Research Assessment 7

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Analysis:

As a Health Science II student, I go to the Medical Center of Plano for rotations every week. Since we are only certified as CNAs (Certified Nurse Aides), we cannot perform tasks that are heavily medicine related such as administering drugs and performing EKGs. However, every department in the hospital allows Health Science II students take and record vital signs. Undoubtedly, vital signs are an integral part of patient care. They can determine which treatment protocols to follow, provide important information needed to make lifesaving decisions, and confirm feedback on treatments performed. Accurately reading and recording vital signs is crucial if health care workers are to take care of patients properly. A skewed reading can cause either medical professions to overlook serious illnesses or incorrectly think someone is in a critical condition.In the medical field, there are five main vital signs professional regularly check. The five vital signs are blood pressure, heart rate/pulse, oxygen levels, respiratory rate, and temperature. Each vital sign displays different information based on its readings.

For example, blood pressure measures the pressure in which the heart pumps blood throughout the body. When recording a blood pressure, medical professionals traditionally use a blood pressure cuff and a stethoscope. However with technological advances these days, many hospitals and medical center use automatic cuffs that do not have a gauge and do not require a stethoscope. In the hospital, we use machines called Patient Monitor Trolleys which are fitted with pulse oximeters and thermometers. When recording an individual's blood pressure, two numbers are recorded; the systolic and diastolic. The systolic is the higher number, the 120 in the 120/80, and shows the pressure inside the artery when the heart contracts and pumps blood throughout the body. On the other hand, the diastolic number, the 80 in 120/80, shows the pressure inside the artery when the heart is at rest and is refilling with blood. The average and healthy blood pressure to have is 120/80, but every individual's body is naturally different and these numbers fluctuate within a reasonable range. A high blood pressure, also known as hypertension, would be 140/90 and above. High blood pressures are dangerous because it means the heart and arteries are being overworked and are more susceptible to damage. In fact, hypertension is also called "the Silent Killer." Hypertension increases the risk of strokes, coronary heart disease (heart attacks), renal failure (kidney failure), atherosclerosis and congestive heart failure. Low blood pressure, otherwise known as hypotension, is when readings are less than 120/80. However, many people's blood pressure is lower than 120/80 naturally or if they are very fit. Hypotension is equally as detrimental to individual's because it can cause dizziness, syncope (fainting), nausea, and fatigue. Additionally, low blood pressures usually indicate health issues such as heart problems, severe dehydration, endocrine issues, blood loss, septicemia (severe infection), and anaphylaxis (severe allergic reaction). Blood pressures are immensely significant and are often time double checked in critical

times and emergencies. For example, I learnt first hand that in severe trauma patients, emergency room personnel double check the digital machines blood pressure readings. While the machine takes the pressure on one arm, someone must verify the reading by manually checking on the other arm. In my case, I was able to have the opportunity to be the one to take the manual blood pressure reading when a level one trauma came into the emergency room of Medical Center of Plano. After this experience, I understood the true importance of blood pressures and accurately recording them. A flawed reading can cause someone to be greatly harmed or even die.

The second vital sign, is heart rate. Heart rate can be taken in the form of a pulse or digitally with a patient monitor's pulse oximeter. A pulse oximeter is usually placed on a patient's pointer finger, although it is sometimes placed on their middle fingers as well. The Medical Center of Plano, prefers pulse oximeter readings instead of manual pulse readings because pulse oximeters can be left on and constantly monitored if needed. Unlike blood pressure readings, there is only one number that needs to be recorded when taking heart rates. The average heart rate for a normal, and relatively healthy individual is 60 to 100 beats per minute. This is a measurement indicates the number of times the heart beats per minute as well as heart rhythm. Pulse rates fluctuate easily, so there is no need to be too alarmed if there is a change. A change in heart rate usually indicates exercise, illness, injury, and emotions. Additionally, a lower heart rate generally indicates a more efficient heart function and good cardiovascular fitness. Since there is a wide range for heart rate, it is only necessary to be concerned if one's heart rate is consistently high or low. A consistently high pulse is known a tachycardia and is usually over 100 beats per minute. Tachycardia can be a indication of anemia, smoking, fever, high blood pressure, drinking too much alcohol, damage to heart tissue and hyperthyroidism among other things. A consistently low heart rate is called bradycardia and is below 60 beats per minute. Bradycardia also indicates similar causes such as heart damage, hypertension, electrolyte imbalance, inflammatory diseases such as lupus, hypothyroidism, hemochromatosis, myocarditis, heart rhythm disorders, and obstructive sleep apnea.

The third vital sign is respiratory or respiration rate. Unlike all other vital signs, this sign must be measured manually. To manually measure a respiration rate, you count the number of times they inhale while keeping time for a minute. That is why almost all medical professionals wear watches with second hands or seconds at all times on the job. Respirations can be counted by watching the rise and fall of a patient's chest or stomach. This vital sign is very tricky because many individuals take shallow breaths, which are terribly hard to see. Additionally, it is easy to lose count especially if the patient or someone else is talking. Many experienced professionals actually only count respirations for 15 seconds and then simply multiply that number by 4. This gives them the respiration rate for a minute or 60 seconds. An average respiration rate is between 12 to 20 breaths per minute. A respiration rate lower than 12 or more than 25 breaths per minute is considered abnormal by medical professionals. An abnormal respiration rate can indicate conditions and illnesses such as asthma, anxiety, pneumonia, congestive heart failure, lung disease, use of narcotics, and/or drug overdose.

The next vital sign is body temperature. Measuring temperatures is the most easy and most household vital sign. Millions of parents take the temperature of their child to determine whether or not

they are sick. Similarly, temperature is equally important in hospital settings. To take temperatures, many individuals use thermometers. At the Medical Center of Plano however, all departments except the Emergency Room use non-contact thermometers. To use these, you hold down a button while waving it over the patient's forehead and then releasing behind their ear. The thermometer then displays the body temperature. The average body temperature is 98.6 degrees Fahrenheit, but normal temperatures for a healthy individual's oftentimes range between 97.8 to 99.1 degrees Fahrenheit. Any body temperature higher than an average temperature is considered a fever. Fevers usually indicate illnesses such as bacterial infection, viral illnesses, heat exhaustion, inflammation, etc. A body temperature below 95 degrees Fahrenheit is also known as hypothermia. Hypothermia is usually caused by contact with cold weather or cold water. This can then lead to the formation of nasty illnesses such as gangrene and frostbite.

The fifth vital sign is blood oxygen levels otherwise known as blood oxygen saturation. Oftentimes, this long name is shortened to Sp02. Blood oxygen levels are measured through a process called Pulse oximetry, which is a noninvasive method that allows for the measurement of a person's blood oxygen saturation. Blood oxygen levels are measured through pulse oximeters that are placed on a patient's finger. Similar to heart rate readings, there is only one number to record in this case as well. The average Sp02 reading is above 95% oxygen saturation. Any reading near or under 92% indicates that an individual's blood contains an abnormally low level of oxygen. A Sp02 percentage under 92% should be reported to a doctor, nurse, or medical professional. The unfortunate fact about blood oxygen saturation, is that it is not taught to CNAs since it is "the fifth vital sign" and is not considered as important. The consequences of it not being taught is that many CNAs, such as myself, do not know what is abnormal and what is normal. This can be detrimental to patients who already have an illness, as many do in the hospital. Measuring Sp02 levels can help medical personnel asses those with asthma, chronic obstructive pulmonary disease, etc. Below is a labeled diagram of a patient's vitals monitor.

As can be seen, even something as simple as vital signs can reveal important details and information about a patient. A person's vital signs can determine their treatment, treatment time or date, medications, and more. Every disease and illness affects your vital signs in a noticeable way. An elevated heart rate can indicate something as severe as heart problems or as ordinary as stress. Reading vital signs and knowing what they mean is crucial information needed for all individuals entering the medical field in any way, shape, or form. CNAS, RNs, Nurses, Nurse Practitioners, EMTs, PAs, and MDs and more must all know these rudimentary skills. The table below depicts vital signs in different medical scenarios, but does not include Sp02 levels because of the inability to find such information.

Factor	BP	HR	RR	T
Normal	120/80	60-100	12-20	98.6
Fever	120/80	< 100	<20	<98.6
Pulmonary Embolism	>120/80	<100	<20	<98.6
Chronic Pain	120/80	>60	12-20	98.6
Narcotics	>120/80	>60	>12	>98.6
Spinal Injury	>120/80	>60	>12	98.6
Exercise	<120/80	<60	<20	<98.6
High White Blood Cell Count	>120/80 (Sepsis)	<60	<20	<98.6