Areas of Risk	**Steps to reduce bias & discrimination**
Unsafe or ineffective systems	Develop systems with consultation form diverse communities, stakeholders, and domain experts to identify concerns, risks, and potential impacts. Systems should undergo pre-deployment testing, risk identification, and ongoing monitoring. It is very important in pharmaceuticals to have a secure system as it is a multi-billion dollar industry that is highly competitive.
Algorithmic discrimination	Designers, developers and deployers of automated systems should take proactive and continuous measures to protect individuals and communities. This protection should include equity assessments as part of system designs, use of representative data, ensure accessibility for people with disabilities, and clear oversight. This is important internally to align with the mission. A main goal of a lot of drugs is to help make life easier for people with disabilities, and the public-facing systems should reflect this.
Abusive data practices / data privacy	Designers, developers, and deployers of automated systems should seek permission and respect the decision regarding collection, use, access, transfer, and deletion of data in appropriate ways. Systems should not employ user experience and design decisions that hinder user choice or have defaults that are privacy invasive. Consent requests should be brief, understandable, and in plain language. With a possible future career in marketing research, I find data privacy very important when looking at prospective employers and customers' data privacy should not be taken advantage of.
Lack of disclosure of use of automated systems	Designers, developers, and deployers of automated systems should provide accessible plain language documentation including clear descriptions of the overall system functioning

	and the role automation plays and that such system is in use. Transparency is key.
Accessibility to human alternatives when appropriate	There should be fallback procedures in place in instances where automated systems may fail. This procedure can include a human or other alternative and the consideration should be timely. Human substitutes should receive proper training.
Framing trap: failure to model the entire system over which a social criterion will be enforced	Adopt a heterogeneous engineering approach: draw the boundaries of abstraction to include people and societal systems as well, such as local incentives and reward structures, institutional environments, decision-making cultures, and regulatory systems. Should we build this thing in the first place? Does it impact the social context? Do we understand the social requirements?
Portability trap: failure to understand how repurposing algorithmic solutions designed for one social context may be misleading, inaccurate, or otherwise do harm when applied to a different context	Shift away from a solution-oriented approach to a process-oriented one, or one that draws a boundary and understands how a model fits into the organization at large. There is not a lot of room for error in pharma and bringing drugs to market, so having system's built individually may be time consuming, it is necessary.
Solutionism trap: failure to recognize the possibility that the best solution to a problem may not involve technology	Step back and as yourself, should this system even exist? Who are we building this for? Example: facial recognition and its abuse in law enforcement. Enforce regulations, companies take initiative to shut down systems until there is regulation. Listen to what users are saying about the systems and if technology is the answer and if it is doing more harm than good.
Unfathomable training data: size does not guarantee diversity, static data and changing social views, encoding bias, curation, domination, and accountability	Use platforms for training data for LLM's that do not have moderation practices that make them less welcoming to marginalized populations Train LLM's on more languages to be inclusive to individuals from marginalized communities, healthcare especially needs to be accessible.