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Intensive Care Sample Case

Ventilator breathing tube removed, vomiting and negligent resuscitation causing death.

These voluminous medical records were grossly out of order (accidentally or intentionally?). However, by reading every page I was able to find all the relevant pages, which document all the facts.

Before I discuss the factual details in this case I need to inform you of some of the basic standards of care.

When a stomach suction tube (also called a NG (nasogastric) tube, OG (orogastric) tube, lavine tube, and feeding tube) is used, it must pass into the stomach and not end in the esophagus (food pipe) above it, or it will not function properly.

Any major operation can cause a temporary cessation (ileus) of the intestinal tract. When the NG tube is placed on suction, unless it is a double-lumen vented "sump" type, which self-clears with continuous suction, it should be on low intermittent (gomco) suction and must be manually irrigated every hour to be sure it is not clogged.

Before any patient is fed via the tube, the stomach and intestinal tract must be functioning. The hourly and 8 hour nursing shift drainage needs to be minimal (usually less than 100 cc = 3 ounces), and the patient should not be nauseated.

When a patient is on a ventilator, and if they are agitated they need to be sedated and soft (padded) wrist restraints need to be used to prevent the patient from pulling out the endotracheal (breathing/ventilation) tube, and other tubes. This ventilation tube has a soft

balloon cuff surrounding its lower inch, which forms a seal between the outside of this flexible plastic tube and the inside of the trachea (windpipe). It is inflated via a small parallel tube and it must be checked hourly to be sure it is not leaking. It allows the ventilator to use adequate pressure and prevents aspiration (vomit passing around the balloon cuff and entering the lungs). If it leaks, the ventilator can not achieve proper lung inflation pressure and air comes out the mouth, around the tube instead of only through it.

A patient can not be suddenly taken off a ventilator. They must be weaned. The ventilator has an ability, when it is set up, to not only force oxygenated enriched air into the lungs, but by not letting the exhale pressure to go to zero (equal to room air pressure), by it maintaining this Positive End Expiratory Pressure (PEEP), it helps prevent the collapse of air sacs (alveoli) and thus improve patient oxygenation as measured by the arterial blood gas (ABG) studies. The patient has to be off PEEP and have good ABGs before the ventilator is turned off and the patient is allowed to breathe on his own, and still have ABGs before the endotracheal tube is removed. If it comes out too soon it must be re-inserted without any delay.

Medical records must be accurately kept and not falsified or contradictory.

The patient had known severe chronic obstructive lung disease (COPD) from smoking. The Surgeon, Dr. #1, told the patient to stop smoking which he did, but he only waited one week to operate. This was a needed but not emergency operation. At least one month or more should have passed, and the patient should have been under the direct care of a Pulmonary Specialist. I can not tell if such a specialist was caring for him pre-operatively. Pulmonary function tests (PFT) should have been done along with pulmonary physiotherapy to get his lungs in the best condition, considering his long term and recent heavy smoking history. This does not appear to have been done, and would be substandard (negligent) care. It put him at much greater risk for the need of the ventilator (with its associated endotracheal tube), and was one of the contributing factors to his "arrest".

The aortic valve replacement surgery on 9/21/99 was indicated (although it was not an emergency) and performed properly. The operation was complicated by great difficulty taking him off the heart-lung (bypass) machine. He also required extra medication and time in the operating room for his lungs to oxygenate him and he also needed the use of an Intra-Aortic Balloon Pump (IABP) to help boost his blood pressure and it remained in his artery for one day. That was good care.

The patient was frequently agitated and was ordered to be in soft wrist restraints and also was ordered to receive 10 mg of Morphine, Phenergan (a sedative and anti-nausea drug) and Versed (much more potent sedative than Valium), and all not only sedate but depress

respiration's (stupify and interfere with the brain's stimulus to initiate and maintain a normal and deep breath exchange). He also was in the wrist restraints for both arms (bilaterally), as the nurse's notes show (see 9/23 at 0435). But he still pulled out his chest tubes on 9/23. This is not proper restraint and care.

Also, the drug Pavulon was ordered and he received it. This drug is like curare and paralyzes all the muscles to keep a patient from "fighting" the ventilator as well general agitation as its secondary effect. This allows the ventilator to fully control this drug induced non-breathing state. It is also used to fully paralyze a patient to allow the insertion of an endotracheal tube (intubation).

On 9/21, the printed standard order of Dr. #1, order #15 says: "NG tube insert low continuous suction". If this was the standard one lumen (passageway like a straw), that would not be proper because it would suck the stomach into the tube's openings and thus block the fluid from passing. Which type of tube was used? I think it was the double lumen "sump" type that can use continuous suction.

On 9/21 the Nutritional Therapy department of Hospital #1 was consulted and suggested "Promote with Fiber" to be started at 10 cc (1/3 ounce) per hour and increased until 70 cc (2 1/3 ounces) was reached.

On 9/22 the record shows that NG/salem sump (double lumen tube which can go to continuous suction) drained 325 ml = cc = 11 ounces at 0530. It drained 150 mL at 1345 and 200 mL at 2130. This would be borderline to start tube feedings. 20 cc of tube feedings per hour were started at 1300 on 9/23. It was increased to 30 cc (one ounce) per hour at 0100 on 9/24. He received a total of 327 ml by 6 a.m. (0600) on 9/24 (noted on the intake and output part of the record that actually has the date of 9/23 on top because the 24 hours began at 0700 on 9/23).

On 9/23 at 1400 he was nauseated. It says "patient mouthing (he could not talk with the endotracheal tube passing through his larynx (voice box) "throw up", medicated with phenergan". The residual in the "stomach" when the nurse suctioned the tube was only 40 ml (cc) at 1400 and 50 ml at 1900.

They may have been feeding him orally or changed the "oral gastric tube" or only pushed air through it (air bolus) at 1530. You can listen over the upper abdomen to hear air enter the stomach when forced through the tube by a bulb syringe. The nurse noted the tube feeding was "in progress at 20 cc/hour with minimal residual obtained".

At 2350 (11:50 p.m.) on 9/23 "patient gagging, asked if he felt nauseated, patient nodded yes. Patient very agitated". This note was through 9/24 at 0145. He was give 8 mg

morphine IV (intravenously), with 25 mg of phenergan. At 0430 he was agitated and was given 5 mg of morphine and 2 mg Versed.

Through 1200 on 9/24 he was tube fed at the rate of 30 cc (1 ounce) per hour. This was increased to 40 cc/hour at 1300. The residual at that time was noted to be 20 cc. The 4 hourly check for residuals in the stomach on 9/24 through 2300 were low (50 cc, 10 cc 30 cc) the hourly rate was increased to 50 cc at 0200 on 9/25. The residual at 0400 was only 20 cc.

On 9/24 at 1850 (6:50 pm) the nurses note says: "ETT (endo-tracheal tube) secured at lip". This is the standard of care.

On 9/24 at 2215 it says "nods 'yes' to 'are you nauseated". Gagging noted. 0 zero residual TF (tube feeding). Medicated with phenergan per MD order." That nurse did not verify the position of the NG tube by the use of an air bolus. That is not acceptable care. He was nauseated and gagging. The position of the NG tube should have been verified. A small residual volume means nothing if the tube is in the esophagus and not in the stomach. A zero residual is a "red flag" and was not heeded.

He had no stool for a least two days despite all this fiber. His intestinal tract was not yet functioning and that was another "red flag", and was not heeded.

On 9/25 at 0000 (midnight) he was agitated and medicated. Also both at 0230 and 0450. The "Medication Administration Record" notes that he received Versed (midazolam) 2 mg (milligrams) at 0000, 0450, and 0500. It is incorrectly recorded in the box under the "second shift, 15:00 to 22:59", instead where it belongs under the "Third Shift, 23:00 to 6:50". The time at 0450 appears to be altered. Why? Was it 02:50 as the nurses note says or 04:50 on the Medication Administration record.

The next note is on the top half of the patient care (nurses) notes page with a large "X" on the bottom half. It says: "9/25 0500 Patient fighting ventilator. X-ray here to do x-ray. Patient trying to sit up. Fight ventilator. Medicated 2 more of Versed (that makes a total of 4 mg in 10 minutes). M.D. aware. Gagging. Vomited around tube. (Therefore the NG tube was blocked or not in his stomach). Cuff possibly popped (it has to be checked every hour for proper inflation to just make a seal when the ventilator is forcing air through the endotracheal tube). Extubated per Dr. #1 (contrary to what the family was told and the other records state). RN #1.

"9/25 0005 Watching closely. Respirations fast and shallow (from the respiratory depressant of the 4 mg of versed he just received 5 and 15 minutes before as two 2 mg

doses). Responds quickly. Dr. #1 at bedside. Reintubated ". HR (heart rate) 168 (two times normal) with periods of bradycardia (slow heart rate from lack of oxygen) R.N. #1"

"9/25 0506 Code (cardiac resuscitation) in progress. See code sheet. R.N. #1".

The two pages I have for the "Cardiopulmonary Resuscitation Record" start 0510 (not 0505) and was for the intubation "by Dr. #1". The first medication started was at 0535 when there was no blood pressure recorded (blank box, not zero's). The first recorded blood pressure was at 0545 and was 86/40 (shocky).

One of the CPR "team" members was Nurse #1. The others were Dr. #1 and 4 Nurses.

The "comments" section on the right of the large "Hospital Ventilatory Support Flowsheet" notes that at "0500 patient extubated self".

On 9/24 a pulmonary doctor noted on the "Physician Order Sheet": "In am (morning) weaning parameters". Obtain a copy of those weaning parameters.

Dr. #1 ordered the tube feedings on 9/23, and followed the nutritionist's recommendation.

On 9/22 Dr. #1 ordered "Cetacaine Spray (now)". That is a topical anesthetic, which can numb the throat and increase the risk of aspiration. How often was it used and when?

On 9/21 Dr. #1 correctly ordered "place patient in soft immobilizers while on ventilator".

According to the "Permanent Graphic I & O (intake and output) Record" he received 182 cc (6 ounces) of tube feedings the 8 hour morning shift on 9/24 and 320 cc (11 ounces) the afternoon/early evening shift but nothing is filled in for the night shift.

Dr. #1 wrote a note on 9/25 at 6:15 am: "Patient self-extubated with his tongue at 5 am during emesis (vomiting) of tube feedings (could not happen if it was secured by tape to his lip and face and if the balloon cuff was properly working; what brand tube was used and was this tube tested and saved. Possible product liability if the cuff was defective or additional negligence if they re-used the tube as the anesthesiologists sometimes do). I was in the unit at the time. Placed on 100% mask (100% oxygen via a mask over his nose and mouth).

This is negligent to do with a vomiting patient or one who just vomited and often will again, because it holds the vomit in the mask and will cause him to aspirate as he tries to inhale!) but developed decreased sat (oxygen saturation of his blood: hypoxia) within 5 minutes. Reintubated by me /s difficulty" If he was there and reintubated and ventilated

him in time, he would not have developed anoxic encephalopathy (brain damage from lack of oxygen) as documented by the neurologist and the EEG (electroencephalogram) and other doctors.

The patient became shocky and needed "CPR on and off for 30 minutes".

A bronchoscopic procedure was done at 0745 by the pulmonary Dr. #2 and noted "no gross food particles". Through this flexible lighted telescopic device, fluid was inserted and suctioned for analysis by the pathologist. He (Dr. #3) noted on the "Bronchial washings" that there was "foreign material consistent with aspiration".

On 9/24 at 10:05 am the arterial blood gas study while on 7.5 cm of PEEP (a moderately high pressure), the PCO₂ (carbon dioxide) was slightly elevated to 46.21 (normal is 35-45).

On 9/25 at 04:47 (just before the 4 mg of Versed) the carbon dioxide was higher at 50.31 with 5 cm (less PEEP). He was not "weaned" and could not be/remain extubated.

There should have been no "observation" of this patient. He should have been immediately re-intubated. He was not fully weaned to zero PEEP, with acceptable arterial blood gas levels. Furthermore, he had been heavily sedated with 4 mg Versed which will further depress his respirations. (see the PDR: Physician's Desk Reference and/or drug inset warning required by the F.D.A).

At 0540 the repeat ABG shows a low PCO₂ at 27.3 consistent with over-ventilation (acceptable) but there is a negative "base excess -15.9" consistent with prolonged shock and possible inadequate CPR efforts.

On 9/24, the two blood levels of the drug theophylline (a bronchial dilator) were below the therapeutic range of 10-20. They were 8.5 and 7.5 and there was an asterisk (*) noting an abnormal level. Another reason not to wait to re-intubate him. Dr. #2 was in charge of adjusting the theophylline doses. Dr. #2 was also following the chest x-rays and is also responsible for this drug dosing.

On 9/21 the chest x-ray report notes "Multiple support devices appear in good position".

On 9/25 it says "Portable (x-ray) study at 05:20 am shows the support catheters to be similar in position to the previous study. There is a nasogastric tube shown with the tip not optimally seen but projects to the level of the distal (lower third) esophagus. It was not in the stomach.

It should have been adequately taped to his nose. Obtain good copies of this and the previous chest x-rays (9/20, 9/21, 9/23 at 05:47, and 9/23 at 18:36 and any others before 9/25 at 05:20). It may show its location in the esophagus. The Experts should view them.

After the resuscitation started, at 5:30, Dr. #1 ordered that he be given the drug Pavulon to make him placid (paralyze him), but that should have been given immediately upon extubation (endotracheal tube removal), so he could easily be re-intubated. Also, at the same time firm pressure should have been applied to his cricoid cartilage (larynx) to compress the esophagus (food pipe) against his spine, so that food could not regurgitate up into his mouth, and thus prevent aspiration.

The irreversible brain damage was caused by a number of negligent acts as described in detail above.

In brief summary: This non-emergency indicated operation should have been delayed more than one week to allow his lungs to recover. Therefore, he would not have been on a respirator for days after surgery. For whatever reason (popped balloon cuff without documentation of such, or self-extubation "by his tongue," or hands, or by Dr. #1) should not have happened and there should have been no delay in reintubating him with protective cricoid pressure, since he was grossly sedated and respiratorily depressed by 4 mg. of Versed. He should not have had a mask placed over his face (nose and mouth) to ventilate a patient who just vomited and was at high risk to vomit again and aspirate. Also, the patient should not have had continuing tube feedings when he was nauseated. The feeding tube's position was in the esophagus, and not in the stomach since there would have been a large residual (not zero), that would not have ended up in vomit and aspiration, under a negligently applied face mask, by Dr. #1.

The hospital, its ICU (Intensive Care Unit) Nurses, Dr. #2 and especially Dr. #1 departed from the proper standards of care for all the reasons noted above, and their negligence was the proximate cause of his permanent brain damage from lack of oxygen which was contributed to by his profound shock and CPR need caused by the same anoxia (lack of oxygen).

I suggest the following Experts in the following order: Anesthesiologist, ICU Nurse, Pulmonary Disease and Thoracic Surgeon.

I suggest you also obtain the cardiac catheterization report that documented the severity of his aortic valve insufficiency for a Cardiology Expert to review with these records to

confirm the necessity for the operation, and note how extra weeks delay would be reasonable.

Enlarge that Nurses note page stating the Dr. #1 extubated the patient, for the jury, and depose "RN #1" who wrote it with each minute noted as events occurred.