Artificial Intelligence in Health Care:
Benefits and Challenges of Technologies to Augment Patient Care

GAO-21-7SP

Published: Nov 30, 2020. Publicly Released: Nov 30, 2020.

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Fast Facts

Artificial Intelligence tools show promise for improving health care. They can help predict health trajectories, recommend treatments, and automate administrative tasks. Challenges associated with these tools include:

Transparency: If a medical provider doesn't know how a tool works, it could reduce trust in the tool.

Bias: Limitations and bias in data can reduce the safety and effectiveness of AI tools.

Data: Obtaining the high-quality data needed to create effective AI tools can be difficult.

We offer policy options—such as improving data access, establishing best practices, and more—to address these and other challenges we found.

AI generates information for health care providers to help them better care for patients and be more efficient.

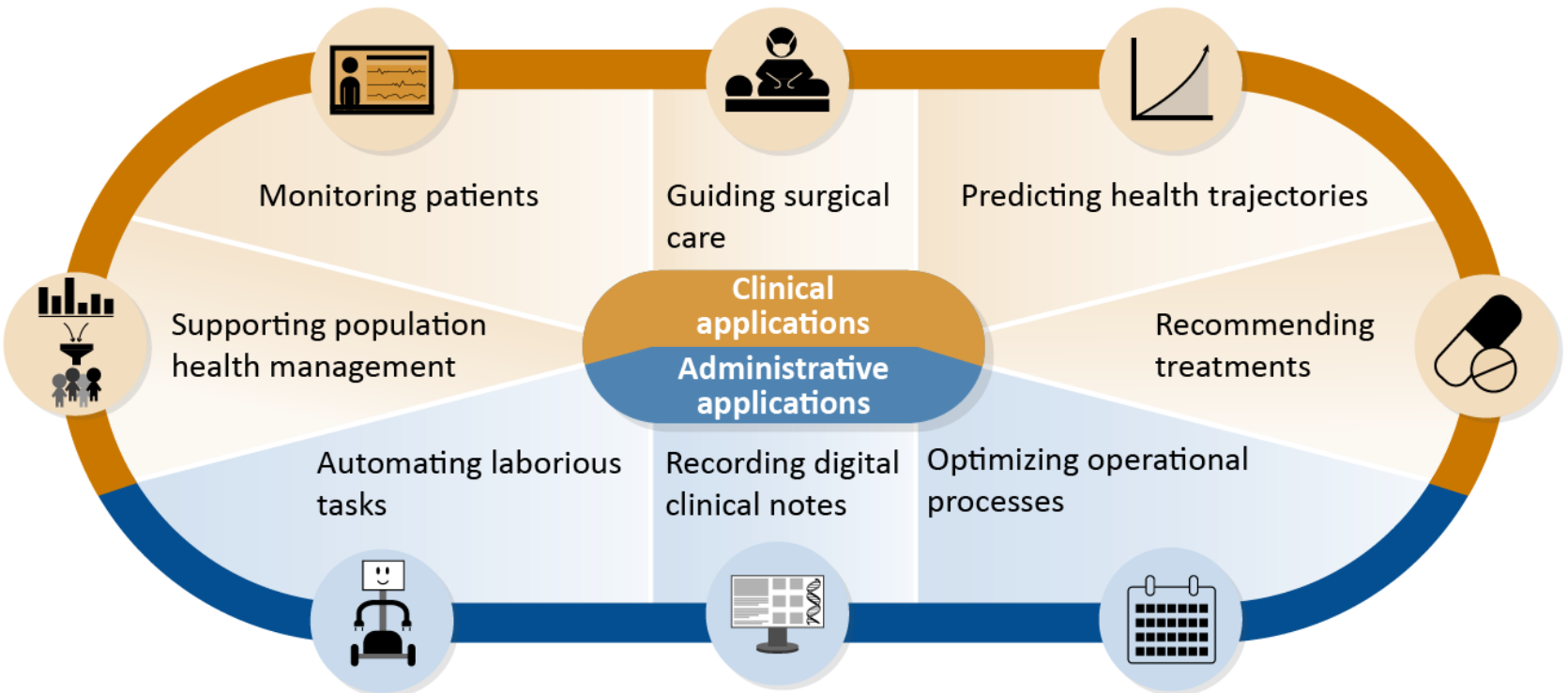
Source: GAO. | GAO-21-7SP

Highlights

What GAO Found

Artificial Intelligence (AI) tools have shown promise for augmenting patient care in the following two areas:

- **Clinical AI tools** have shown promise in predicting health trajectories of patients, recommending treatments, guiding surgical care, monitoring patients, and supporting population health management (i.e., efforts to improve the health outcomes of a community). These tools are at varying stages of maturity and adoption, but many we describe, with the exception of population health management tools, have not achieved widespread use.
- **Administrative AI tools** have shown promise in reducing provider burden and increasing efficiency by recording digital notes, optimizing operational processes, and automating laborious tasks. These tools are also at varying stages of maturity and adoption, ranging from emerging to widespread.



Source: GAO. | GAO-21-7SP

GAO identified the following challenges surrounding AI tools, which may impede their widespread adoption:

- **Data access.** Developers experience difficulties obtaining the high-quality data needed to create effective AI tools.
- **Bias.** Limitations and bias in data used to develop AI tools can reduce their safety and effectiveness for different groups of patients, leading to treatment disparities.
- **Scaling and integration.** AI tools can be challenging to scale up and integrate into new settings because of differences among institutions and patient populations.
- **Lack of transparency.** AI tools sometimes lack transparency—in part because of the inherent difficulty of determining how some of them work, but also because of more controllable factors, such as the paucity of evaluations in clinical settings.
- **Privacy.** As more AI systems are developed, large quantities of data will be in the hands of more people and organizations, adding to privacy risks and concerns.
- **Uncertainty over liability.** The multiplicity of parties involved in developing, deploying, and using AI tools is one of several factors that have rendered liability associated with the use of AI tools uncertain. This may slow adoption and impede innovation.

GAO developed six policy options that could help address these challenges or enhance the benefits of AI tools. The first five policy options identify possible new actions by policymakers, which include Congress, elected officials, federal agencies, state and local governments, academic and research institutions, and industry. The last is the status quo, whereby policymakers would not intervene with current efforts. See below for details of the policy options and relevant opportunities and considerations.

Policy Options to Address Challenges or Enhance Benefits of AI to Augment Patient Care

Policy Option	Opportunities	Considerations
Collaboration (report p. 32) Policymakers could encourage interdisciplinary collaboration between developers and health care providers.	• Could result in AI tools that are easier to implement and use within a providers' existing workflow. • Could help implement tools on a larger scale. • Approaches to encourage collaboration include agencies seeking input from innovators. For example, agencies have used a challenge format to encourage the public to develop innovative technologies.	• May result in the creation of tools that are specific to one hospital or provider. • Providers may not have time to both collaborate and treat patients.
Data Access (report p. 33) Policymakers could develop or expand high-quality data access mechanisms.	• A "data commons"–a cloud based-platform where users can store, share, access, and interact with data–could be one approach. • More high-quality data could facilitate the development and testing of AI tools. • Could help developers address bias concerns by ensuring data are representative, transparent and equitable.	• Cybersecurity and privacy risks could increase, and threats would likely require additional precautions. • Would likely require large amounts of resources to successfully coordinate across different domains and help address interoperability issues. • Organizations with proprietary data could be reluctant to participate.
Best Practices (report p. 34) Policymakers could encourage relevant stakeholders and experts to establish best practices (such as standards) for development, implementation, and use of AI technologies.	• Could help providers deploy AI tools by providing guidance on data, interoperability, bias, and implementation, among other things. Could help improve scalability of AI tools by ensuring data are formatted to be interoperable. • Could address concerns about bias by encouraging wider representation and transparency.	• Could require consensus from many public- and private-sector stakeholders, which can be time- and resource-intensive. • Some best practices may not be widely applicable because of differences across institutions and patient populations.
Interdisciplinary Education (report p. 35) Policymakers could create opportunities for more workers to develop interdisciplinary skills.	• Could help providers use tools effectively. • Could be implemented in a variety of ways, including through changing academic curriculums or through grants.	• Employers and university leaders may have to modify their existing curriculums, potentially increasing the length of medical training.

Oversight Clarity (report p. 36) Policymakers could collaborate with relevant stakeholders to clarify appropriate oversight mechanisms.	• Predictable oversight could help ensure that AI tools remain safe and effective after deployment and throughout their lifecycle. • A forum consisting of relevant stakeholders could help recommend additional mechanisms to ensure appropriate oversight of AI tools.	• Soliciting input and coordinating among stakeholders, such as hospitals, professional organizations, and agencies, may be challenging. • Excess regulation could slow the pace of innovation.
Status quo (report p. 37) Policymakers could maintain the status quo (i.e., allow current efforts to proceed without intervention).	• Challenges may be resolved through current efforts. • Some hospitals and providers are already using AI to augment patient care and may not need policy-based solutions to continue expanding these efforts. • Existing efforts may prove more beneficial than new options.	• The challenges described in this report may remain unresolved or be exacerbated. For example, fewer AI tools may be implemented at scale and disparities in use of AI tools may increase.

Source: GAO.

Why GAO did this study

The U.S. health care system is under pressure from an aging population; rising disease prevalence, including from the current pandemic; and increasing costs. New technologies, such as AI, could augment patient care in health care facilities, including outpatient and inpatient care, emergency services, and preventative care. However, the use of AI-enabled tools in health care raises a variety of ethical, legal, economic, and social concerns.

GAO was asked to conduct a technology assessment on the use of AI technologies to improve patient care, with an emphasis on foresight and policy implications. This report discusses (1) current and emerging AI tools available for augmenting patient care and their potential benefits, (2) challenges surrounding the use of these tools, and (3) policy options to address challenges or enhance benefits of the use of these tools.

GAO assessed AI tools developed for or used in health care facilities; interviewed a range of stakeholder groups including government, health care, industry, academia, and a consumer group; convened a meeting of experts in collaboration with the National Academy of Medicine; and reviewed key reports and scientific literature. GAO is identifying policy options in this report.

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Full Report

Accessible Text (114 pages) Full Report (106 pages)

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