A Costly Complication: Venous Needle Dislodgement

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We have seen amazing advances in medicine in the past 65 years. Diseases that would have been fatal in 1945 are now usually treatable and many are curable. More and more advances are made every day, but modern medicine can come with a hefty price tag. Treatments can be very expensive costing thousands if not hundreds of thousands of dollars. Specialized treatments, procedures, and medications can quickly add up to momentous amounts. In looking at the cost, it's not just the price of the treatments. Patients may suffer, and new complications may occur due to the risks and side effects of the treatments themselves. A complication in medicine is an additional problem that arises following a procedure, treatment or illness and is secondary to it. A complication complicates the situation.[1]

Every treatment and procedure has associated risks and complications. Complications may delay the recovery time for a patient, have an effect on the patient's ability to recover from the primary illness, and could also result in death.

Creating a Balance

In order to better understand how certain inherent complications, such as venous needle dislodgement (VND) can be avoided, it helps to be aware of the safety measures that help guide medical treatment.

Maintaining a reasonable balance between safe, high-quality patient care and cost containment is a never ending balancing act. It requires a consolidated effort from the medical professionals, facilities, insurers, and the patient.

- The medical professionals are responsible for carrying out care that meets the acceptable guidelines, and providing assessments of the patients so complications may be identified and treated as necessary.
- The facility's role is to ensure that the medical professional employed in the clinics are well trained and carry out safe patient care, according to policies and procedures. They also ensure that the facility's professionals are trained on the safe use of the equipment.
- Insurance companies, many times in the form of managed care companies, contribute by setting forth their philosophy of providing the safest, highest quality healthcare while controlling costs.
- Patients are assuming an even larger role in their care. Patients are being educated about their diseases and treatments so they can assume an active role in their care.

Costs to provide the safest and highest quality of care are carefully calculated. Unexpected expenditures for complications arising from a treatment, or expenses related to liability issues can interrupt the delicate balancing act.

Focus on Safe, High Quality Care

In the early 1980s professional medical associations, as well as insurance companies and voluntary organizations began the process of identifying the best methods for treating diseases and illnesses consistently.[2]

By the late 1980s, the American Medical Association, working with medical specialty societies, launched a major initiative that signaled the endorsement of medical standard-setting by the organized medical profession.[3] One of medicine's goals was to raise the quality of patient care by developing written guidelines for the management of diseases and illnesses, as well as treatments and procedures. The collaborative effort resulted in the development of medical standards of care, which are in use today. Evidence-based medicine is also used in U.S. healthcare. It is best described as means integrating individual clinical expertise with the best available external clinical evidence from systematic research.[4]

Some of the goals of standards of care include: improving patient outcomes and quality of care, preventing duplication and overuse of services, controlling costs, and eliminating or reduce costly complications. Standards of care do not refer to one thing. There are several categories that fall under the term standard of care:

- Standards of quality: statements defining the minimal level of performance,
- Clinical practice guidelines: statements to assist practitioners in decision making
- Medical review: assesses the appropriateness of decisions, services, and outcomes
- Performance measures: monitors quality, practice guidelines, and medical review criteria

Dialysis

Dialysis is an example of a treatment that has dramatically changed the lives of people with renal failure. The short-term goal of dialysis is to correct fluid and electrolyte imbalances and remove toxins. Long-term goals include optimizing the patient's functional status and blood pressure, preventing uremia, and improving the patient's quality of life and survival.

Medical professionals and patients are constantly alert for possible complications that may occur as a result of the treatment before, during and after a dialysis. Because dialysis affects every system in the body, the list of potential complications is long. Some examples are: decreased blood pressure, cramps, increased temperature, heart irregularities, air embolism, infections, seizures, low oxygen level, and VND. Some complications are more common than others, and some pose a greater threat than others to the well-being of the patient.

VND

One of the most serious complications in dialysis is venous needle dislodgement. If the venous needle becomes dislodged or disconnected from the vascular access, large amounts of the patient's blood may be pumped outside of the patient's body in a matter of minutes. For instance, if a dialysis machine is set to pump the blood at 400 mL/min, the patient loses the equivalent of 13 ounces of blood (over 1 ½ cups) every minute. This can have tragic results if the dislodgement isn't recognized immediately. Dialysis machines are required by law to have pressure alarms built into them that are set to be triggered if the pump pressure falls below a specified amount. Unfortunately, once the end of the needle is out of the patient's access, and the blood is being pumped into the bed or chair, there is very little leeway in time before the patient experiences a massive hemorrhage or dies from exsanguination.

New information on the incidence of VND, based on recent statistics, indicates it occurs much more frequently than what was once thought. More than 200 needles dislodge everyday.5 More than two patients have a VND with a serious outcome everyday.6 More than two patients die every week due to VND.[7]

If dislodgement is recognized early, the patient may not lose enough blood to warrant any additional treatment; however, it is such a rapidly occurring incident that large amounts of blood may be lost very quickly if intervention isn't begun almost immediately.

Home Dialysis

Home dialysis, as opposed to in-center dialysis, is a growing trend. Home dialysis allows patients to dialyze at home instead of having to travel to a dialysis center. Patients need to qualify to be eligible for the program. Most patients who choose home dialysis enjoy many benefits, including the flexibility to have more control over when they get their treatments, being able to spend more time with their family and the ability to continue to work. Home dialysis also allows patients to learn more about their disease and how it is treated.[8] Patients who dialyze at home face the risk for VND as well. It is one of the most frequent concerns they have. They worry that they may not immediately detect dislodgement.

Cost of VND

Several areas of cost should be examined. The first is the cost of medical care.

Minor VND: Limited intervention in the form of blood transfusion (approximately $620 per unit) and an extra dose of Epogen (approximately $520) that can be carried out in the dialysis clinic is approximately $1,000. Newly published research (April 5, 2010), finds the cost of blood transfusions is significantly under-estimated, and establishes the true cost at $522 to $1,183 Per Unit.[9]

Serious VND: Hospitalization for blood loss anemia four days equals approximately $114,000. One day of anemia therapy includes Epogen, blood transfusion, iron, and possibly plasma expanders or albumin coming to approximately $28,500/day. An emergency room visit may cost approximately $15,000 or more depending upon what is done.

Example: A patient in the ER for four hours receives oxygen at 2 liters/min., blood draw for routine panel, and an abdominal CT scan equaling a bill of $16,483. Intensive Care Unit hospitalization (one day) ranges from approximately $10,000 to $20,000 and up. The cost range is from approximately $114,000 to $150,000 and up

The above approximate costs were derived from Internet research utilizing U.S. hospital websites that provide pricing information on emergency department charges, room charges including intensive care, and procedures and medications. Other costs include lost income from patients not having treatments, cost of liability claims, and cost of brand image damage.

Liability

Malpractice and wrongful death claims related to VND can be costly. Patients or surviving family members may seek legal counsel in instances when serious harm or even death is the result. Examples of VND claims may include:

- The patient wasn't monitored closely resulting in VND
- Medical personnel silencing the pump alarm, but not checking the access site resulted in VND
- The blood lines were secured to the bed or chair, and became caught resulting in VND
- The needles weren't taped securely allowing needle to pull out resulting in VND
- Clinic didn't use available blood loss alarm
- Patient death

Examples of a VND cases: *Disconnection of hemodialysis venous needle resulting in exsanguination of the patient.* In this case, the patient's family claimed that the patient was confused and left unattended during the dialysis treatment. The venous needle became disconnected from the patient and the patient bled to death before anyone came to check on them. Analysis of the medical records failed to show any documentation after the patient was hooked up to the machine. This case settled out of court hours before a jury trial was scheduled to begin. As part of the settlement, the dollar amount agreed to was confidential.

Disconnection of hemodialysis venous needle from vascular access resulting in a Class 4 hemorrhage and subsequent hospitalization. This case involved a patient who got their blood tubing caught on the bed table height adjustment. The patient did not realize that the venous needle had become disconnected because the access site was covered with blankets. Eventually, blood began dripping onto the floor and it was discovered. The patient lost a significant amount of blood and required hospitalization and treatment. The patient survived, but filed a lawsuit because the patient and patient's family did not feel the facility professionals were well-trained and attentive. This case also settled out of court for an unspecified amount.

There are steps that can be taken to reduce liability exposure. Just as medical standards of care and practice guidelines are used to ensure the patient receives the safest and highest quality of care, so can a specialized patient risk assessment tool to minimize the risks of a VND. A patient risk assessment tool for VND outlines what patients are more likely to be at risk, and what circumstances may pose an increased level of threat for the patient.

The tool also reminds medical personnel what they should technically do to minimize the chance of a VND, as well as indicates that an FDA-approved blood detection device should be used. Currently, here in the United States there is only one FDA-approved device. The Redsense alarm was approved in late 2007 for clinic use, and in May of 2010 for home use.[10]

Last year the European Dialysis and Transplant Nurses Association/ European Renal Care Association released such a tool. It can be viewed at www.edtnaerca.org/pdf/home/Edtna_poster_UK.pdf.

No one is impervious to liability claims, but there are steps that can be taken to reduce exposure. First and foremost, carefully following the recognized standards of care and utilizing quality assurance programs are a good place to start. Quality assurance programs that regularly assess medical and nursing activities to evaluate the quality of medical care may help identify deficiencies.

Thorough and complete documentation is also valuable. The medical record is a legal document. It indicates the care provided, and records valuable data and observations. Careless or incomplete documentation also is a reflection of the quality of care the patient received.

Malpractice lawsuits have a lot to do with perceptions. The patients and families may have perceptions about the quality of care they receive. They don't necessarily have the technical knowledge to know if the care being rendered is quality care. What they see, or perceive, can have a bearing on if they seek legal counsel in the first place. Do the caregivers seem competent and caring? Or do they seem uninterested, rushed, and careless?

It is important that the medical personnel caring for dialysis patients are proficient in what they do, and that they are aware that VND is something that can occur at any time. Home dialysis patients need to be thoroughly educated about VND and need to know the steps that should be taken to minimize the risks.

The use of the Redsense alarm may also help reduce liability. Redsense is an FDA-approved device for use in clinics and for home use. If a facility is using other means to detect blood loss, the argument could be made that whatever they are using is being used "off-label". Off-label (unlabelled or unapproved) use refers to the use of an approved product in a scenario that is not included or is disclaimed in the product information. Off-label use is not illegal; however, it can raise concerns about moral and ethical responsibility in providing quality of care to the patients. Because Redsense is designed to react instantly with the first drop of blood it is dependable and also quite cost effective when compared to the expenses related to treating a patient with a significant VND.

Conclusion

VND has the potential to be a very costly complication. Even under the best conditions a patient may experience this frightening incident. Prompt recognition and response may prevent it from developing into a disaster for everyone involved. Utilizing all of the resources available, from policies and procedures and assessment tools to direct monitoring of the access site by a blood loss detector, such as the Redsense alarm, will provide a much needed security net. RBT

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