn't understand what she was saying and she was drooling from her mouth and her face didn't look right." On further questioning by EMS, the daughter says her mother ate lunch at 12:30 p.m. and then went to sit in her chair where she was later found as noted above. Date and time of last known well are known as 7/10/2019 12:30 p.m., and date and time of symptom onset are known as 7/10/2019 2:00 p.m.
2. EMS arrived to CD's residence on 6/10/2019 at 7:30 a.m. His son was present and states that he last saw his father last night at 8:30 p.m. His father lives alone. His father woke up this morning about 6:30 a.m. and noticed that his right arm was weak. It did not get better, so CD called his son at 7:00 a.m. His son came over right away and was concerned that his father was having a stroke. His daughter then arrived and states that she had talked to her father on the phone last night around 9:30 p.m. and that he didn't mention anything about a problem with his arm. Date and time of last known well are known as 6/9/2019 9:30 p.m., and date and time of symptom onset are known as 6/10/2019 6:30 a.m.
3. EMS arrived to EF's residence at 5:15 p.m. on 7/09/2019. EF states she has had numbness to her left arm for 4 hours. Since it did not go away, she decided to call EMS to get it checked. She thinks her arm isn't completely numb, but it feels heavy, and she can't hold a pen tightly. Date and time of last known well are known as 7/09/2019 1:15 p.m., and date and time of discovery are known as 7/09/2019 1:15 p.m.

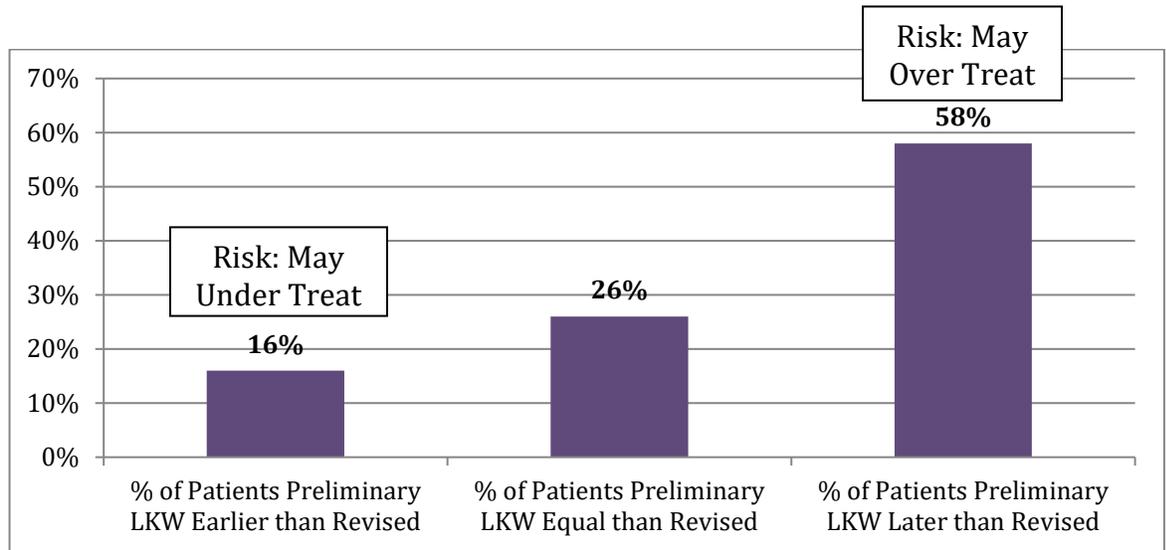


Accuracy of First Recorded “Last Known Normal” Times of Stroke Code Patientsⁱⁱ

This study investigates whether a difference exists between preliminary Last Known Normal (LKN) times (first responders and emergency department practitioners) and revised LKN (=LKW) times (neurology/stroke practitioners), and what potential impact on emergent management of acute stroke this discrepancy may pose.

Conclusion: Most patients had disparity between preliminary and revised LKN times. Had the preliminary LKN time been used for acute stroke decision making, 58% of patients would have potentially been treated outside the approved thrombolytic time window, with higher risk of adverse events, and 16% may have been inappropriately excluded from thrombolysis. This study highlights the need for training in the determination and refinement of the actual time of stroke onset, especially at hospitals without stroke expertise.

Summary Chart of Study Findings:



Patient Groups (N=261)

Median Difference between Preliminary and Revised LKW

Group A	Group B	Group C
30 Minutes (range 15-182.75)	0 (0-0)	47.5 Minutes (range 19-252.5)

References:

ⁱ Get with the Guidelines® - Stroke PMT® Abstraction Guidelines Updated June 2019

ⁱⁱ Spokoyny, I, et al. 2014. Accuracy of First Recorded “Last Known Normal” Times of Stroke Code Patients. J Stroke Cerebrovasc Dis. 2015 Nov; 24(11): 2467–2473. Retrieved from: <https://www.sciencedirect.com/science/article/abs/pii/S1052305715003080?via%3Dihub#abssec0020>

