ABSTRACT

Systems engineering is an interdisciplinary field that seeks to better understand and manage changes in complex systems and projects as whole. Systems are sets of interconnected elements which interact with each other, are dynamic, change over time and are subject to complex behaviors. This poster presentation will report on the results of an NIH/POCT workshop exploring the future of point of care testing and technologies and the recognition that these new technologies do not exist in isolation but within other of technologies and systems that influence their likelihood of success or failure and their effectiveness.

SYSTEMS ENGINEERING AND POINT OF CARE TESTING

In this workshop, a diverse group of individuals from around the country, from disciplines ranging from clinical care, engineering, regulation affairs and many others to members of the three major NIH funded efforts in the area the Centers for POCT for sexually transmitted disease, POCT for the future of Cancer Care, POCT primary care research network, gathered together for a modified deep dive workshop exploring the current state of the art and mapping probable future directions and developing longer term goals. The attendees were broken up into 4 thematic groups: Home, outpatient, public/shared space and rural/global. Each group proceeded to explore the problem and solution space for point of care tests and technology within their theme. While each thematic area had specific challenges, many commonalities also emerged. This effort thus helped create a conceptual framework for POCT as well as identifying many of the challenges for POCT moving forward.

As illustrated in the figure on the right, four main dimensions were identified as defining the functional space for both point of care testing and technology within their theme. While each thematic area had specific challenges, many commonalities also emerged. This effort thus helped create a conceptual framework for POCT as well as identifying many of the challenges for POCT moving forward.

CHALLENGES

To address these challenges, it is recommended that the POCT community consider the following actions:

- Address the technologies’ usability, ergonomics, and the behavioral and cultural effects on the individual and society early on in the development process
- Increase the focus on privacy and confidentiality concerns that these technologies raise in parallel to their development
- Survey the landscape of end-users and their needs on a regular basis and providing a mechanism for engaging community driven technology
- Set interoperability standards and standards of reliability and accuracy
- Develop communication and educational standards for clinicians and patient end-users
- Evaluate new systems in the context in which they are implemented—before, during and after implementation
- Increase the focus on privacy and confidentiality concerns that these technologies raise in parallel to their development
- Encourage regulatory bodies to develop multiple tracks to examine and regulate new POCT technologies based on a risk assessment and stratification of the technologies
- Encourage regulatory bodies to develop surveillance and outreach programs to help facilitate and guide quality controls for new and developing technologies

CONCLUSION

POCT has the potential to profoundly shape future healthcare delivery. These technologies, however, have the potential to radically alter when, how and where care is delivered and therefore they need to be understood from a systems perspective to best allow their and the system’s success.

REFERENCES


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INTRODUCTION

The US healthcare delivery system is undergoing significant change. To address emerging challenges and unmet needs, NIH created the Point of Care Technologies Research Network (POCTRN) whose purpose is to drive the development of appropriate point-of-care technologies (POCT) merging scientific and technological capabilities with clinical need. www.poctrn.org