Chronology Logan Parker verses Regional Health
Prepared by Lynn Paladino, RN, BS, CCM, CLNC

Date	Time	Source/Page	Entry
		Community Hospital EEG Report Page 12	Logan is 12 years old with cognitive changes (Asperger's) and urinary incontinence. There is no history of seizure but Logan has a strong family history of seizures. Logan's medications were Risperdal, Paxil, Concerta, and Depakote. Impression of electroencephalogram (EEG), a technique for studying the electrical currents within the brain. Tracing is abnormal and reveals evidence of mild to moderate diffuse encephalopathic pattern. There is no lateralizing or epileptiform features seen within the tracing.
		Laboratory Reports	Logan has very high Triglyceride levels for four years. • On 08-23-06, the lowest reading is 333, with a reference range of (0-150) • On 05-11-07, the highest reading is 873 with a reference range of (34-140).
05-29-07		ENT Comprehensive History & Physical & Patient Health History Chart 73998 Page 1-7	Logan Parker is a 17-year-old-male, with a measured height of 68 inches and his weight is 224 pounds. • **Chief complaint**: snoring with possible sleep apnea and enlarged tonsils. • **Reason for referral**: evaluate for obstructive sleep apnea (OSA). (Most of this form is left blank.) **Summary of the checked boxes is as follows:** No Known Allergies (NKA) No allergy testing has been done, nor have any allergy shots been taken. Medications taken by mouth (po)

			• Depakote 1625 mg daily • Lexapro 10 mg (frequency missing) • Zyprexa 25 mg daily • Metformin XL 2000 mg daily **Past Medical History**: • Nose and sinuses: Nasal Allergies • Mouth and throat: Sleep Apnea • Stomach and digestive: Reflux • Mental and emotional: Bipolar, Asperger's, anxiety, depression • Glands, hormones, and sugar control: Insulin resistance **Surgeries and Hospitalizations:** • No problems with anesthesia, being numbed or put to sleep. • No hospitalizations for a medical illness have occurred. • Cystoscopy with Holmium Laser-four procedures have been done. (The Holmium laser is a surgical laser that has been found particularly effective in performing several types of urological surgeries. **Family History**: Ears: hearing loss before the age of 20 • Brother Heart and blood vessels: • Father Glands, hormones, sugar control • Father Logan has denied tobacco in any form, exposure to second-hand smoke, and denies using drugs and caffeine. The use of alcohol question has been left blank. **Review of Systems-General Health**: Nose and sinuses:

			• Congestion • Frequent colds • Frequent nose bleeds • Hay fever • Sinus drainage Mouth and throat: • Snoring Stomach and digestive system: • Heartburn Mental and emotional health: • Nervous anxiety • Sad thoughts more than usual (depressed) Allergies, infections, immune system: • Frequent sneezing • History of hives
05-29-07 05-30-07		ENT-Dictation Office Note/Letter Date of visit Transcription Page 15	**Evaluation of possible obstructive sleep apnea (OSA)**. "Logan has been experiencing some significant weight gain over the past 6-12 months since he has been placed on Zyprexa and over that time has been noted to have severe snoring and occasional episodes of "cessation of breathing." Logan has been having difficulty in school due to falling asleep in class, and although this is one of the side effects of that medication, there certainly could be daytime sleepiness from a nighttime apnea. Logan does awaken frequently at night feeling short of breath. He has had no history of any recurrent tonsillitis, recurrent otitis media, and has not yet had any sleep study performed." The past medical history, surgical history, social history, medications and allergies listed on Logan's health history form was reviewed today in the office. **Physical Exam**: Height 68 inches and weight is 226 pounds **Auditory Canals**: clear with no middle ear fluid.

			Sinuses: nontender. **Intranasally**: there is evidence of some moderate 2+ hypertrophy of the inferior turbinate and a low right nasal septal spur. **Intraorally**: there is no buccal or posterior pharyngeal mucosal lesions. The tonsils are 2+ in size. There is some redundancy of the posterior tonsillar pillars as they extend up to the soft palate, but the uvula itself is normal in size. There is no restriction of Logan's anterior-posterior oropharyngeal airway. A mirror exam of the larynx does reveal obstructed view of the anterior two-thirds of the glottic opening to indicate some posterior displacement of the tongue. Otherwise, Logan's neck has no adenopathy tenderness or mass. **ENT MD**: "Given the high likelihood of sleep apnea, I would like to assess its severity and therefore will have Logan proceed with a sleep study. He will then follow up with me afterwards to assess the results and our further steps." The ENT has placed Logan on a steroid nasal spray.

06-12-207		Consent for Procedure-Sleep Study Page 000035 Consent to Photograph and Record and or Illustrate Page 000036 General Consent Financial Agreement Page 000037	Logan's Mother signed and dated this consent. No witness signature of a health care professional is entered on the form. There is date of 06-12-07 entered next to the blank witness signature line. Logan's Mother signed and dated this consent. No signature from photographer is entered on the form. Logan's Mother signed and dated this consent. No witness signature is entered on the form.
06-12-07		CPAP/Bi-Level Report Page 000016	Logan fell asleep shortly after hook-up. Logan has Cheyne-Stokes type of respirations. He has moderate hypopnea, obstructive sleep apnea, and centrals. Logan's oxygen saturation drops to as low as the upper seventies. Logan meets the criteria for a split night. He is fitted with CPAP with initial pressure at 4 cm water and is increased due to snoring and hypopnea. He does well at 8 cm water. Logan still has sounds and paradoxical respiratory movements which appear as if he might have upper airway resistance syndrome, (UARS) a rare sleep disorder characterized by narrowing of the airway.

<table>
<tr>
<td>06-13-07</td>
<td></td>
<td>Pre-Sleep Testing History and Physical Page 12-13</td>
<td>A History and Physical is required by the American Academy of Sleep Medicine for all patients studied.

Logan answered the questionnaire with the following answers:

History:
YES to the following:

Difficulty initiating or maintaining sleep
Loud or bothersome snoring or possible witnessed apneas
Unrefreshing sleep
Bothersome daytime fatigue or sleepiness
Unusual behaviors during sleep or other sleep related problems and “some cessation of breathing” is hand-written in on the form.

NO to the following:

Possible cataplexy, sleep paralysis, or hallucinations when drowsy or nearly asleep.

Past Medical History:

Height: 68 inches, Weight 226 pounds
Head and neck normal
Thorax and lungs normal
Cardiovascular normal
Back and limbs normal

Evaluate for: Obstructive Sleep Apnea was circled

There are 2 copies of this form:

Page 12:</td>
</tr>
</table>

- Physician signature date on form is **6-13-07.** This has an electronic faxed stamp dated on 06-12-2007 at 10:56 AM. It also has a hand stamped “faxed” without a date.
- A **YES** response to question “Unusual behaviors during sleep or other sleep related problems” with a write in response for please describe “**some cessation of breathing**.”
- Question, “Would you like (name blanked out) to treat if the results are positive?” The **NO** answer is circled.

Page 13:

- Physician signature date on this form is **06-05-07**.
- A **NO** response to question “Unusual behaviors during sleep or other sleep related problems.” “**some cessation of breathing” is missing from this form.**
- For past medical history, Obesity and **upper airway problems** have been circled. They are not circled on page 12
- Head and Neck exam: “normal” is unchecked and “**Nasal Obstruction**” is added.
- Question, “Would you like (name blanked out) to treat if the results are positive?” The Yes/No answer is left blank.

06-12-07	11:20 PM to 6:25 AM	Clinical Polysomnogram Report Page 000020	**Reason for Study**: Rule out sleep apnea. Organic sleep apnea. Age**:** 17 Sex: Male Height: 5 feet 10 inches Weight: 226 pounds BM**I**: 32.4 **Medications**: Depakote, Zyprexa, Metformin HCL, Lexapro, Accutane, Clonidine, and Ativan. **Clonidine** is added to the list of medications, not previously noted on ENT Comprehensive History and Physical or ENT Health History. Logan has a history of loud bothersome snoring, witnessed apneas, restless sleep, night sweats, and bothersome daytime fatigue or sleepiness. His known medical problems include Asperger's and bipolar disorder. The sleep study test began 06-12-2007 at 11:20 PM and ended on the following day 06-13-2007 at 6:25 AM. Logan was studied on room air (RA) The following measurements were made during the recording: • **EEG**- Electroencephalography is an electrophysiological monitoring method to record electrical activity on the scalp that has been shown to represent the macroscopic activity of the surface layer of the brain underneath. It is typically non-invasive, with the electrodes placed along the scalp. Signal intensity: EEG activity is quite small, measured in microvolts (mV). • **EOG**- Electrooculography is a technique for measuring the corneo-retinal standing potential that exists between the front and the back of the human eye. The resulting signal is called the electro-oculogram. Primary applications are in ophthalmological diagnosis and in recording eye movements. The signal range is between 0 to 50 Hz (Hertz-a measure of frequency). • **EKG- or ECG** - Electrocardiography is the process of producing an electrocardiogram. It is a graph of voltage versus time of the electrical activity of

			the heart using electrodes placed on the skin. It is a test that measures the electrical activity of the heartbeat. • **EMG- Electromyography** - (EMG) measures muscle response or electrical activity in response to a nerve's stimulation of the muscle. The test is used to help detect neuromuscular abnormalities. • **Airflow Thermocouple** - Is a probe that measures airflow. • **Impedance pneumography** - Central apnea is routinely detected by transthoracic impedance pneumography. • **Oxygen saturation**- pulse oximetry, sampled 8 times per second. (Blood oxygen level is measured as a percentage, 95 to 100 percent is considered normal. If oxygen levels are below 88 percent, it is considered hypoxic and can cause damage to multiple organs and lead to fatal complications.) **Findings**: It took Logan 3 minutes to achieve sleep with sleep efficiency at 94 percent. He had seven awakenings, 36 arousals including six spontaneous, 11 snore, 17 respiratory and two Periodic Limb Movements (PLM). The Rapid Eye Movements (REM) latency was 119 minutes and there were three REM periods. **Findings without Continuous Positive Airway Pressure (CPAP) for the first 209 minutes**: • Continuous mild snoring • 44 obstructive apneas • 14 mixed apneas • 28 hypopneas- a sleep breathing disorder that causes shallow breathing episodes. Lasted 13-16 seconds and were associated with 10-15 percent oxygen desaturation and/or arousal, awakening, movement. The longest event was a 31- second obstruction, and the lowest saturation was 71 percent.

			Logan was placed on nasal CPAP due to the respiratory disturbance. • Initial CPAP pressure was 4 cm of water. • Pressure was gradually increased to 8 cm of water due to occasional snoring and hypopneas. • Logan had intermittent central-appearing apneas and hypopneas. This resolved after Logan fell into REM sleep at 5:30 AM.
06-13-07	2:45 AM		• Logan had an apnea plus hypopnea while on 8 cm water CPAP for a **Total Respiratory Disturbance of 16 events per hour of sleep and most of these were the central events.** The reason for this finding is unclear.
06-13-07	4:30 AM- 5:30 AM		• Logan was in sinus rhythm with mild sinus arrhythmia with a mean heart rate of 82 beats per minute. • There was no evidence of significant periodic limb movement disorder or any other movement disorder. **This raises concern that Logan may have complex sleep apnea.** **Logan's assessment of Sleep**: Be careful with your capitalization. No need to capitalize sleep. • He feels he had a better than average deep sleep. • The testing equipment made him uncomfortable. • Logan felt sleepy in the morning after the test and preferred to be lying down.
06-13-07			**Interpretating Physician**: • Moderately disrupted sleep with intermittent respiratory arousals and awakenings • Mild soring plus moderate obstructive sleep apnea plus hypopnea total respiratory disturbance index of 27 events per hour of sleep. Typical apneas and hypopneas were associated with mild to moderate oxygen desaturation and/or arousal, awakening, and/or movement. • Organic sleep apnea. • Obstructive sleep apnea syndrome

			• There was general improvement in the apnea on 8 cm of water CPAP, however, Logan had intermittent Central appearing apneas and hypopneas suspicious for some degree of complex sleep apnea. Clinical correlation will be necessary. • Treatment of Logan's OSA will be directed by his physician, (ENT). If any question about his response to that treatment, a repeat CPAP titration should be considered.
06-21-07		Follow up Note after Sleep Study Page 000014	ENT MD discussed surgical intervention with Logan's mother. This would include: • Septoplasty • Possible turbinectomy • Removal of tonsils • Removal of Uvula MD believes this would be enough to bring Logan down to a respiratory disturbance index below 20 at which level "he would have no significant risks with regards to any of the long-term sequelae of obstructive sleep apnea". He also discussed the general anesthesia, the possible need for nasal packing, and all the other risks of bleeding and infection related to the surgery. They would like to proceed.
06-26-07		Predetermination Request Letter Page 000011	Letter to the Medical Review Board to request medical necessity predetermination for surgical treatment of the diagnoses listed: • Obstructive sleep apnea • Tonsillar hypertrophy • Deviated septum • Turbinate hypertrophy

			Procedures: • Uvulopalatopharyngoplasty (UPPP) is surgery to open the upper airways by taking out extra tissue in the throat. • Septoplasty Turbinate excisions (bilateral) is a corrective surgical procedure done to straighten a deviated nasal septum – the nasal septum being the partition between the two nasal cavities. • Obstructive sleep apnea occurs when the muscles that support the soft tissues in your throat, such as your tongue and soft palate, temporarily relax. When these muscles relax, your airway is narrowed or closed, and breathing is momentarily cut off. • Tonsillar hypertrophy is another term for enlarged tonsils • Turbinate hypertrophy-are structures within the nasal passageway. That can become enlarged and can block nasal passageway. • Each nostril has three turbinates which are each made of bone and soft tissue.
07-10-07		Predetermination Process Log Page 000009	Logan's Mother received confirmation that the request for authorization for the surgical day procedures for Logan has been approved.
07-23-07	8:30 AM-8:45 AM	Preoperative Nursing Documentation Page 5	Logan arrives ambulatory for surgery today accompanied by his mother, Pamela. Vital signs (VS) TPR on admission to the Pre-op area are: Temperature (T) 97.9, Pulse (P) 112, (R) Respirations 20, (BP)Blood pressure 144/101 oxygen saturation (O2 Sat) 96%. Logan's BP is elevated today. The normal BP for 17-year-old male is 120/80. **Medical history**: 17-year-old-male, 5 ft 8 inches, weight 230 pounds, has maintained "nothing by mouth" (NPO -Latin for nil per os) for 4 hours for liquids and 8 hours for solids since 9:00 PM 07-22-07.

<table>
<tr><td></td><td></td><td></td><td>Diabetes-insulin resistance, Asperger’s, obstructive sleep apnea, cystoscopy times three.

Logan’s skin is warm and dry. He is alert with regular breathing. Logan denies pain, there is a YES answer to consent form signed for “nose, tonsils, uvula”.</td></tr>
<tr><td>07-23-07</td><td>8:45 AM</td><td>Pre-Anesthetic Evaluation
Page 9</td><td>Anesthesiologist added Morbid obesity, bipolar disorder to Logan’s medical history. The body mass index (BMI) of 36 was also added (BMI greater than 30 is considered as obese). The American Society of Anesthesiologists (ASA) score of 3 was recorded which represents severe systemic disease for Logan. The plan for anesthesia is for general anesthesia. Chest x-ray, and EKG reports are documented as not applicable (N/A). Airway is “adequate,” heart is “within normal limits,” (WNL), lungs are “clear.”</td></tr>
<tr><td>07-23-07</td><td>8:55 AM</td><td>Consent for Anesthesia,
Page 000001</td><td>Logan’s mother signs the consent for surgery for septoplasty with possible turbinates, uvulopalatopharyngoplasty, and tonsillectomy. Anesthesiologist documents that Logan had been fasting since 9:00 PM 07/22/07.</td></tr>
<tr><td>07-23-07</td><td>9:05 AM</td><td>Preoperative Nursing Documentation
Page 5

Preoperative Nursing Documentation
Page 6</td><td>A 20-gauge intravenous line (IV) is placed in the antecubital space (AC) of Logan’s left arm to infuse 1000 milliliters (mL) of Lactated Ringers solution at a keep-vein-open (KVO) rate. Kefzol 1 gram is also infused. Kefzol is an antibiotic that is frequently given prophylactically just before surgery to prevent postoperative infection.

Current Medications
Depakote 2000 mg daily
Zyprexa 20 mg daily
Lexapro 10 mg daily
Metformin 2000 mg daily
Clonidine 0.1 mg at night as needed</td></tr>
</table>

07-23-07	9:30 AM	Progress Note Patient Information Page: 13	**Operative note**: Preoperative and Postoperative diagnosis Obstructive Sleep Apnea, Nasal Obstruction, Tonsil Hypertrophy Procedures performed under general anesthesia were septoplasty, turbinectomy, tonsillectomy, and uvulopalatopharyngoplasty (UPPP). Drains: None; Complications: None, Estimated blood loss: Minimum, Condition: stable to PACU.
07-23-07	10:15 AM	Anesthesia Perioperative Documentation Intraoperative Notes Page 9	Anesthesia started, monitors are applied to Logan, and intubation with 7.0 endotracheal tube (ETT) placed. The endotracheal tube was then connected to a ventilator, which delivers oxygen to the lungs. Initial vital signs: Pulse: 128, BP 155/75, oxygen sat 99% Medications administered intravenously in the operating room, (OR): • Decadron 10 mg (steroid, anti-inflammatory) • Rocuronium 5 mg (muscle paralytic) • Anectine 200 mg (muscle paralytic) • Propofol 150 mg (sedation) • Oxygen 4-6 liters • Labetolol 10 mg (antihypertensive) • Zofran 4 mg (anti-nausea)

07-23-07	10:25 AM	Operative Documentation	Surgery started
07-23-07 07-23-07	10:45 AM 11:17 AM	Anesthesia Perioperative Documentation Intraoperative Notes Page 9	Morphine 5 mg administered IV (narcotic for pain relief). Vital Signs: P 105, BP 155/75, oxygen sat 99%, End -Tidal Carbon Dioxide (ETCO2) 53. Surgery completed. Vital signs: P 105, BP 120/50, oxygen sat 99%. Estimated blood loss 50 ml. **Discharge Criteria/Orders**: • Stable • Tolerate PO liquid • Dressing checked • Able to ambulate • Nausea /vomiting, dizziness minimal • Swallow, cough, gag reflex intact • Alert and oriented • Given discharge instructions • Recovery score 10 (Aldrete Score) • No respiratory distress • Voided • Responsible adult present
07-23-07		Operative Report Page 16-17	**ENT Operative Report**: Procedures performed under General anesthesia:

			• Septoplasty • Bilateral inferior turbinectomy • Uvulopalatopharyngoplasty • Tonsillectomy **Complications**: None **Indications**: Logan is a 17-year-old male with a history of bipolar disorder who was noted to have significant daytime sleepiness. He underwent a sleep study, which showed a respiratory disturbance index of 27 events per hour, placing the patient in the mild to moderate sleep apnea category. **Logan attempted CPAP therapy but due to his underlying bipolar disorder he was unable to tolerate the facial mask and we discussed surgical intervention.** Based on the abnormal physical findings it was recommended he undergo the procedure as described above. The need for postoperative nasal packing as well as the risks of bleeding and infection and postoperative pain regimen were all discussed with the patient and his mother who is a nurse. She granted her consent. **Operative Report Summary**: Bilateral tonsils were removed, the soft palate was resected, the deviated septum removed, and the inferior turbinates were reduced. All bleeding was controlled. The nasal cavity was copiously irrigated. Telfa (non-adherent dressing pad) and ointment packing was placed. Logan was awakened and extubated taken to the recovery room having tolerated the procedure well.
07-23-07	11:25 AM	Post-Operative Nursing Documentation and Notes Pages 7-8	Logan is received in Post-Anesthesia Care Unit (PACU) by stretcher sedated with oral airway in place and with blow-by oxygen in place. Monitors are placed on Logan, packing intact in nose with gauze drip pad in place. Ice pack placed to throat. Lactated Ringers IV infusing. T 98.1, P 104, R 22, BP 144/76, oxygen sat 98%. **Logan's Post Anesthesia Recovery Aldrete Score Time: 6** 11:25 AM (6), 11:45 AM (7), 12:45 AM (9), 1:00 PM 1(10), 1:25 PM 10

			(The Aldrete score is a measuring tool to determine when patients can be safely discharged from the PACU. The Post-Anesthetic Recovery Score assesses activity, respirations, circulation, consciousness, and color. A perfect score is 10. A passing score is 9.)
07-23-07	11:45 (12:45 was written over to 11:45)	Post-Operative Nursing Documentation Page 7	Vital signs P 109, R 24- (22 was written over to read 24.) BP 158/88, oxygen sat 92%
07-23-07	12:00 PM	Post-Operative Nursing Documentation Notes Page 8 Post-Operative Nursing Documentation Page 7	Logan remains sleeping with regular respirations, unresponsive, and vital signs stable (VSS). This documentation is a different writer than the rest of the documentation on this page. Vital signs P 111, R 24 (22 was written over to be 24), BP 150/79 oxygen sat 93%
07-23-07	12:20 PM	Documentation Post-Operative Nursing Notes Page 7-8	Nurse's notes state Logan continues to sleep, BP up, medications given per order. Logan moved head side to side slowly but remained unresponsive to verbal stimuli. Vital Signs: P 110, R 24, BP 166/89, oxygen sat 90%

07-23-07	12:21 PM	Notes Page 8	Labetalol 10 mg IV given by the nurse for increased BP. The notes have misspelled this medication, “Latbetalol”.
07-23-07	12:31 PM	Notes Page 8	Nurse documents BP down to WNL (within normal limits), but no documented BP.
07-23-07	12:35	Post-Operative Nursing Documentation Page 7	Vital Signs: P 111, R 24, BP 147/81, oxygen sat 95%
07-23-07	12:43 PM	Notes Page 8	Logan was sitting up eating a popsicle and sipping Sprite. Medications were given per orders for pain and shivering. There is no documentation of what medications were given at 12:43.
07-23-07	12:44 PM	Notes Page 8	Parents at bedside. Discharge (D/C) instructions given to parents, no questions or concerns voiced.
07-23007	12:45 PM	Postoperative Nursing Documentation Page 7	Aldrete Score was 9. BP not documented at this time.
07-23-07	12:50 PM	Documentation Post-Operative Nursing and Notes Page 7-8	Vital Signs: P 116, R 24, BP 148/90, oxygen sat 90% Morphine 2 mg IV for pain level 4/10. (Pain scale is 0-no pain, to 10 the worst pain ever)

07-23-07	12:53 PM	Notes Page 8	Morphine 2 mg IV for pain 3-4/10
07-23-07	1300 (1:00 PM)	Post-Operative Nursing Documentation And Notes Pages 7-8	Aldrete Score was 10. No BP documented at this time.
07-23-07		Anesthesia Orders Page 10	Most of this form is left blank. Orders Completed: • Morphine 2-4 mg IV every (Q) minutes up to 20 mg PRN (as needed) pain • Promethazine (Phenergan) up to 25 mg IV slowly PRN nausea • Labetalol 10 mg q 3 minutes to keep SBP (systolic blood pressure) less than 160
07-23-07		Discharge Instructions Page 14	Printed discharge instructions with circles and handwritten orders: • Do not drive a car, operate power equipment, or climb onto ladders, drink alcoholic beverages, or sign legal documents for remainder of the day.
			• Notify physician of temperature greater than 101 F. • Notify the physician immediately if there is any heavy bleeding or uncontrolled pain. • Dressing instructions: Packing removed per Dr. (ENT) • Start with light foods, cold today then soft • “Do not take pain medications on an empty stomach.” This was marked through. • Special instructions: increase fluids. • Appointment at your physician’s office tomorrow.

<table>
<tr><td>07-23-07</td><td>1324
(1:24 PM)</td><td>Notes
Page 8</td><td>The nurse documents that Logan ambulated to the car in stable condition with father and mother.</td></tr>
<tr><td>07-23-07</td><td>1651
(4:51 PM)</td><td>Pre- Hospital Patient Care Report
Pages 2-3</td><td>Ambulance on scene.

Medications listed on form:
• Lortab-first time med appears on Logan’s medication list
• Depakote
• Zyprexa
• Clonidine
• Metformin
• Hydrocodone-APAP-first time this medication appears on Logan’s medication list.
On arrival to scene at Logan’s home at 6602 Jonathan Ct Avon 46123, found unresponsive person on floor with no pulse or respirations and dark brown fluid and bright red blood coming from person’s nose and mouth. Mother and another woman were performing CPR.

Quick look paddles show asystole (no cardiac rhythm). Ventilation with bag valve mask (BVM) with oxygen until intubated (placed a breathing tube). Paramedic inserts IV. Paramedic administers epinephrine (Increases BP and blood flow) and atropine (can treat very low heart rate).

Logan’s mother states he had surgery today to remove tonsils and uvula due to sleep apnea. Logan slept most of the afternoon and had SOB (shortness of breath) and difficulty breathing.

Mother states that his oxygen levels were low 80% and high in the hospital at 85%. The mother monitored his earlobes and nailbeds at home, which were bluish most of the day.</td></tr>
</table>

			She went to straighten his head to open airway and notices he is apneic, calls 911 and begins CPR. A total of epinephrine 1:1000unit, 1 mg IVP (intravenous push-a bolus of medication at one time) times 4 and atropine 1 mg IVP times 3 given by ambulance crew. Logan exhibits pulseless electrical activity (PEA) enroute to the hospital.
07-23-07	1717 (5:17 PM)	Pre-Hospital Patient Care Report Pages 2-3	On arrival to the emergency department (ER or ED or EC), the ambulance crew notes Logan has a rapid strong radial pulse. Report is given to ED Attending and staff and care is transferred to them.
07-23-07	1717-1740 (5:40 PM)	Regional Health Emergency Record Page 7	**ED Attending notes**: Patient arrives intubated, is initially in asystole and then PEA. Patient is in a sinus rhythm briefly and then back to PEA. He receives 4 mg epi (epinephrine) and 3 mg of atropine while enroute to ED. At ED, he receives an additional 3 mg of atropine and 2 mg of epinephrine. Dopamine is also added. Logan has no response to the medications, and pacing is tried but the pacemaker does not capture the heart. Bicarb (sodium bicarbonate)1 ampule is given, and blood is administered with no response. Logan's parents are at bedside during the entire code with a care coordinator
07-23-07	1739 (5:39 PM)	Regional Health Emergency Record Page 8	Accu-check (finger stick blood sugar) was done with results of 401. (Normal range is 70-105 mg/dL).

07-23-07	1740 (5:40 PM)	Regional Health Emergency Record Page 9	Logan was pronounced dead, and the coroner was notified.
07-23-07	1745 (5:45 PM)	Regional Health Emergency Record Page 9	Primary care physician is notified.
07-23-07	1822 (6:22 PM)	Regional Health Emergency Record Page 9	Coroner arrives in the ED and organ procurement agency is also contacted. An autopsy is requested.
07-23-07	2007 (8:07 PM)	Regional Health Emergency Record Page 9	Logan's body was transported to the morgue accompanied by security and copy of the chart for the coroner.
07-24-07	8:30 AM	Coroner's Autopsy Report Page 1	The coroner reported the cause of Logan's death was due to hypertrophic cardiomyopathy (thickening heart muscle) complicated by complex sleep apnea with contributing cause of hepatic steatosis and obesity. The manner of death was natural.

			Autopsy findings included: • Enlarged heart (Cardiomegaly – 460 grams) with biventricular hypertrophy • Patchy fibrosis and redundancy of mitral valve suggestive of prolapse (mitral valve prolapse is a condition where the blood leaks backward through the mitral valve) • Focal endocardial fibrosis of left ventricle • Moderate laryngeal edema and generalized erythema (redness) of upper tracheal mucosa. • Moderate patchy hemorrhagic aspiration/congestion-related RBC (red blood cells) extravasation of both lungs, no vital reaction (consistent with perimortem events) • Bilateral pulmonary congestion and edema. **Additional Findings**: • History of complex sleep apnea (elements of both obstructive and central). • Hepatosplenomegaly with fatty change/early fibrosis of liver. • Mild cerebral edema. • Focal 1.0 cm red-purple module of pancreas consistent with accessory spleen • Moderately enlarged thyroid with nodular appearance. • Status-post surgery for obstructive component of sleep apnea including nasal septoplasty and tonsillectomy (7-23-07). • History of autism, bipolar disorder, remote problem involving left renal pelvis (2004), focal skin infection of legs, and insulin resistance. • Obesity, moderate **Toxicology Results**: **Blood**: • Morphine 10.5 ng/ml • Hydrocodone 29.4 ng/ml • Propofol 0.061 ng/ml

			• Citalopram 62.1 ng/ml • Olanzapine 262 ng/ml • Tryptase 3.51 **Urine**: • Morphine 6590 ng/ml • Hydrocodone 308 ng/ml • Hydromorphone 95 ng/ml Vitreous: negative for volatiles Metabolic Abnormality Evaluation: Negative