Precision Oncology in Veterans Affairs Medical Centers

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March 6, 2023

Agenda

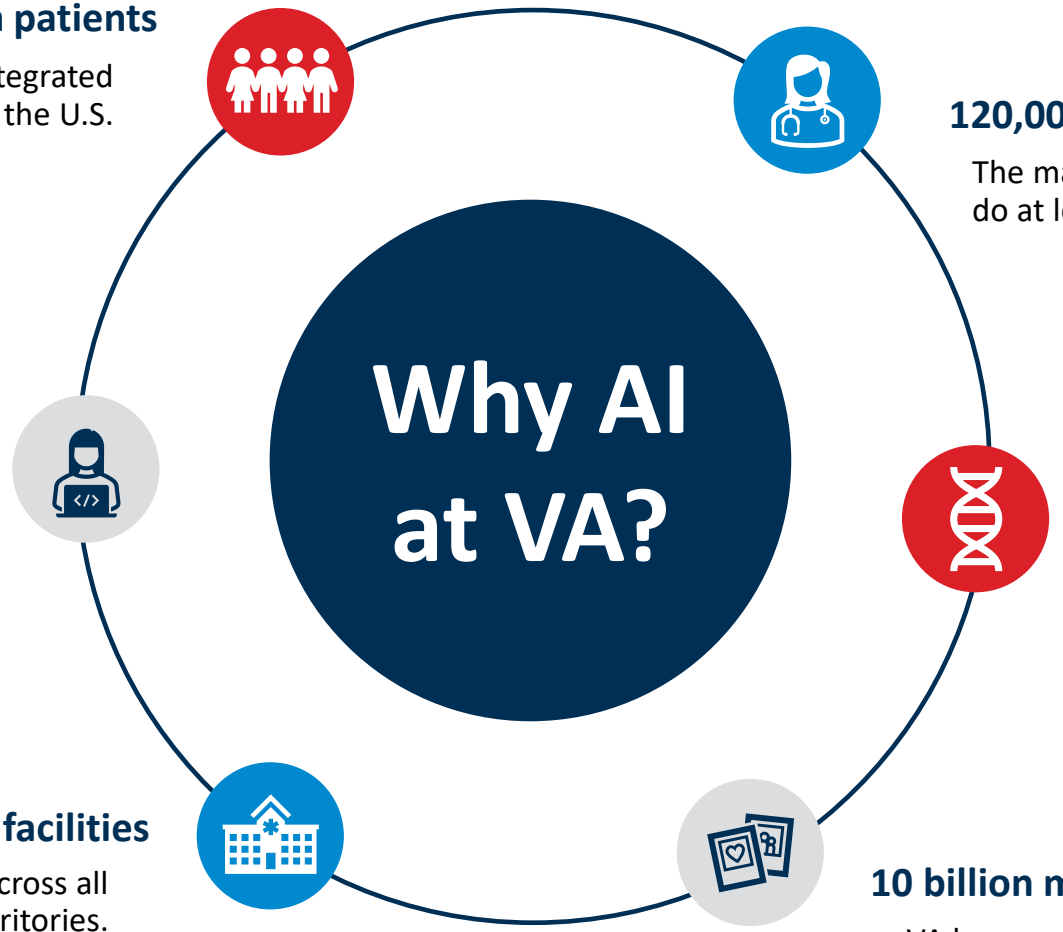
- About the NAII and AI at VA
- Networks and Cancer R&D at VA

About the NAII and AI at VA

National Artificial Intelligence Institute: Vision and Mission

Vision	Mission
To lead the way in trustworthy artificial intelligence as a premier global institute for research, implementation, policy and collaboration that enhances outcomes for our Veterans, their families and beyond.	The National Artificial Intelligence Institute seeks to establish the U.S. Department of Veterans Affairs as the preeminent organization for research, development and training of artificial intelligence with impact on a global scale, ensuring the health and well-being of our Veterans.

Why AI at VA?



9.1 million patients

VA is the largest integrated healthcare system in the U.S.

120,000 clinicians

The majority of U.S. doctors and nurses do at least some of their training at VA.

2.2 million telehealth episodes/year

More than 727,000 Veterans are served by telehealth/year.

800,000 genomic donations

VA has the largest genomic database tied to medical records in the world.

1,200+ medical facilities

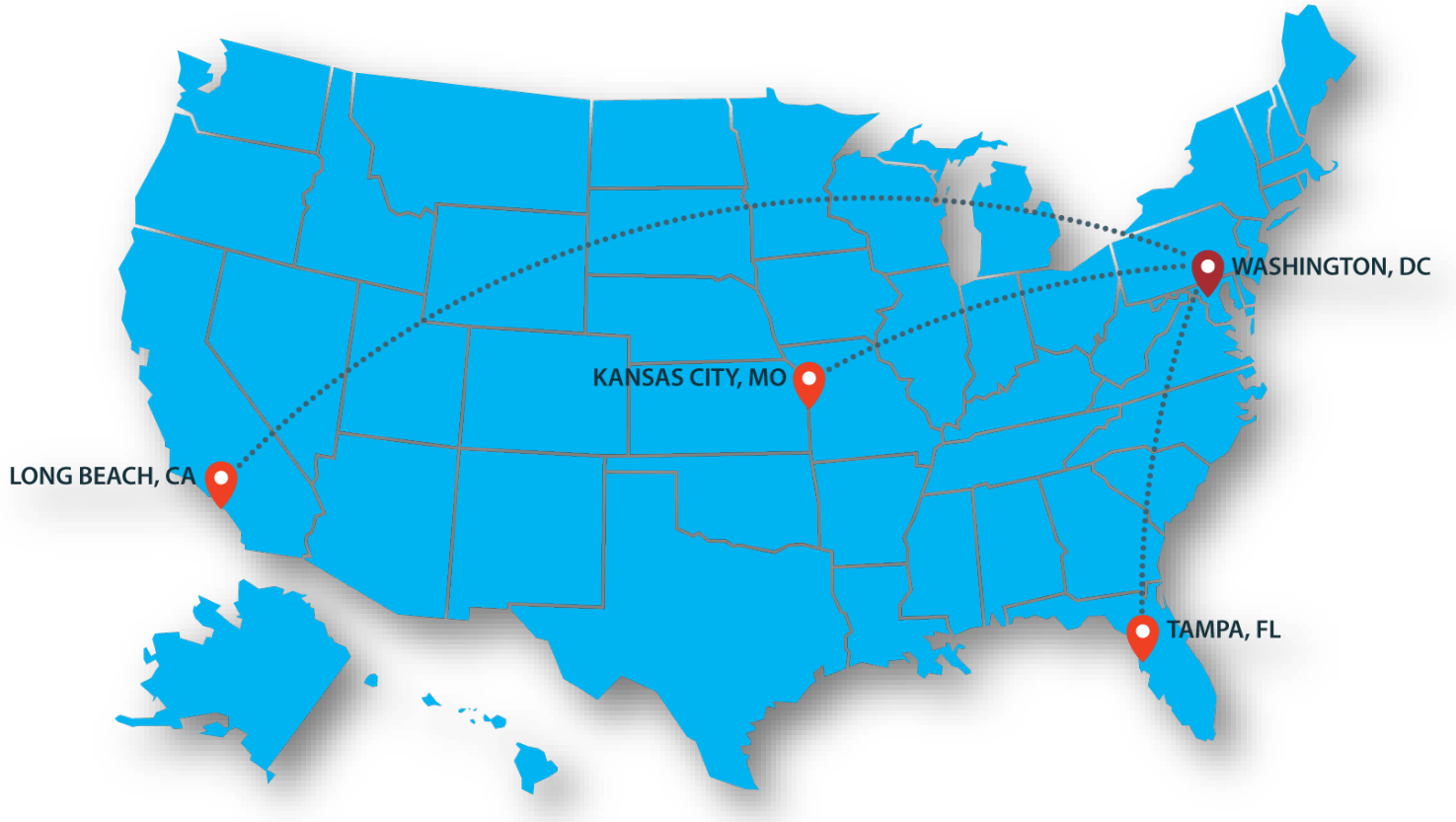
Veterans receive care across all U.S. states and territories.

10 billion medical images

VA has one of the world's largest medical image repositories.

NAII AI Network

- Pilot, Iterate, Scale
- Diversity of Talent
- Diversity of Patient Populations
- NAII AI Network is growing!



Networks and Cancer R&D at VA

Networks and Cancer R&D at VA

VA is the largest provider of oncology services in the nation

- More than 450,000 veterans treated for cancer at VA
- 3.5% of all US cancer patients are treated at VA
- Over 20,000 veterans have benefitted from precision oncology care

VA resources and access to data allow for research on a much larger scale than other institutions, including major advancements in artificial intelligence

- IBM Watson collaboration examining genomic data
- AI assisted pre-cancerous polyp detection

VA-Industry Collaboration on genomic data

Public-private partnership between VA and IBM as part of National Cancer Moonshot Initiative:

- Primarily targets stage 4 patients that have exhausted other treatment options
- Central hub of researchers examines genomic data with help of IBM Watson artificial intelligence to identify mutations and suggest targeted treatments
- Greater accessibility: More than 1/3 of participants are from rural communities, where deploying cutting edge treatments is often a challenge

Patient Story

Less than 1 year after retirement, Army Veteran Tam Huynh was diagnosed with Stage 4 metastatic lung cancer

- Approximately 7,700 veterans are diagnosed with lung cancer each year
- Mr. Huynh experienced severe side effects in early stages of treatment with "off the shelf" chemotherapy
- Analysis assisted by IBM Watson revealed a mutation that could be targeted more effectively by an existing drug
- "Interpretation is the hard part...we use [the AI tool] to bring knowledge focused on this patient's results"

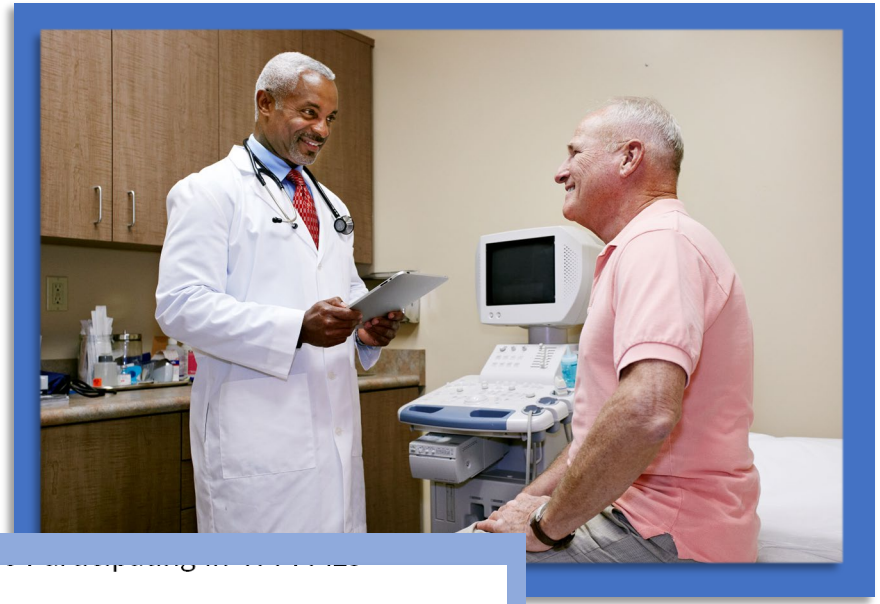
  - **Dr Michael Kelly, National Program Director for Oncology at VA**

AI-assisted Colorectal Cancer Screening

AI used to assist in the detection of pre-cancerous polyps during colonoscopies

- Colorectal cancer is the second leading cause of cancer death for men and women in the US
- Every 1% increase in pre-cancerous polyp detection rate reduces future risk of death by 5%
- Using the tool increases polyp detection rate by 14.4% during routine colonoscopies

Lung Precision Oncology Program (LPOP)



VA established 23 hub locations to address lung cancer research and precision treatment initiatives

- LPOP aims to utilize a variety of initiatives to improve care and outcomes
  - Utilizing data analytics captured in the Cancer Care Registry to assess quality and access to care
  - VA network unites clinicians and computer scientists to increase access to screening and improve early detection
  - Veterans that have trouble traveling or that live in rural areas can access precision care through TeleOncology
- As of May 2021, more than 5,000 veterans had received molecular testing through LPOP

Presentation Summary

- **VA is a premier AI research organization with extensive data gathering and analysis capacity**
  - Largest genomic database tied to medical records in the world
  - One of the world's largest repositories of medical images
- **VA leverages this data and the power of collaborations with government, industry, and academia to advance development of AI, precision oncology, and cancer treatment for veterans**

Thank You!

Email us at NAII@va.gov

Website: National Artificial Intelligence Institute (NAII) (va.gov)

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- AI@VA Community on Teams: https://tinyurl.com/VA-AI-Community
- Subscribe to our newsletter: Join the AI@VA Community

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Questions?

PHASER Program

Collaboration with Sanford Health Imagenetics program to offer clinical pharmacogenomic testing

- Housed under the National Oncology Program
- Aims to use genetic testing to determine patient responses to specific drugs
- Benefits for patients include:
  - Reducing trial and error when searching for treatments
  - Limiting side effects
  - Getting better results

PHASER Patient Story

Navy Veteran and stage 4 lung cancer survivor Patrick McGuire became one of PHASER's first participants

- Diagnosed in 2015, Mr. McGuire underwent multiple surgeries for brain and lung tumors
- Initial treatment attempts outside the VA resulted in bad interactions to prescription medicines
- After seeing VA doctors, his condition improved, and he experienced fewer adverse reactions thanks to targeted treatment
- Future rollout of the program will seek to reach 250,000 veterans at 125 locations around the U.S.

"DNA sequencing on his tumors found a particular gene mutation that we have a drug for…and he reacted well with very few side effects"

- Dr. Michael Kelley
National Program Director for Oncology at VA