Artificial Intelligence Use with Electrocardiograms

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May 30, 2022

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Artificial intelligence (AI) is contributing to the rapid advancements in the medical field today. It has aided many doctors, nurses, and other healthcare professionals to treat patients by diagnosing various diseases, assessing heart rhythms, and identifying harmful risks for the patient. Since AI is already integrated into the health care system, it is vital for health care professionals to learn about and identify how AI can affect health practices. Critical care nurses should be at the forefront of this technological advancement.

Description and Connection to Nursing

AI is incorporated throughout all technology. In fact, one advancement that connects to nurses is AI's use with electrocardiograms (EKG). EKGs can be vital to determining a patient's priority problems and interventions. Therefore, identifying and intervening for various cardiac rhythms quickly and efficiently can determine if a patient will live or die. Nurses have a major responsibility for noticing and treating cardiac rhythms. Consequently, based off their assessment, nurses make critical clinical decisions for the patient. AI can be incorporated in identifying cardiac rhythms, risks for dysrhythmias, and signs or symptoms of EKG changes (Douthit et al., 2022).

AI with EKGs is a relatively new but beneficial technological advancement that can greatly impact patient outcomes and alter nursing care. Smart clothing, high-tech stethoscopes, and smartphone AI have been utilized with EKGs for monitoring and discovering irregular heart rhythms (Douthit et al., 2022). Through this technology, AI can identify and analyze a variety of heart rhythms even when the patient is not symptomatic. This can prompt and aide the nurse on appropriate interventions to complete (Mayo Clinic, 2022). In addition to detecting these heart rhythms, AI can identify why abnormal heart rhythms are occurring. This can predict and

prevent future cardiac related illnesses which improves overall patient outcomes (Mayo Clinic, 2022). Overall, integration of AI into hospital care aids in accurately diagnosing patients, and directly influences nursing interventions and care.

Role of the Critical Care Nurse

In a critical care setting, nurses hold a large responsibility for patient cares and interventions. These interventions can range from focused assessments, medication administration, and/or hygiene cares. Especially in an acute care setting, monitoring EKG rhythms are vital to patient health. For example, not recognizing symptoms of a cardiac problem or properly identifying an abnormal heart rhythm can be detrimental to an individual's health. However, AI implementation and nurses' critical thinking can greatly improve patient prognosis (Asselbergs, 2021).

Nursing Interventions

Artificial intelligence is only as good as its programming; therefore, nurses are vital to incorporating and implementing AI into healthcare systems due to their critical judgement and experience in patient care (Robert, 2019). Therefore, some job positions may be turned into programming and integrating AI into healthcare systems rather than a bedside nursing position. These nurses need to understand how to utilize AI into patient care (McGrow, 2019). Therefore, programming AI to identify EKG readings, risks for dysrhythmias, and symptoms of abnormal heart rhythms will greatly benefit critical care nurses in the acute care setting.

AI is relatively new in the hospital setting and is gradually being incorporated with EKGs. Special trainings or workshops are required for nurses to fully understand the impact it can have on patient care because of this new advancement, (Buchanan et al., 2021; McGrow, 2019). AI can be viewed as a "new language" to some; therefore, gaining experience with AI

algorithms, interpreting data, and incorporating AI with current EKG knowledge will result in improved patient outcomes. In addition to learning the how to incorporate AI with EKGs, nurses will need to have a growth mindset to accomplish the goal of AI. A growth mindset is needed while learning how to incorporate AI into EKG due the possibility of failures or successes. New technology can have its downsides while learning how to effectively include it into the healthcare system; therefore, nurses will need to accept failures and continue to provide adequate patient care (Robert, 2019). Overall, having a growth mindset while learning about implementing AI and EKGs will be valuable to nursing practice.

Not only will bedside nursing change due to AI, but nursing professors will also need to adjust teaching styles to welcome the new technology (Buchanan et al., 2021). They may need to adjust homework assignments, teaching plans, or skills drills to accommodate for AI in cardiology. In addition, nursing preceptors are responsible for teaching new nursing graduates; therefore, these preceptors may need to combine AI and EKG training, so the new graduate will be able to understand the new concept. Consequently, changing teaching plans for nursing students and new graduates will better equip them to care for cardiac patients (Buchanan et al., 2021).

Patient and Family Education

Patients may be given a smart shirt or smart phone to monitor EKGs (Mayo Clinic, 2022). Nurses will need to educate on appropriate use of this equipment and to ensure proper EKG readings. In some cases, this technology can be sent home with the patient; consequently, educating on its use and function is vital to patient health. For example, if the sensors are not properly placed, smart phones are not charged, or if smart clothing is damaged, it will alter the

AI ability to address EKG rhythms in patients. Therefore, nursing education to avoid these complications is important for the patient health (Mayo Clinic, 2022).

Some patients are skeptical of this new technology due to the fear of cost and effectiveness; however, it is a low-cost option to detect abnormal EKG rhythms that has been shown to be accurate and efficient (Mayo Clinic, 2022; McGrow, 2019). Educating patients and families about the low-cost may entice patients to utilize the effective technology. In addition, nurses can educate patients that AI's use with EKGs has the capacity to diagnose and notify healthcare professionals of dysrhythmias which can initiate early treatment; therefore, improving prognosis (Douthit et al., 2022). Having knowledge about medical treatments can ease patient anxiety and increase treatment with compliance. Overall, therapeutic communication with the family and patients can ease anxiety and help patients make important medical decisions.

Research Effect on Patient Goals/Outcomes

The goal of AI is to support nurses' decision making rather than overtake it. AI can act as a second pair of eyes to identify arrythmias and risk factors for arrythmias. In fact, AI has been shown to identify abnormal heart rhythms like atrial fibrillation before the patient is symptomatic (Mayo Clinic, 2022). By analyzing EKGs, AI can determine future outcomes for the patient. In addition, AI can identify what therapies and treatment the patient may need in response to interpreting EKG rhythms (Asselbergs, 2021). When nurses analyze this information from AI, they can utilize critical judgement and implement necessary interventions which will improve patient outcomes due to accuracy and timeliness of treatment (Cleveland Clinic, 2020). AIs use with EKGs is only effective if the nurse decides to integrate it into patient care. Therefore, when nurses utilize AIs ability to analyze EKGs, patient outcomes increase tremendously.

Patient care is a directly affected by the responsibilities and actions of a nurse. However, many nurses spend time analyzing data and documenting patient cares which decreases the time nurses have at patient's bedside. Artificial intelligence can interpret data, especially EKG readings, much quicker than humans (Douthit et al., 2022). When nurses utilize AI capability to identify EKG rhythms, it decreases the amount of time the nurse spends doing it themselves. Some AI technology will even document the assessment. Consequently, the nurse can spend more time at the patient bedside which positively impacts the patient (Douthit et al., 2022; Robert, 2019). Nurses should utilize this extra time with patients since it can build trust and decrease anxiety. In addition, nurses will have the opportunity to assess the patient more which may help the nurse identify other complications (Douthit et al., 2022; Robert, 2019). For example, a nurse may identify a subtle change in mental status from spending more time with the patient. Overall, AI allows the nurse to spend more time with the patient which positively impacts the patient in numerous ways.

Conclusion

Artificial intelligence is a growing technology that can impact nurses throughout the world. Though AI won't overtake bedside nursing, nurses play a critical role in developing, programming, and integrating AI into the hospitals. Once AI is used in hospitals, special seminars and trainings are recommended for nurses to understand how to effectively combine previous nursing practice with AI. Nursing educators and preceptors are prompted to incorporate the new technology into teaching new graduate nurses. If these actions are completed, patients will experience positive outcomes since interpretation of EKGs are done quickly and accurately. To conclude, AIs contribution to EKG practice is changing the nursing field today. It should be welcomed and utilized to effectively treat patients.

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