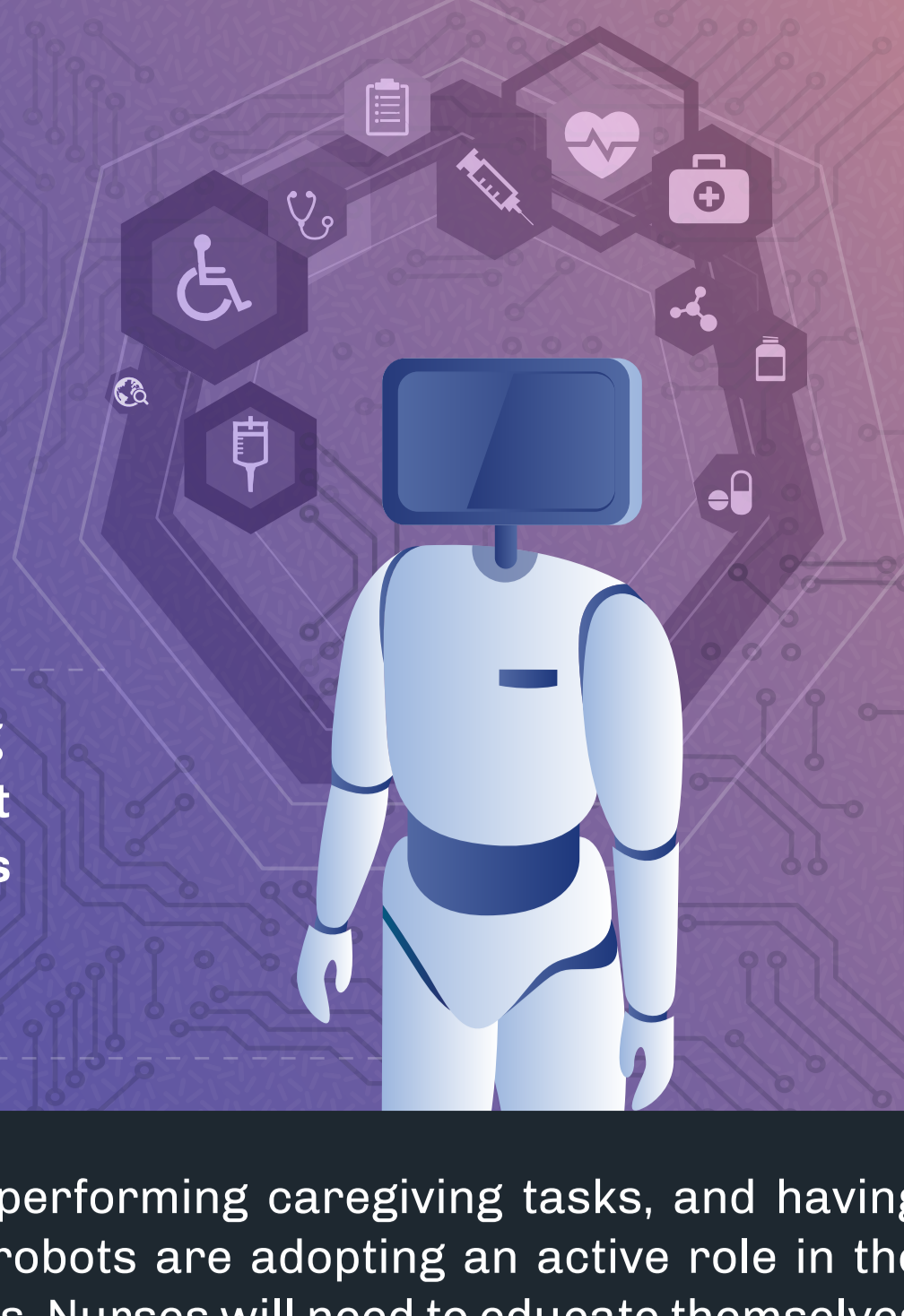# THE POWER OF AI & ROBOTICS IN HEALTH CARE
AND HOW NURSES CAN INTEGRATE WITH THE NEW TECHNOLOGY

We may not be very close to receiving primary care directly from robots, but artificial intelligence (AI) and robotics are certainly making strides within the health care industry.
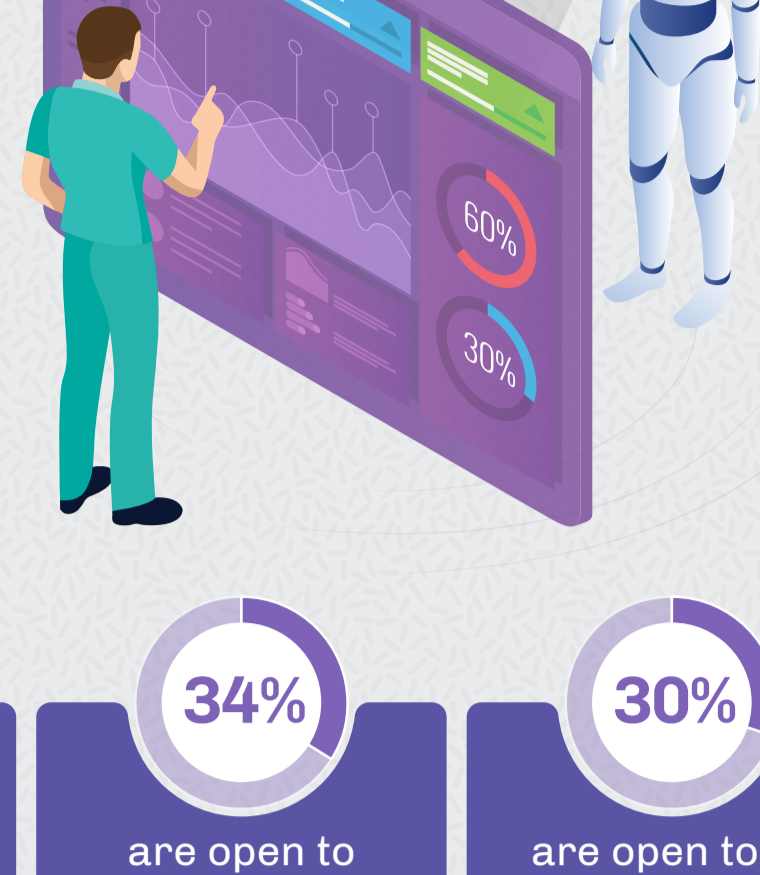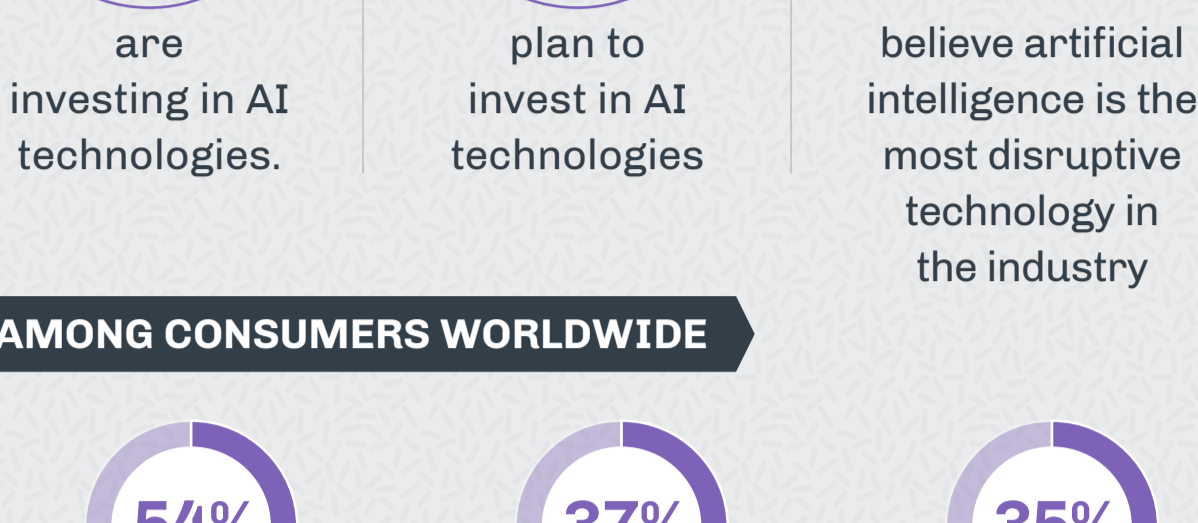
From assisting in surgeries, performing caregiving tasks, and having conversations with patients, robots are adopting an active role in the delivery of health care services. Nurses will need to educate themselves on these technologies and be prepared for the impact on health care.
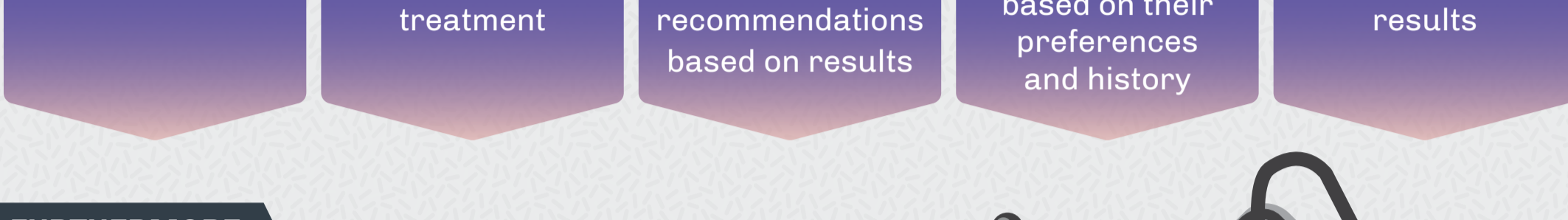
THE RISE OF ROBOTS AND ARTIFICIAL INTELLIGENCE

By 2021, the AI market for health care is projected to reach **$6.66 BILLION**, while the market for robots in health care is projected to reach **$2.8 BILLION**.

### AMONG HEALTH CARE EXECUTIVES WORLDWIDE

63% are investing in AI technologies.

74% plan to invest in AI technologies

31% believe artificial intelligence is the most disruptive technology in the industry

AMONG CONSUMERS WORLDWIDE

54% are open to receiving AI-enabled health care

37% are open to AI monitoring their heart condition and advising treatment

35% are open to AI checking their heartbeat's rhythm & accepting recommendations based on results

34% are open to receiving customized fitness and health advice based on their preferences and history

30% are open to AI taking and testing a blood sample and providing results

FURTHERMORE

66% of consumers in Turkey & **62%** in South Africa are willing to undergo 'minor surgical procedures by a robot if studies showed that the robot could out-perform a human surgeon,' according to a PWC 2016 global health survey.
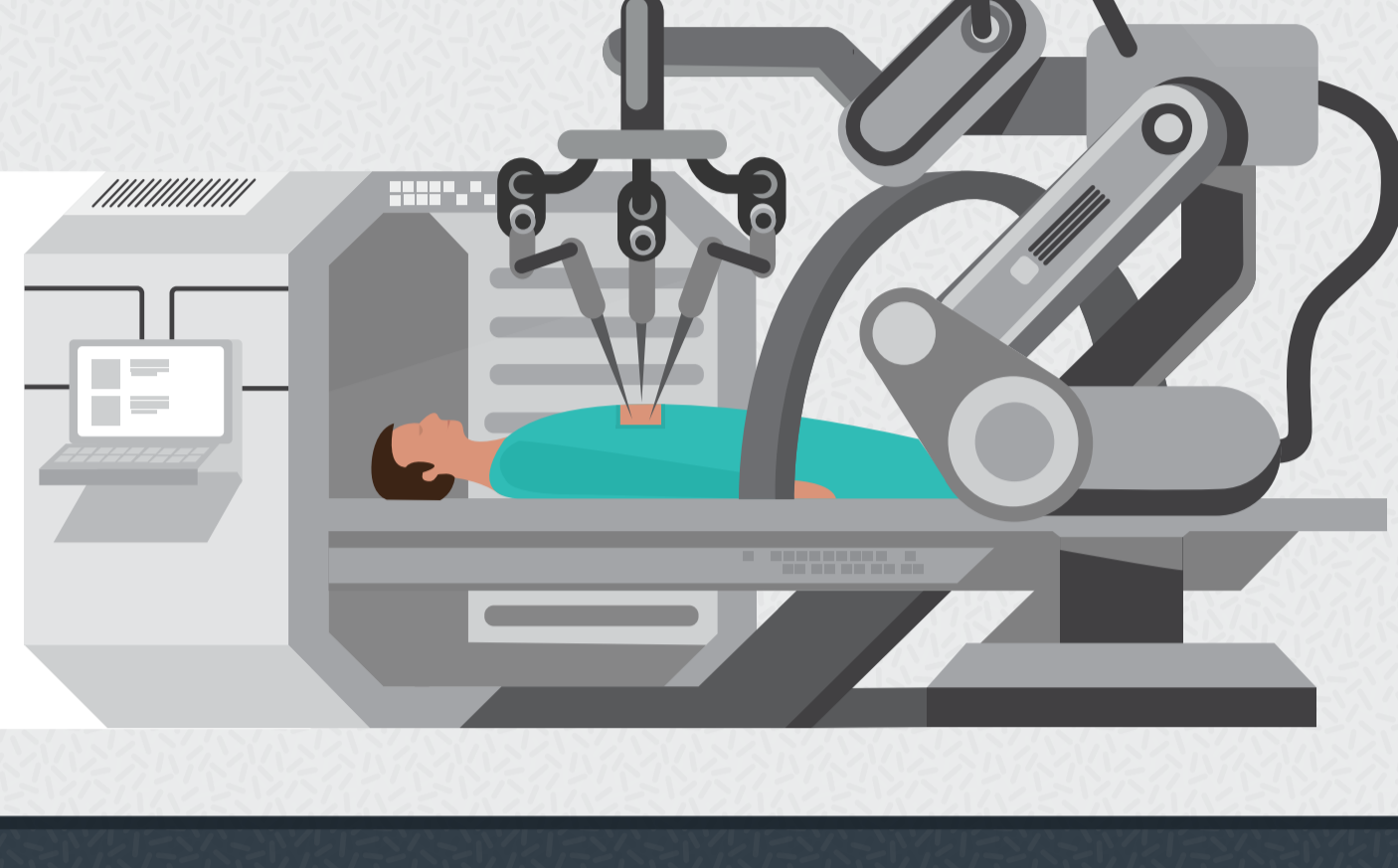
## THE VALUE OF AI IN HEALTH CARE

Visual pattern recognition has been estimated to be **5 TO 10%** more accurate than the average physician.

Physicians may value their intuition above commands from a machine.

20% but "If all physicians matched the performance of the top 20% nationwide, patient deaths from cancer, infection and cardiovascular disease would decrease by the hundreds of thousands each year", according to an article by Forbes. AI could be the tool to make this happen.
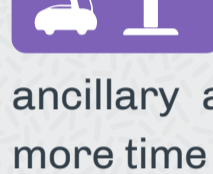
Nurses spend the majority of their shift on paperwork, coordinating lab results, and searching for medication and supplies, according to a report by Deloitte. Robotics and AI can automate hospital ancillary and back-office services, allowing nurses to spend more time delivering care.

7 AREAS IN HEALTH CARE

AI is poised to impact seven key areas in health care: research, end of life care, treatment, decision-making, diagnosis, early detection, and preventative care.

PREVENTATIVE CARE

» AI and consumer health applications can help monitor health, encourage healthy habits, and even detect early signs of illness.

» Over **100,000** health apps are available in Google Play and iTunes stores.

FOR EXAMPLE, the My Fitness Pal app has over **225 MILLION** registered users tracking calories and exercise.

EARLY DETECTION

» Health care organizations can use AI to increase the speed and accuracy of translating scans; AI can also reduce the need for unnecessary procedures.

» AI can review and translate mammograms with **99% ACCURACY** and **30 TIMES** faster.

FOR EXAMPLE, Microsoft is teaming up with Apollo Hospitals "to develop and deploy new machine learning models that predict patient risk for heart disease and helps doctors with treatment plans," according to Healthcare IT News.

DIAGNOSIS

» AI could help diagnose conditions like strep throat without the need for a visit to the doctor.

» An AI system could allow more than **4,000 CANCER** patients to receive early diagnosis every year and there by increase chance of survival.

FOR EXAMPLE, IBM's Watson can review many different types of medical information significantly faster than any human.

DECISION MAKING

» Health care professionals can use AI to identify patients at greatest risk and help prioritize decisions and actions.

» Medical errors, often attributed to cognitive errors, are the third leading cause of death in the U.S.

FOR EXAMPLE, IBM's Watson for Oncology can analyze the context and meaning of structured and unstructured data and provide oncologists with evidence-based treatment options.

END OF LIFE CARE

» Robots can help individuals remain independent longer, reduce the need for care homes and hospitalization, and interact socially to minimize feelings of loneliness.

» In a study published by the NPJ Digital Medicine journal, a deep learning model was fed nearly **48 BILLION** data points and predicted certain medical issues with 90% accuracy.

FOR EXAMPLE, a Google algorithm reviewed about **175,639** data points and gave a more accurate prediction of a patient's risk of death than health care professionals.

TREATMENT

» For decades, robots have helped health care professionals across a variety of tasks, from completing simple repetitive tasks to assisting during surgery.

» According to reports by Frost and Sullivan, AI can potentially improve outcomes by **30 TO 40%**.

Canadian geneticist and immunologist **SIR JOHN BELL** has said that AI can potentially reduce the cost of pathology services by **50%**.

RESEARCH

» AI can help reduce the cost of developing a new drug and transfer the savings to consumers.

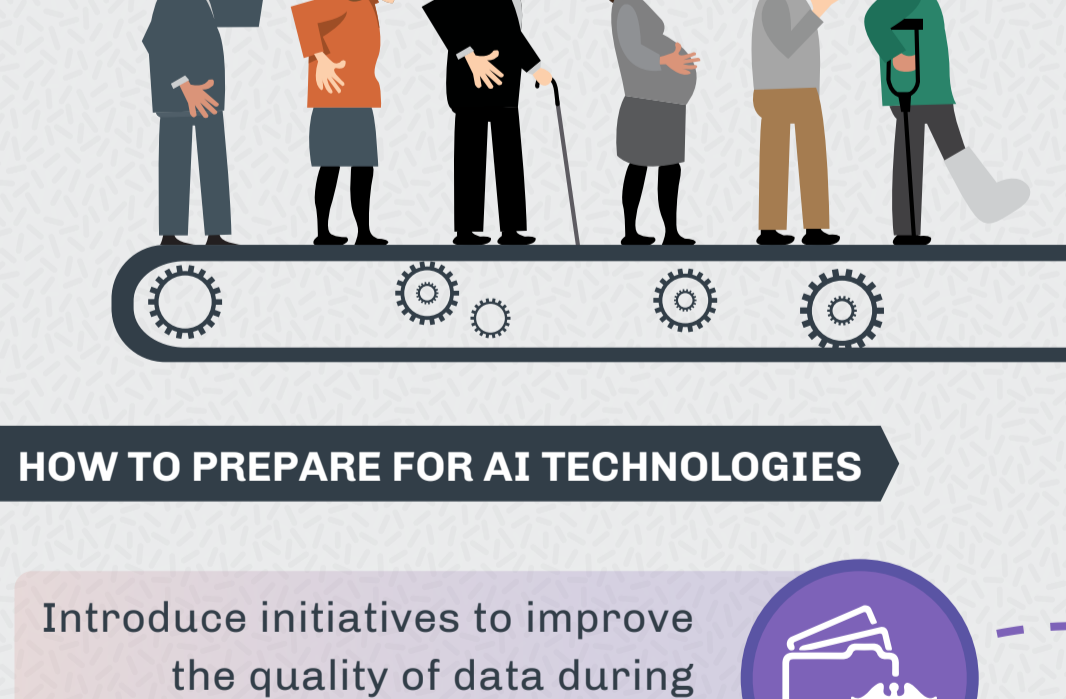» The cost of discovering and developing a drug typically starts at **$2.6 BILLION**.

According to the Life Extension Advocacy Foundation, Insilico Medicine's "AI system was able to classify **(678) DRUGS** into therapeutic use categories with **54.6%** accuracy in identifying **1 OUT OF 12** of the drugs' therapeutic uses.
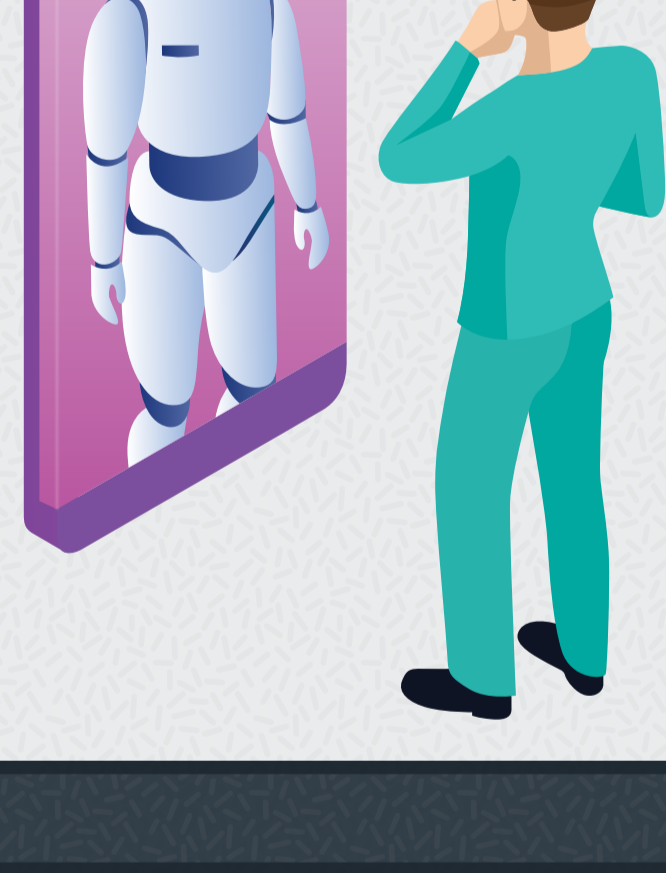
HOW NURSE LEADERS CAN GET READY FOR WHAT'S COMING NEXT

Advanced practice registered nurses can help organizations prepare, implement, and adapt to these promising transformations brought about by AI technologies.

HOW TO PREPARE FOR AI TECHNOLOGIES

Introduce initiatives to improve the quality of data during clinical documentation.

Develop an open, data warehousing infrastructure that inhibits the prevalence of data silos.

Educate staff about the importance of clear and efficient data governance across the organization.

Analyze all data assets to make sure all data assets have the appropriate metadata.

Create a firm foundation of data governance.

Establish safeguards and security standards to protect patient data.

Nurse Practitioners (NPs) can also play an active role incorporating AI into the health care environment:
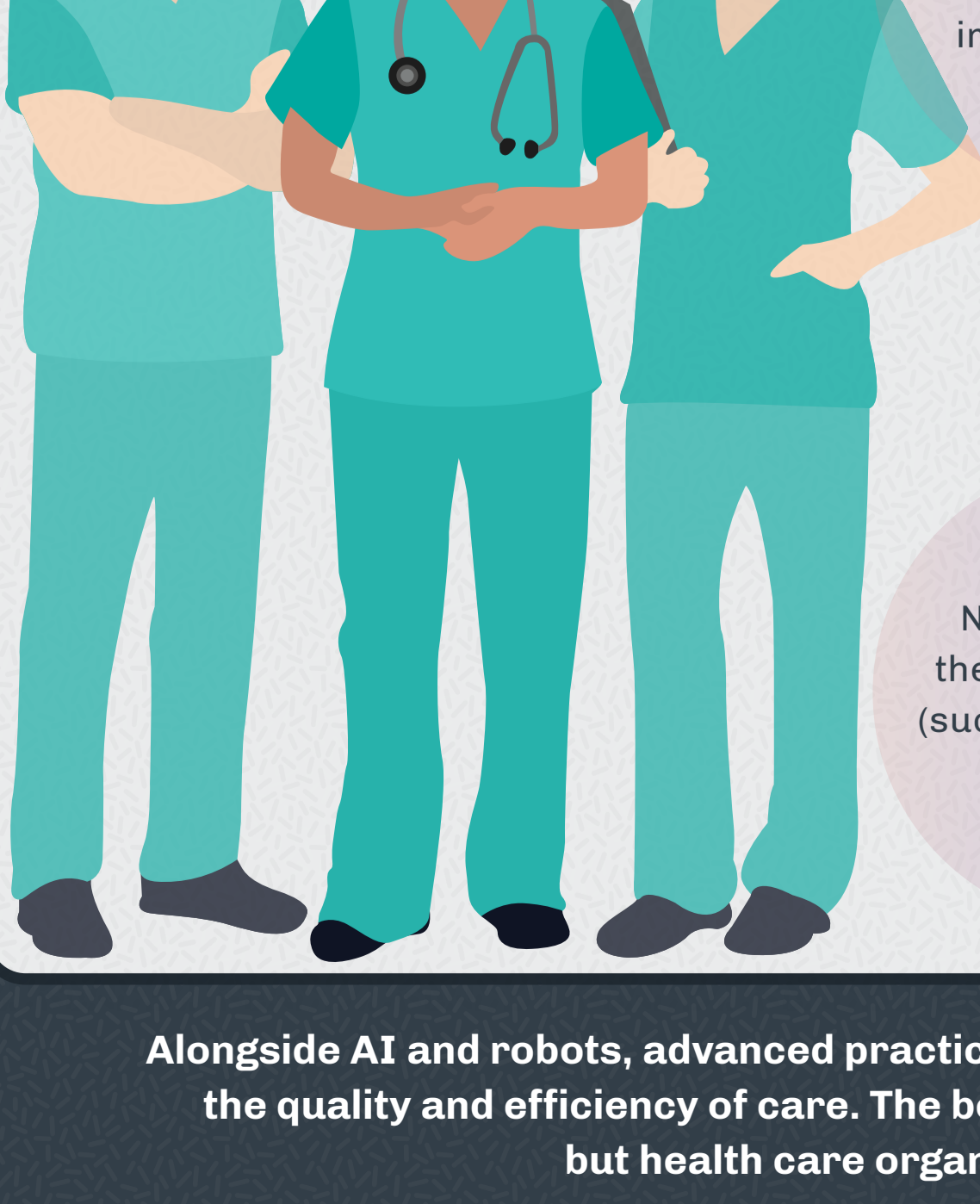
NPs can assist in designing the processes of implementing AI.

NPs can perform duties in niches that an AI system cannot fulfill.

NPs can collaborate with researchers and AI vendors in developing AI technologies by providing insight into the patient experience.

NPs can provide the human element (such as compassion and empathy) alongside AI.

NPs can evaluate AI outputs and determine if the system's conclusions are reasonable.

Alongside AI and robots, advanced practice registered nurses will help improve the quality and efficiency of care. The benefits will not only reach patients, but health care organizations as well.

SOURCES: