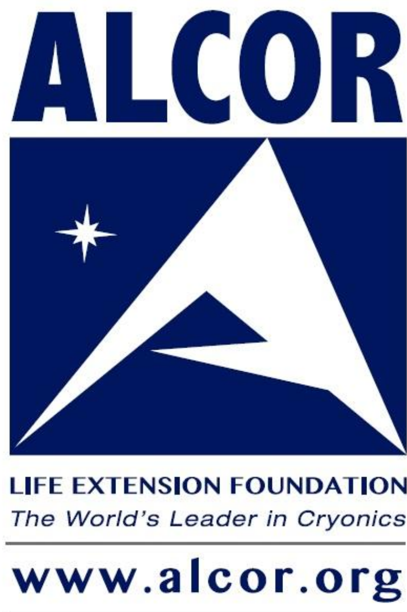
Alcor A-1765

Case Report



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1. Overview

(*Note: All times provided are expressed in Mountain Standard Time unless otherwise indicated.)

Alcor member A-1765 suffered an unwitnessed fall at home on August 4, 2016, and was transported to the hospital. Emergency surgery was performed in an attempt to control cerebral bleeding. Surgeons were unsuccessful in stopping the bleeding. She was admitted to the Neurological Intensive Care Unit (N-ICU) and placed on a ventilator. Her family notified Alcor on August 5, 2016, of these events. The patient was taken off of life support and declared legally dead at 19:21 hrs (MST) that evening.

Hospital and funeral home staff began cooling the patient and transported her back to Alcor for *straight freeze* procedures.

No audio or video recordings we made at any time during this case.

2. Personnel

Josh Lado, EMT. Medical Response Director; Alcor Life Extension Foundation (Alcor).
Steve Graber, Alcor Technical/Readiness Coordinator.

Direction and oversight were provided by:

Max More, Ph.D., Alcor Chief Executive Officer (CEO) and
Steve Harris, M.D., Alcor Chief Medical Advisor.

3. Pre-Deployment/ Medical History

Patient A-1765 was a 67-year-old woman who had been an Alcor member since 1999. Alcor did not have an updated medical history for her, but her most recent information did not indicate that she had any long-term health problems.

Alcor received notification through the emergency hotline (TeleMed) at 13:36 hrs on August 5, 2016, stating that patient A-1765 had been declared brain dead. An initial contact attempt with the family was unsuccessful as the family member's phone needed to be charged. Alcor made contact with the hospital in which the patient was staying and spoke with her attending physician. Alcor was advised that the patient had suffered a cerebral hemorrhage the day prior and emergency surgery had been performed. The medical team was unable to control the

bleeding at that time, and the physician stated they would eventually declare the patient brain dead.

Alcor received a phone call very quickly after pronouncement from the patient's resident physician. He wanted to know what Alcor's protocols were moving forward, and he wanted to state that he would also be speaking with hospital administration to clarify the hospital's standpoint on this matter.

Multiple attempts to contact Suspended Animation (SA) were then made without success. Upon investigation of all phone records by Catherine Baldwin, the Chief Operating Officer of Suspended Animation Inc., it was discovered that all of SA's lines were functioning except her own AT&T cell phone which had a *data queuing issue.* She advised that none of the other methods of contacting SA, including the mobile phones of its other two employees were attempted.

Dr. Harris was then called to provide him an update, and a discussion of the case began with the Alcor Deployment Committee. Dr. Harris stated that this would need to be a straight freeze procedure as a result of a combination of the patient being on a ventilator and the severe head trauma with a resulting lack of blood flow within her brain (cerebral perfusion). Alcor contacted a funeral home to assist with the initial cooling process and to ship the patient to Scottsdale, AZ as quickly as possible. Dr. Harris also advised that the hospital was to be contacted and instructed to take the patient off of the ventilator, to try and limit the amount of ischemia which was occurring in her brain.

Contact with the patient's son was made. There was a discussion about what was happening, and the patient's son was asked about implementing Alcor's protocols. He indicated that he understood the straight freezing procedure and was willing to help ensure that the hospital would work with Alcor and cooperate with the protocols which were asked of them.

A funeral home was contacted, and they were very cooperative assisting with the initial cooldown of the patient as well as providing transportation to Scottsdale, AZ.

A local mortuary in Phoenix was contacted to receive the patient from Phoenix Sky Harbor Airport.

A hospital administrator called to discuss the protocols which Alcor was asking the hospital to assist with. Specifically, they asked about storage of the patient and who would receive custody of the patient from the hospital. The administrator advised that the hospital would help provide an initial cooldown with ice after legal death was declared, and move the patient to the hospital

morgue for storage overnight. She stated that the hospital morgue held at temperatures around freezing, but she was not sure exactly how cold it was.

The patient's son was contacted to discuss the final steps for the patient. He stated that physicians would be disconnecting the patient from the ventilator and would immediately cool the patient down with water ice. He and other family members would be there to watch and make sure that hospital employees put enough ice around the patient and immediately take her down to the morgue.

4. Stabilization and Transport

Alcor Member A-1765 was declared legally dead at 19:21 hrs MST on August 5, 2016. The patient's son stated that hospital employees had put the patient into a body bag. They then put a significant amount of ice around the head and torso of the patient's body and transferred her to the hospital morgue.

The funeral home contacted Alcor the morning of August 6, 2016. They stated that funeral home employees had received the patient from the hospital and ice was still covering the patient. They transported the patient back to the funeral home and placed her into their cooler while adding more ice. The employees checked on the patient throughout the day and added additional ice as needed.

The funeral home called at 13:35 hrs to say that they were having an issue with the Medical Examiner (ME). State law mandates that any unwitnessed fall causing death would automatically cause the patient to become a Coroner's Case. Alcor explained to the funeral home that the patient's Last Will and Testament directed against an autopsy.

Max More was contacted to provide him an update and to obtain further direction. He directed Josh Lado to contact Alcor's legal representation. An email was subsequently sent as instructed.

At 15:29 hrs the funeral home called to advise that the ME decided that no autopsy would be required and that the ME had released the patient. The funeral home finished all of the paperwork and required permits. The patient departed at 05:15 hrs MST on August 7, 2016.

Steve Graber, Max More, Dr. Harris, and the local mortuary were all notified that Alcor would be receiving the patient around 11:00 hrs, on August 7, 2016.

The patient landed at 10:24 hrs MST on August 7, 2016, on Delta Airlines. She was then received and transported to Alcor at 11:17 hrs.

Member A-1765 arrived at Alcor at 11:33 hrs and was received by Josh Lado and Steve Graber. She arrived in a Zeigler case enclosed within two body bags. There was a layer of ice blocks that were approximately four inches thick underneath the patient, covered by a bed sheet that the patient was lying on. There were four ice blocks around the patient's head and gel ice packs covering her head and chest.

The ice on top of the patient was removed, and she was lifted onto the cooldown tray. Cooldown began at 11:52 hrs MST.

5. Cryoprotective Surgery

No cryoprotective measures were taken. The patient was placed directly into the cooldown box upon arrival.

6. Perfusion Summary

No perfusion was performed.

7. Timelines

August 5, 2016

Notification:
(All times are expressed in Mountain Standard Time (MST)

13:37 hrs Emergency text was received from TeleMed.

13:48 hrs Telephone communication was attempted with the patient's family; a message was left.

13:48 hrs Communication with the N-ICU where the patient was located was obtained.

14:02 hrs Communication with family was established.

14:10 hrs The member's resident physician called to discuss patient care and stated that he would need to speak with hospital administration about Alcor's protocols for stabilization after the member's legal death.

14:40 hrs An attempt was made to contact Suspended Animation; a message was left.

14:49 hrs An attempt was made to contact Suspended Animation; a message was left.

14:51 hrs Communication with Dr. Harris was established. He determined that a straight freeze would be best practice for this patient. Josh Lado was directed to contact the funeral home and set up the receiving process for the patient and her transport back to AZ. The hospital was contacted to advise them to discontinue her ventilator.

15:01 hrs An attempt to contact Suspended Animation was made again. A message was left that this patient would receive a straight freeze.

15:28 hrs The family called for an update and to discuss the protocol that the hospital would be performing after legal death was pronounced.

15:34 hrs The funeral home was directed to receive the patient from the hospital, perform a cooldown and transport her to Scottsdale, AZ.

15:52 hrs A mortuary in Phoenix was contacted to receive the patient upon her arrival.

16:27 hrs The hospital administrator called to discuss proper cooling of the patient and what the expectations from Alcor were.

19:21 hrs The patient was disconnected from the ventilator and legal death was declared. Hospital employees immediately began cooling the patient, according to the family, with ice. She was then transported to the hospital morgue.

August 6, 2016

06:00 hrs The funeral home received the patient's body from the hospital morgue. Ice was present around her head and torso.

09:16 hrs The funeral home director called to provide an update. Patient transportation was to be set for the following morning to Phoenix Sky Harbor Airport.

13:25 hrs The funeral home was contacted for an update. There were problems with obtaining the death certificate and the risk of an autopsy pending the ME's decision.

13:29 hrs Contact with Max More established to gain guidance on current matters.

14:17 hrs Email sent to Alcor's legal representative to update them about legal concerns.

15:05 hrs An update received from the funeral home stated that the ME and the physician who had signed the death certificate were discussing the details about how the patient was terminally injured.

15:29 hrs A call was received from the funeral director stating that they had completed all of the paperwork and required permits. Transportation for the patient was arranged to have her sent to Scottsdale at 05:15 hrs MST on 07-Aug-2016.

15:48 hrs Steve Graber, Max More, Dr. Harris, the local mortuary and Alcor's legal representative were all contacted to update them that all permits and paperwork were completed and the patient would be received the following morning.

August 7, 2016

10:24 hrs The patient landed at Sky Harbor International Airport in Phoenix, AZ.

11:17 hrs The patient was received and transported to Alcor.

11:33 hrs The patient arrived at Alcor.

11:41 hrs The patient and the shipping tray/Ziegler case she was in, were transferred to the church cart.

11:47 hrs The patient was placed on the cooldown tray.

11:52 hrs Cooldown was started. The patient was a *whole body* straight freeze. The goal temperature for this stage was -80 °C.

19:50 hrs Several changes were made to the cycle time; 20 to 4 to 12 to 10 seconds.

August 8, 2016

08:45 hrs Steve Graber noted that the liquid nitrogen (LN_2) in the supply dewar was running low. He decided to wait for Mike Perry's arrival before taking action. Mike was due back to Alcor before noon.

12:20 hrs An alarm sounded. The LN_2 supply dewar had run dry.

12:27 hrs System swapped to another dewar.

13:03 hrs Changed the cycle time from 10 to 7 sec.

18:43 hrs LN_2 was topped off.

August 9, 2016

14:21 hrs LN2 was topped off.

21:00 hrs Hugh Hixon returned and made checks to the setup.

10 Aug 2016

Mike Perry was away; Hugh Hixon took over.

10:17 hrs Hugh Hixon questioned the 7 second cycle time, advised to change it to 15 seconds, which has worked well with neuro patients in the past.

13:03 hrs Topped off the LN_2.

16:36 hrs The patient was transferred from the dry ice cooldown, into the dewar.

16:45 hrs Cooldown was initiated from -80 °C to LN_2 temperatures. Set pronouncement time to present, since it was not available.

August 11, 2016

07:22 hrs Topped off the LN_2.

August 12, 2016

10:32 hrs Topped off the LN_2.

23:44 hrs The thermal camera indicated that the collar seal was hot. This was probably the source of a lot of the noise and grinding dust experienced. It was time to go ahead on the fanless cooldown lid.

August 13, 2016

11:01 hrs Topped off the LN_2.

23:25 hrs Topped off the LN_2.

August 14, 2016

04:44 hrs From on times, the solenoid valve may have been leaking.

15:08 hrs Topped off the LN_2.

August 15, 2016

11:58 hrs Topped off the LN_2. Into soft landing, on time up, LN_2 in the bottom.

20:31 hrs Began end fill of LN_2.

22:45 hrs Filled LN_2.

22:51 hrs Ended data collection.

23:07 hrs Cooldown ended.

Other information:

Estimated LN_2 use:

From 07-Aug-2016 to 11-Aug-2016 = 31" (there was probably some other usage).

From 11–Aug-2016 to 15–Aug-2016 = 45.5".

The total amount used was 76.5" x 46.45 L/inch=3550 liters LN_2 (it may have been ~5-10% higher)

8. Issues & Actions

Issue: Train Steve Graber and other Alcor personnel on how to refill supply dewar during a cooldown.

Action: Completed

Issue: The cooldown box took several hours to sound an *out of temperature bounds* alarm after running out of its LN2 supply. The problem was that the cooldown *out of temperature bounds* alarm parameter was too widely set at +\- 10 °C.

Action: With a new and improved fill system which was recently implemented, Alcor can now safely narrow the *out of temperature bounds* window to +\-5 °C. This means that the *out of temperature bounds* alarm sounds in a more timely manner.

Issue: The patient's nasopharyngeal temperature was not captured when she first arrived at Alcor.

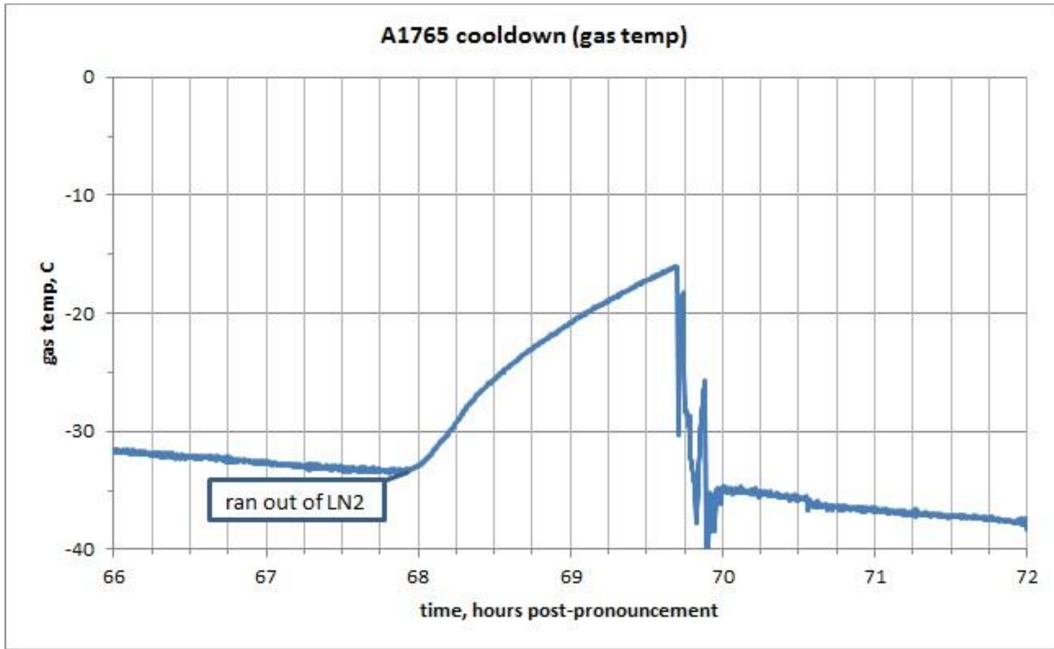
Action: The patient arrived at Alcor and was immediately placed into the cooldown box. There was not sufficient time to insert the temperature probe and get an initial temperature reading.

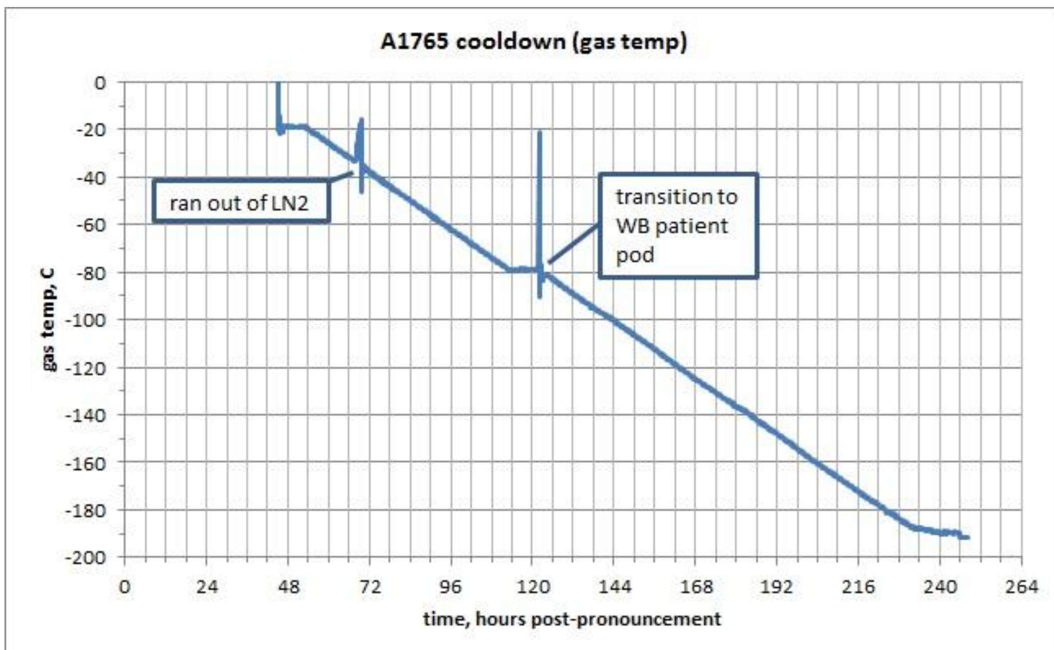
Gathering an initial temperature reading of every patient upon arrival to Alcor is now reinforced as part of Alcor's standard, and moving forward.

Issue: Alcor was unable to reach SA for assistance on this case despite attempts to do so. Upon investigation, it was advised that they did not attempt to call SA's main lines, or the numbers of its employees other than C. Baldwin, whose phone was not functioning.

Action: Ensure that Alcor team members know how to contact SA, by having all numbers available to them. Educate Alcor team members on this issue and its resolution.

9. Graphs





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