



Electronic Health Records for Public Health Planning and Research

Lisa Richardson, MD, MPH
Director, Division of Cancer Prevention and Control

NASEM Workshop
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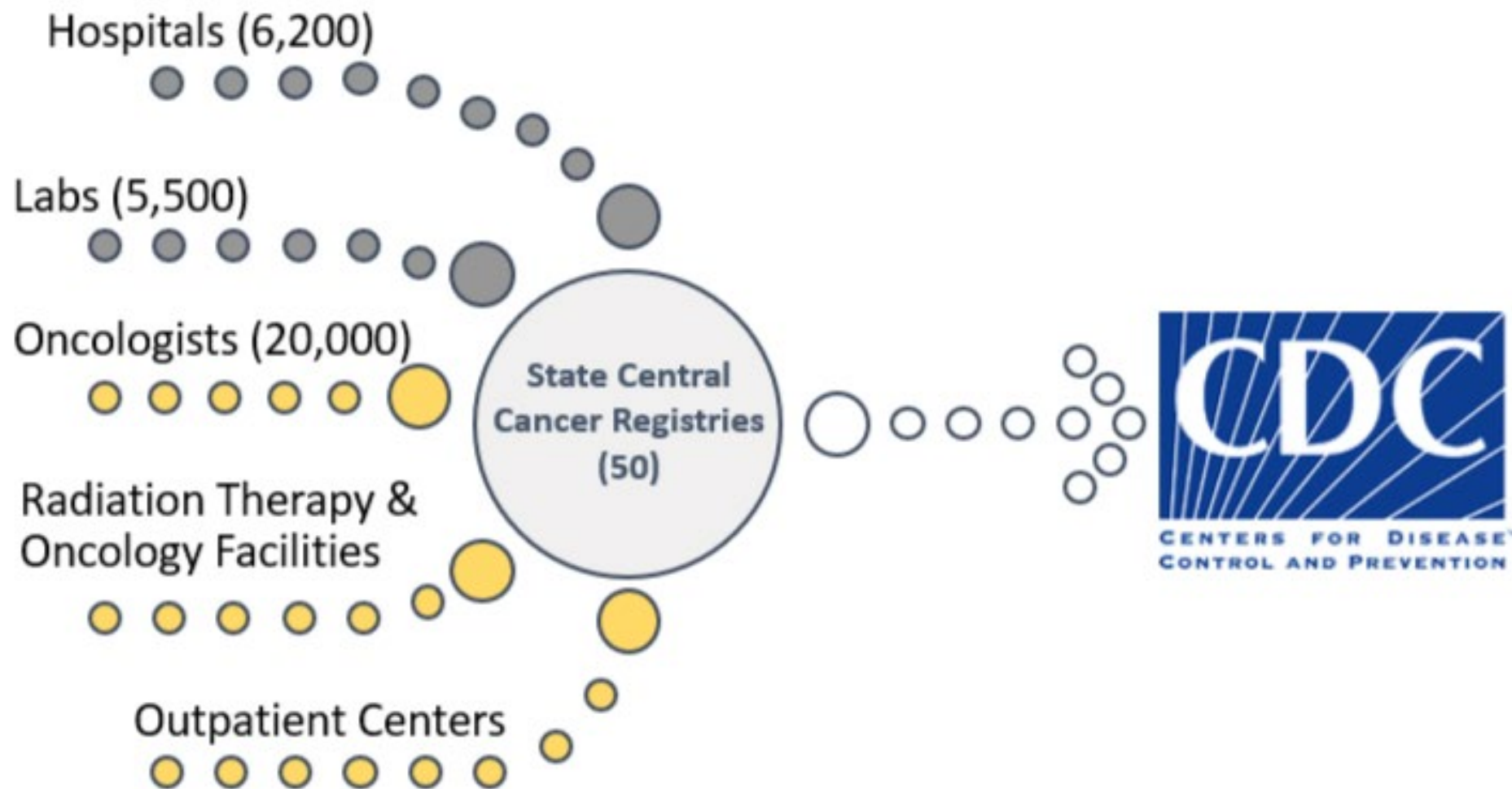




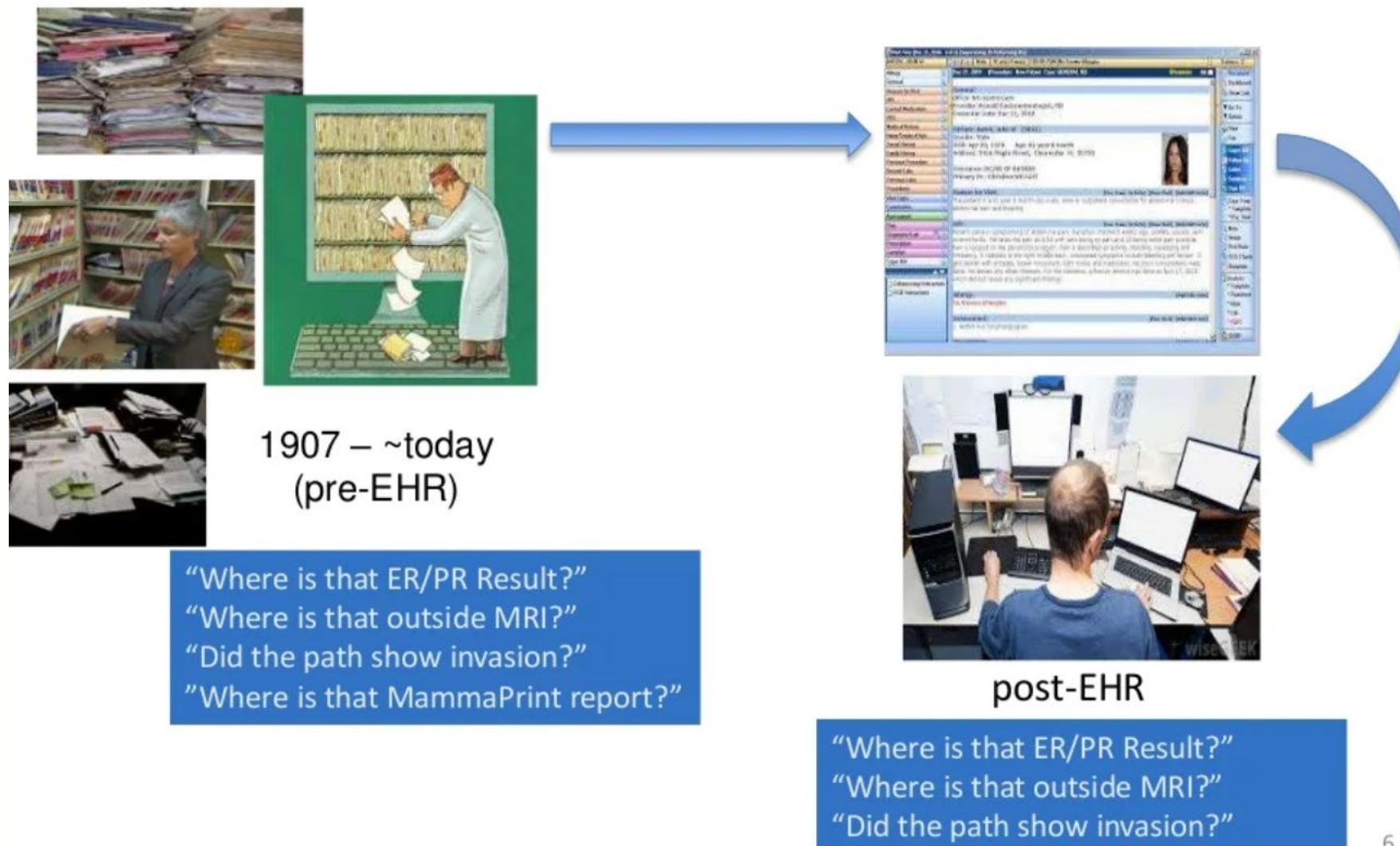
“The best way to predict your future is to create it.”

- Abraham Lincoln
16th U.S. President`

Data Volume and Complexity

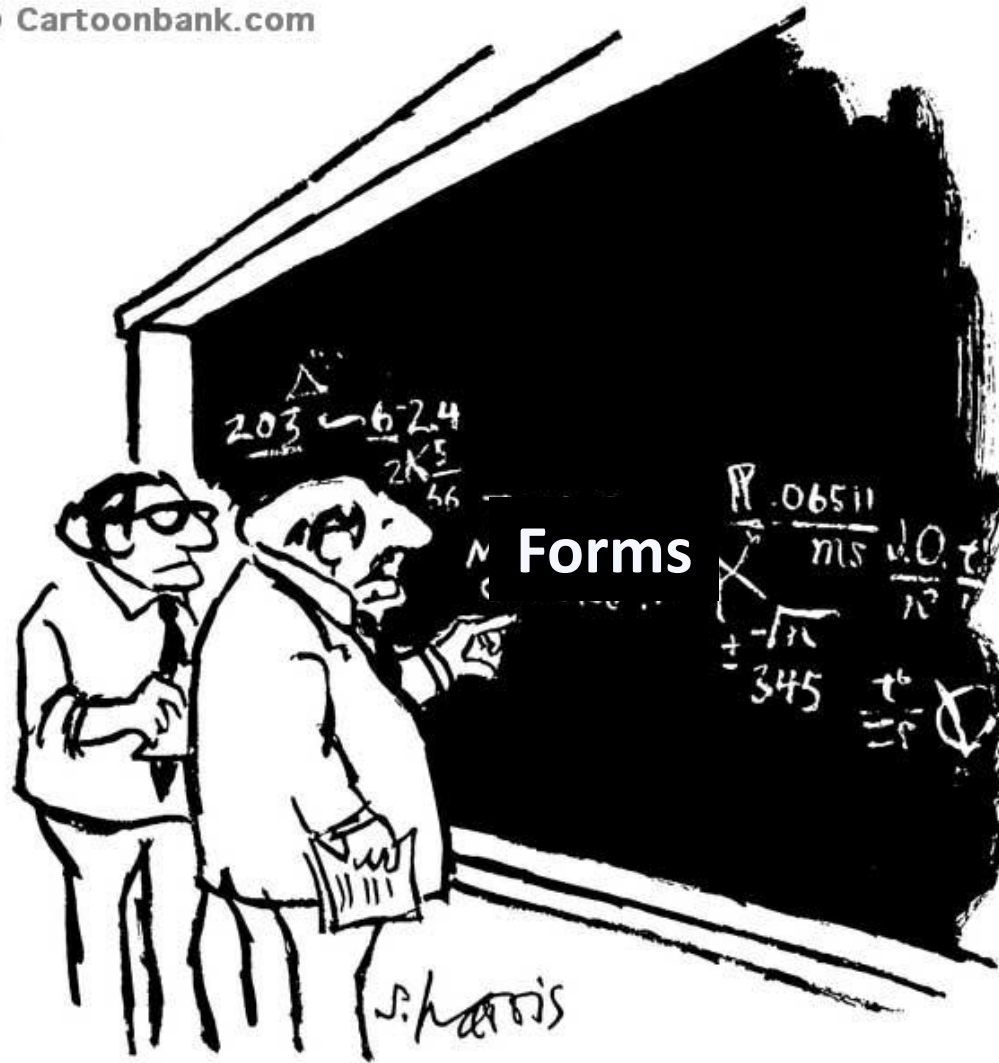


Electronic Health Records Past and Present



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Paper
Records



Forms



Standard Coded
Data

"I think you should be more
explicit here in step two."

College of American Pathologists (CAP) Electronic Cancer Checklists

- Clinical templates automatically filled by simple drop-downs and radio buttons
- Standardized documentation and reporting
- Allows for easier transfer of information to anyone, anywhere because data are structured

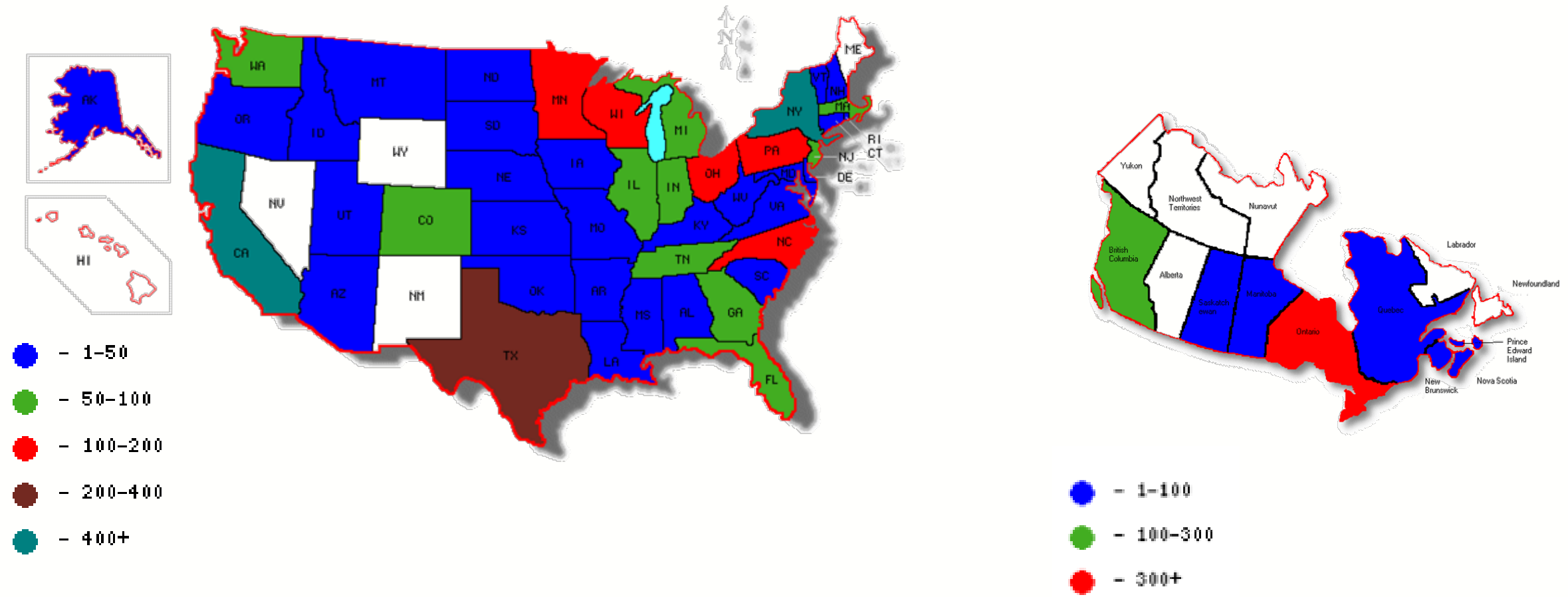


COLLEGE of AMERICAN
PATHOLOGISTS

The screenshot shows a web-based form for documenting breast cancer procedures. It includes several sections with drop-down menus and checkboxes:

- Does the patient have bilateral breast cancer?** with a drop-down menu showing options: -None-, -None-, Yes, and No.
- Tumor laterality** with a text input field.
- Date Of Procedure** with a date picker showing 4/11/2013.
- Procedure** with a large drop-down menu showing options: -None-, -None-, Partial mastectomy, Sentinel lymph node dissection, Therapeutic mastectomy, Skin Sparing Mastectomy, Total Skin Sparing Mastectomy, and Modified Radical Mastectomy.
- Invasive histology:** a list of checkboxes for various cancer types: Invasive ductal carcinoma, Invasive lobular carcinoma, Invasive lobular carcinoma, Pleomorphic lobular carcinoma, Tubulolobular carcinoma, Invasive carcinoma mixed, Tubular carcinoma, Mucinous carcinoma, Medullary carcinoma, Invasive papillary carcinoma, Invasive cribriform carcinoma, and Other (checked).
- Lymph node dissection done?** with a drop-down menu showing options: -None-, -None-, Yes, and No.
- Total Nodes:** with a text input field showing the value 3.

Pathologists Licensed to Use CAP electronic Cancer Checklist (CAP eCC, 2017)

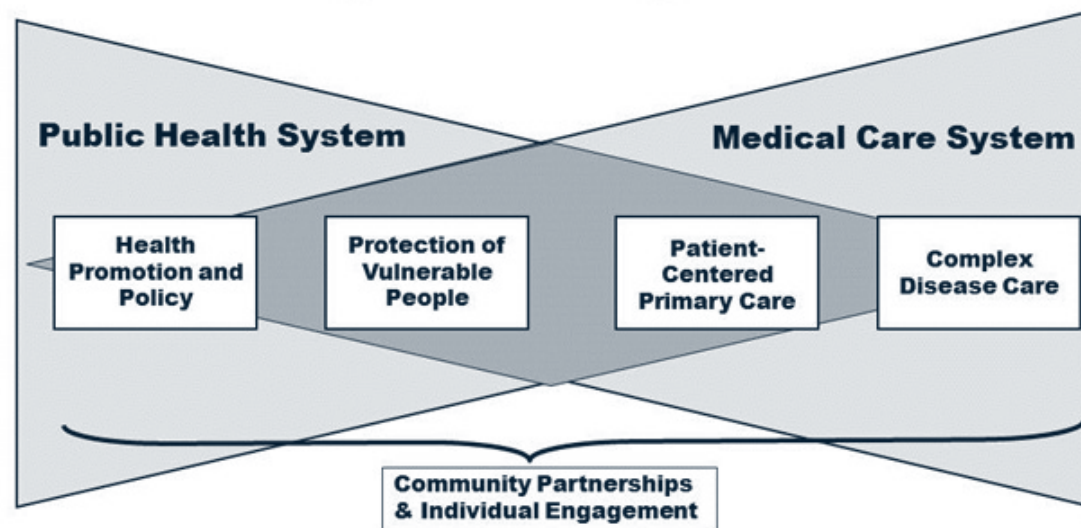


- - 1-49
- - 50-100
- - 101-200
- - 201-400
- - 400+

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Enabling Better Communication and Collaboration Between Health Care and Public Health

Big “I” Integration

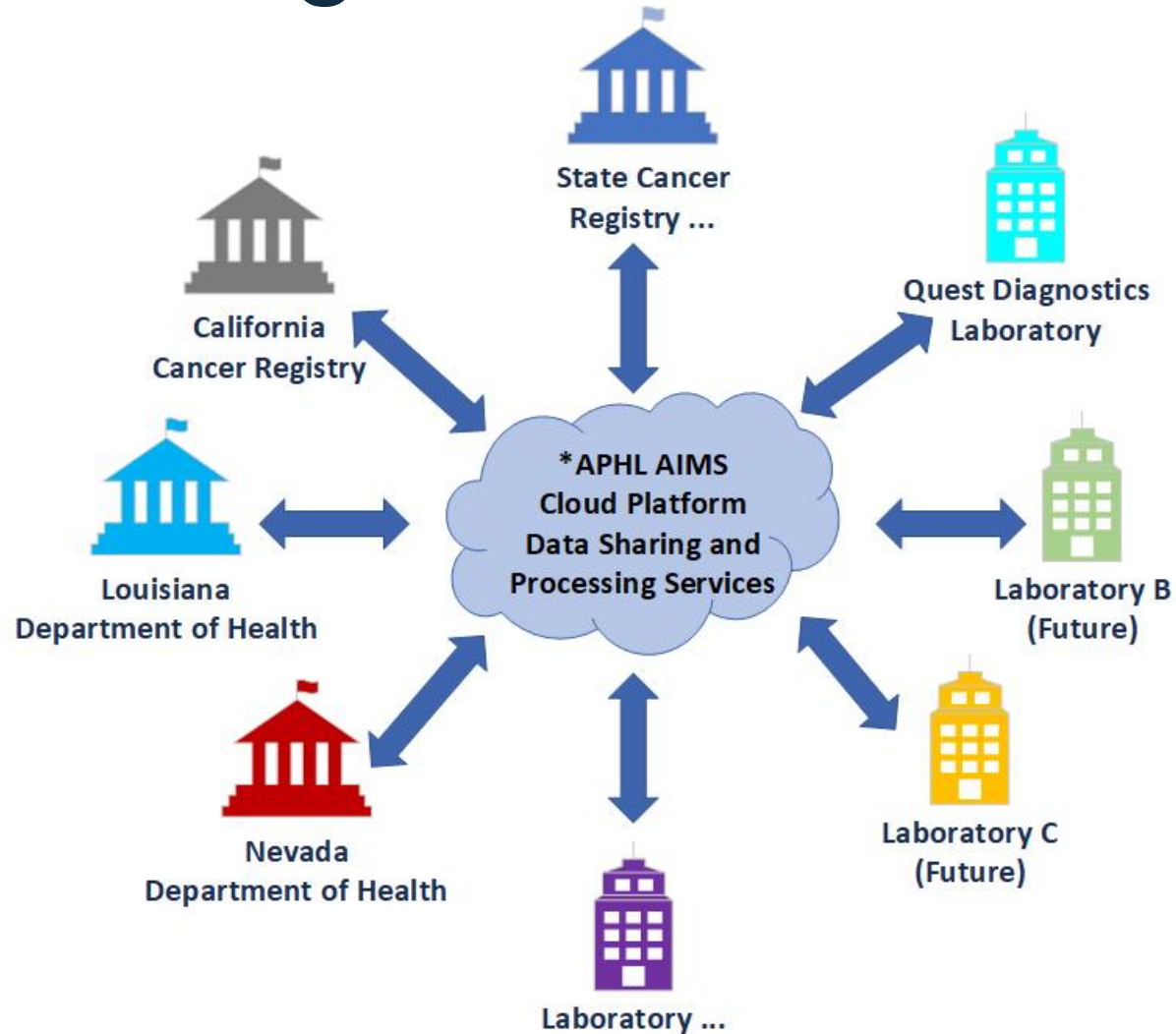


*Adapted from Centers for Disease Control and Prevention, "A Health System: Health Protection for Life!", 2007.

“The flow of important disease-related information between health care and public health will lead to better care and faster, more effective population health interventions”

John Lumpkin, senior vice president, Robert Wood Johnson Foundation

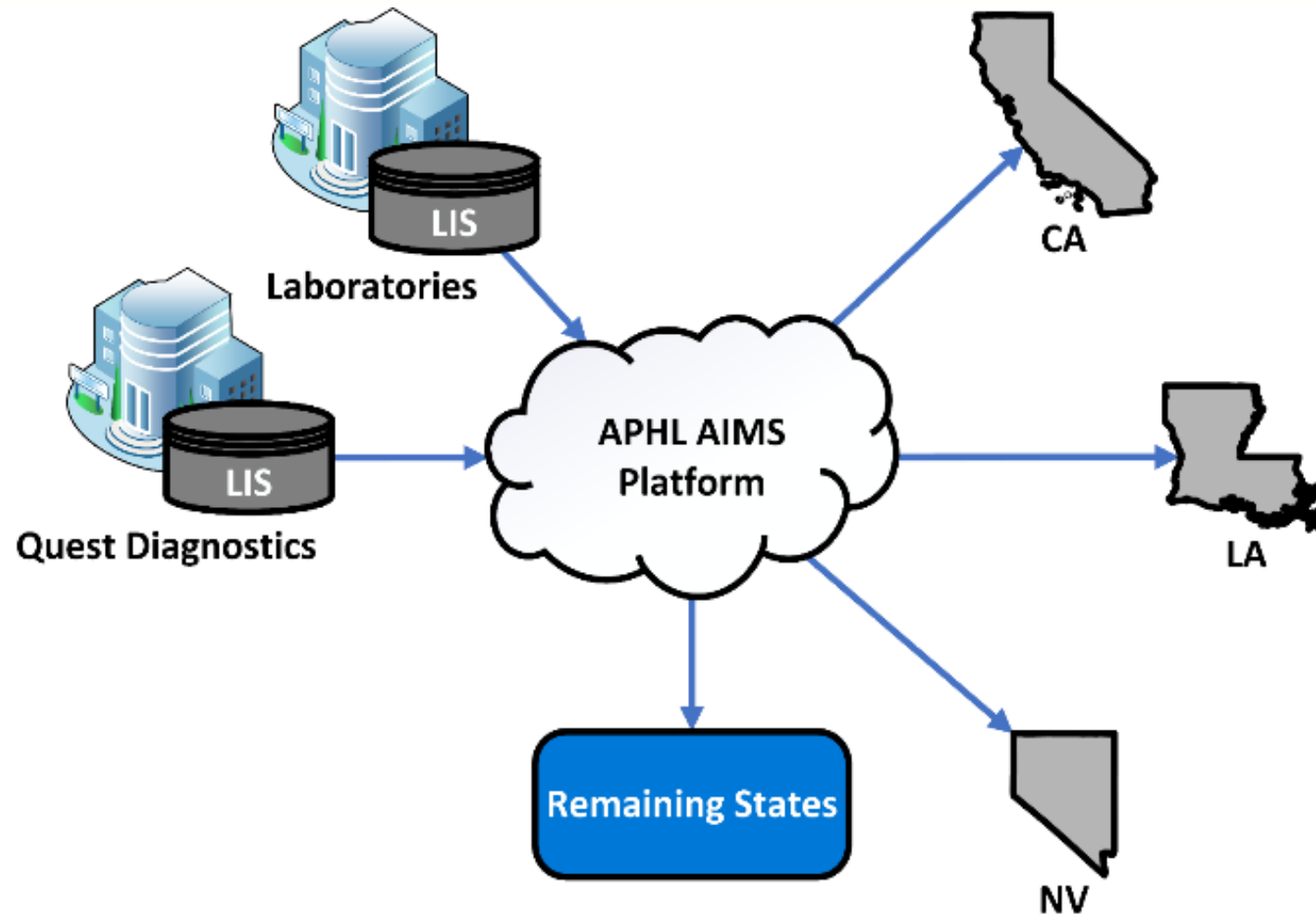
Building the Foundation



*APHL AIMS: Association of Public Health Laboratories Informatics Messaging Services

- California: Direct node on APHL AIMS Platform
- Louisiana: Using existing Dept of Health AIMS portal used to receive infectious disease and HIV data, then automated secure routing of data to cancer registry
- Nevada: Using existing Dept of Health AIMS portal; cancer registry given access to pull data
- Remaining states and new labs implemented after pilot

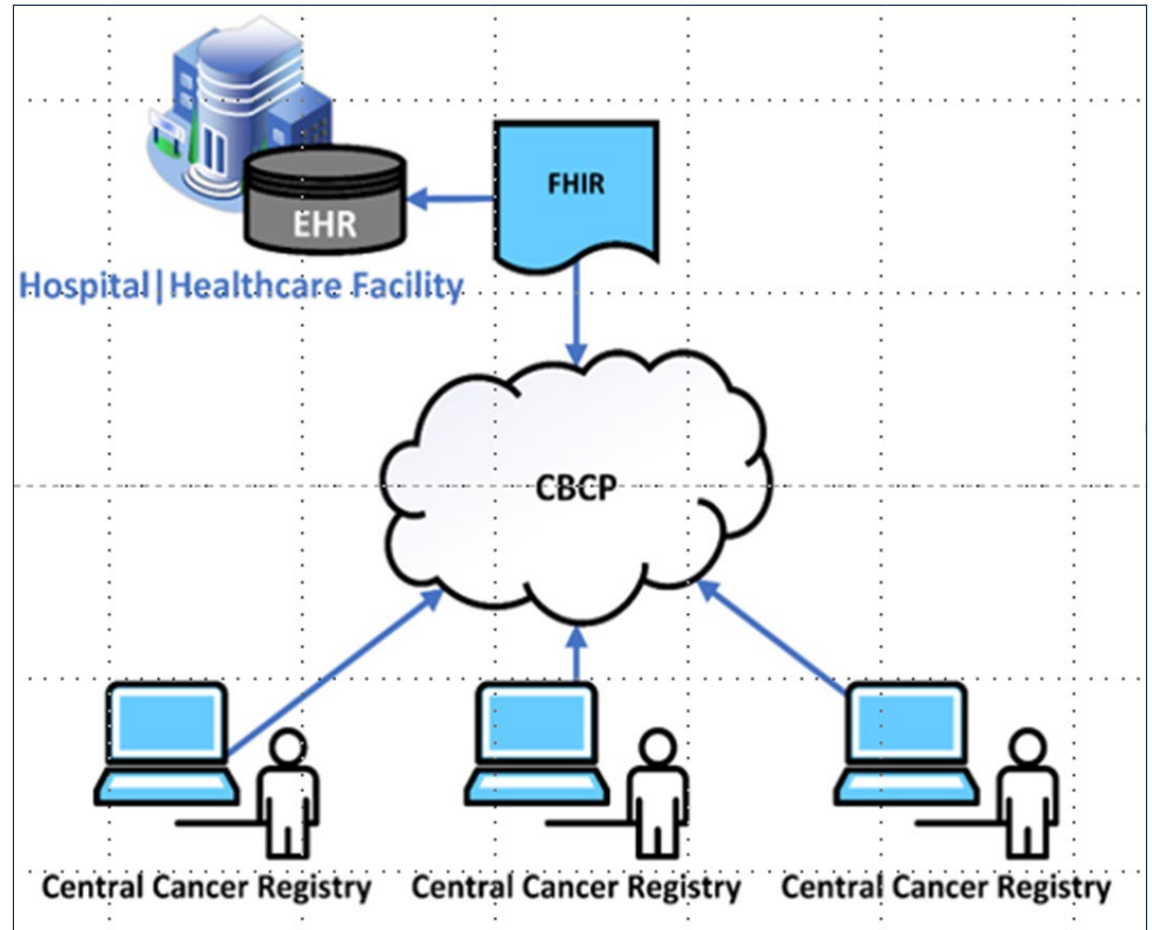
90% of States Receive Path Reports From the Cloud



Emerging Standards in EHR Exchange and Use

Making EHR Data More Available for Research and Public Health (MedMorph)

- Utilizes existing health data and exchange standards
- Facilitates:
 - Timely access
 - Transfer
 - Use of EHR data



Next Steps with EHRs - Electronic Case Reporting (eCR)



Patient is diagnosed with a reportable condition, such as COVID-19



Healthcare provider enters patient's information into the electronic health record (EHR)



Data in the EHR automatically triggers a case report that is validated and sent to the appropriate public health agencies if it meets reportability criteria



The public health agency receives the case report in real time and a response about reportability is sent back to the provider



State or local health department reaches out to patient for contact tracing, services, or other public health action

Can Electronic Health Records be
Modified to Track Complex Procedures?



Screening for Common Cancers Still Recovering

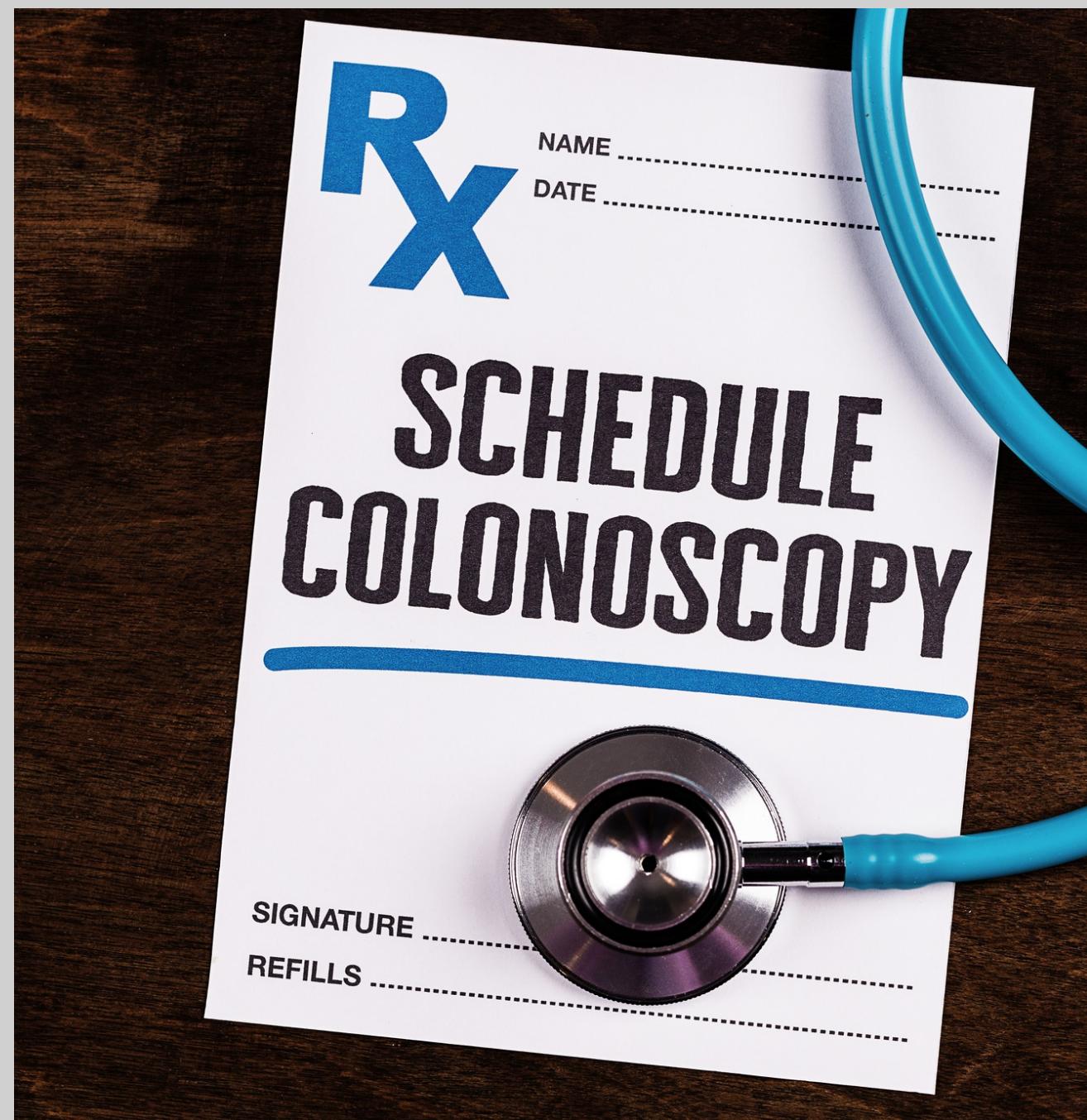
March 2020-March 2021

↓ 13% Breast Cancer Screening = 382,000 missed

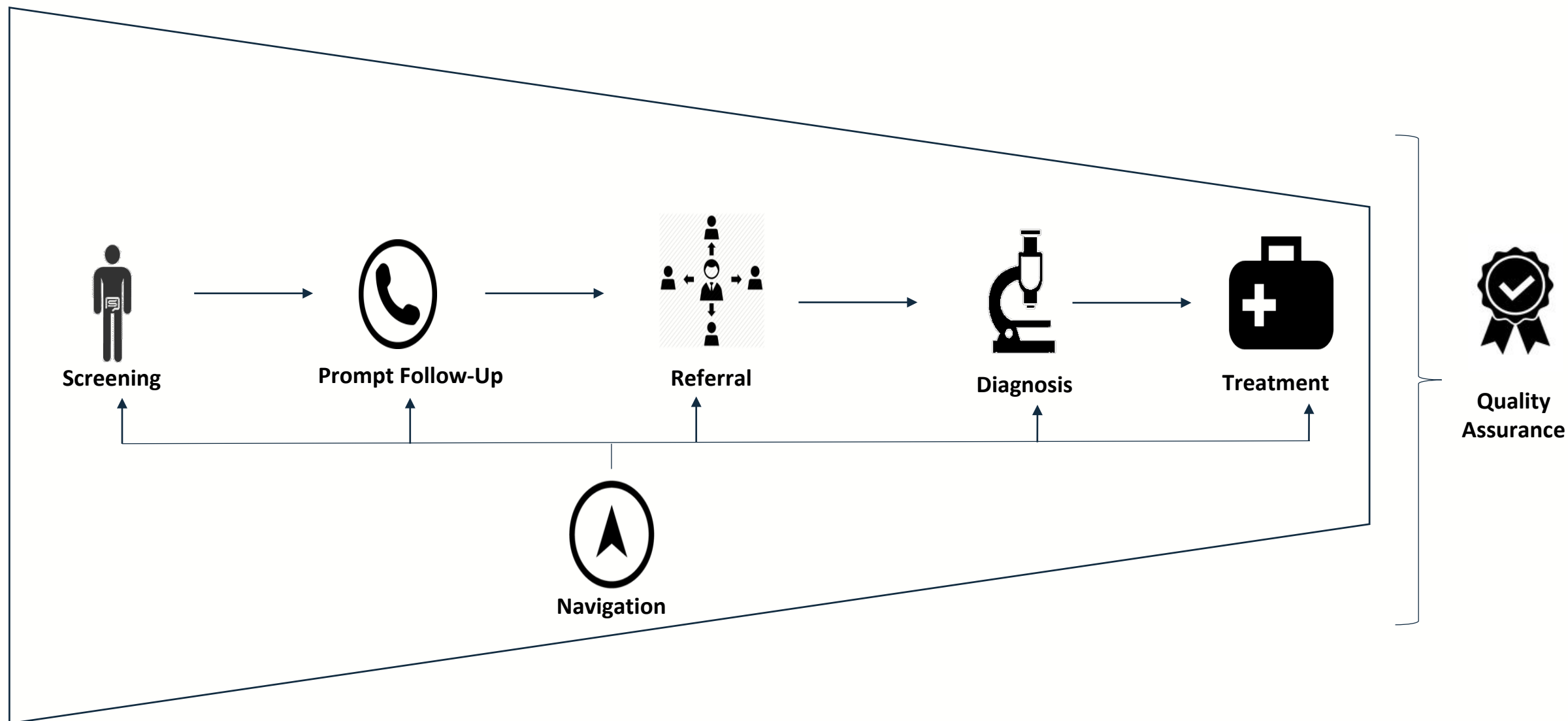
↓ 25% Colorectal Cancer Screening = 249,000 missed

↓ 21% Cervical Cancer Screening = 94,000 missed

Source: [Epic EHR data: Cancer screenings nosedive in 2021 despite easing of COVID restrictions](#)

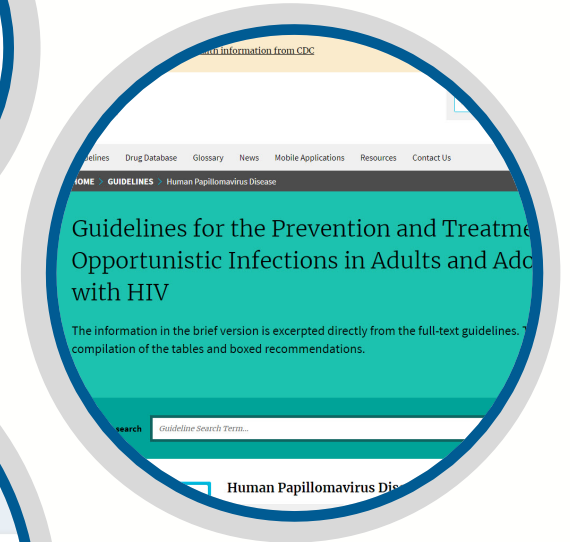


Screening is More than a Test



Many Complex Guidelines

- U.S. Preventive Services Task Force
 -
- American College of Obstetricians and Gynecologists (ACOG)
 -
- American Cancer Society
 -
- The Panel on Opportunistic Infections
 -
- American Society of Colposcopy and Cervical Pathology (ASCCP)
 -



President's Cancer Panel

Improving Cancer Screening Uptake



Goal 4: Create Health Information Technology that Promotes Appropriate Cancer Risk Assessment and Screening

- **Deploy Clinical Support Tools**
 - Cancer risk assessment
 - Management of Screening
- **Convert Narrative Guidelines into Computable Formats**
 - USPSTF, NCCN, ACS, ACR
 - Integrate in EMRs

Source: President's Cancer Panel:

Burden of Preventable Cancers

Many Women not Getting Recommended Cervical Cancer Screenings and Follow up

- **60%*** of women with cervical cancer never screened.
- **67%** of women with abnormal test results did not receive adequate follow up



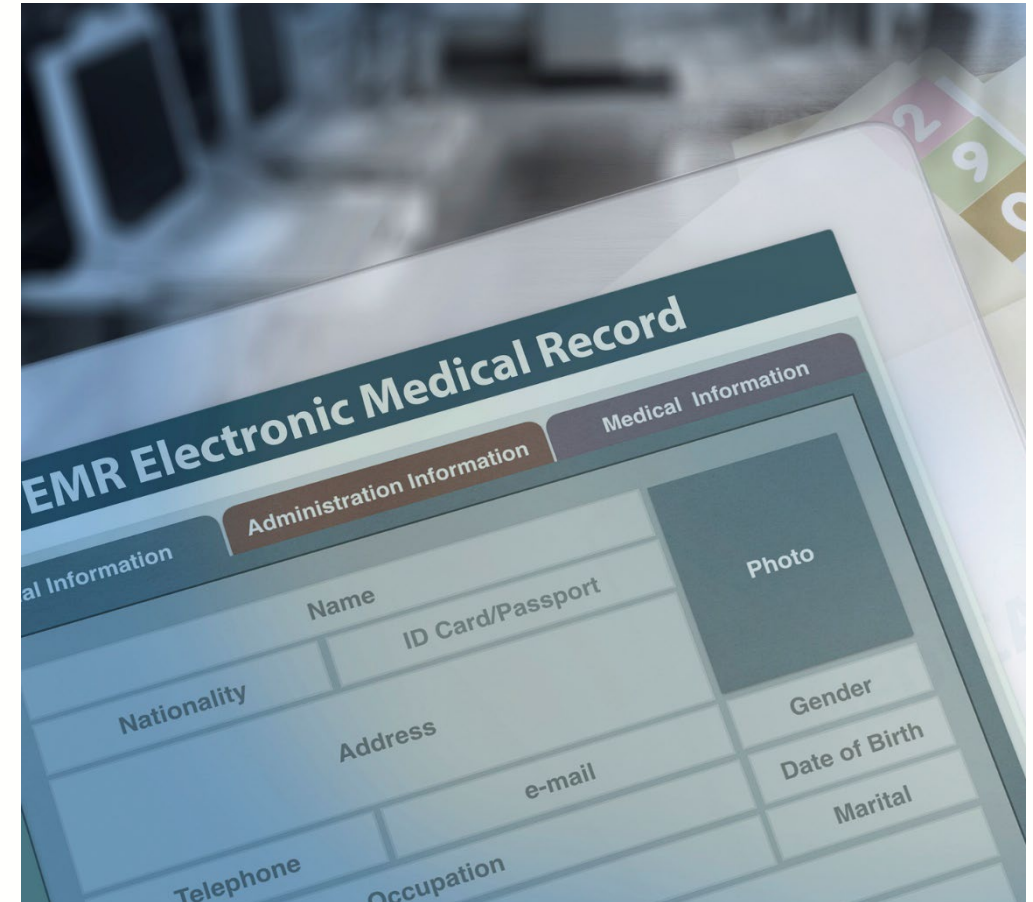
Sources:

*Benard VB, Jackson JE, Greek A, et al. A population study of screening history and diagnostic outcomes of women with invasive cervical cancer. Cancer Med. 2021;10(12):4127-4137. doi:10.1002/cam4.3951

** cdc.gov/cancer/dataviz

Challenges with Safety Net Settings that May Exacerbate inequities

- Insufficient staff and human resources
- Suboptimal health information technology
- Reimbursement for new treatment and care models may be slower
- Administrative challenges
- Challenges accessing specialty care



Screening and Management Clinical Decision Support (CDS)

- Interoperable, shareable, and adaptable
- Enable easier application of:
 - Latest screening guidance
 - Risk-based approach for managing abnormal results
- Improve numbers of women appropriately and equitably screened/treated for cervical precancer

The screenshot shows a web application titled "Cancer Screening & Management Dashboard". It features three tabs: "Breast", "Cervical", and "Colorectal", with "Cervical" currently selected. The interface is divided into several sections:

- Patient Information:** Includes a placeholder for a patient icon and a label "Patient Name".
- Screening Recommendation:** A box stating "Patient is due for a screening" with two buttons: "Order" and "Learn More".
- Pertinent Medical History:** A column on the left containing three entries:
 - HIV Positive:** "Onset: MMDDYY" with a "Learn More" button.
 - Hysterectomy:** "Date: MMDDYY" with a "Learn More" button.
 - DES Exposure:** "Date: MMDDYY" with a "Learn More" button.
- Screening History:** A column on the right containing two entries:
 - Lab Results (02/14/2018):** "HPV: Negative", "Cytology: NILM" with a "Review" button.
 - Lab Results (06/21/2015):** "HPV: Negative", "Cytology: NILM" with a "Review" button.

Source: President's Cancer Panel:

BENEFITS TO PUBLIC HEALTH



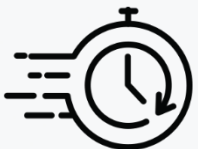
EMPOWER SCIENTISTS

Focus on Knowledge Discovery
and Public Health



GET MORE ACCURATE DATA

Access to Complete, Accurate, and
Up-to-Date Information



SAVE TIME Faster and More
Streamlined IT Development and
Implementation



ENCOURAGE INNOVATION

Enhance Productivity and Creativity



PROMOTE COLLABORATION

Ensure Alignment & Enhance
Productivity



ENSURE SUSTAINABILITY

Maximize Value and Flexibility

The New World of Public Health Data (we hope)

Timely,
Accurate,
Accessible...

THE REALITY

REACTING

Always behind when an epidemic occurs

COUNTING DATA

Collecting data without the ability to rapidly analyze it

STORING IN SILOS

120 silos that restrict data sharing between systems

LOOKING BACK

Using data to see what has already happened

MOVING SLOWLY

Outdated, paper based-systems with multiple points of data transfer

USING RESOURCES INEFFICIENTLY

New resources always required to do new data collection



THE OPPORTUNITY

ANTICIPATING

Getting ahead of an epidemic **to stop it**

UNDERSTANDING DATA

Faster analysis to **gain real-time insights**

SHARING ON PLATFORMS

Interoperable, accessible data **for action**

LOOKING FORWARD

Using data to **predict and prevent threats**

MOVING FAST

Creating a true digital highway to **transfer data in real time**

CONNECTING RESOURCES

Leveraging existing resources and making common **investments for the future**

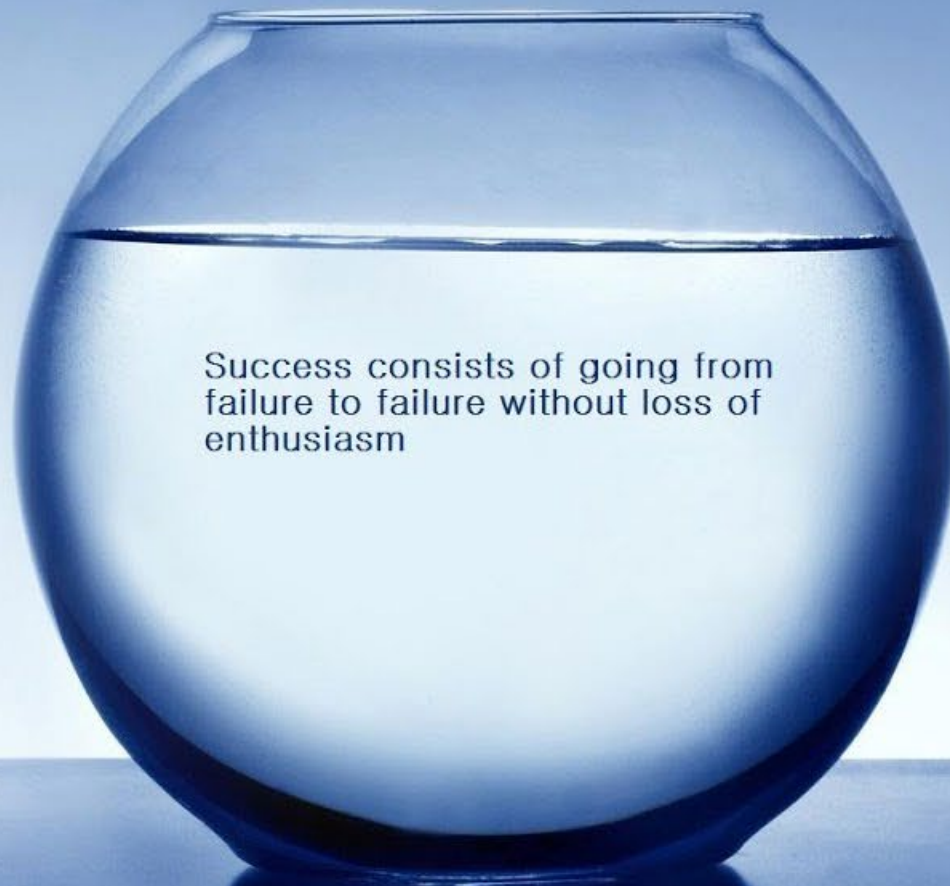


Action is the foundational key to
all success.

Imperfect Action is Better than
Perfect Inaction



Success consists of going from
failure to failure without loss of
enthusiasm



Thank you!

Go to the official federal source of cancer prevention information:
www.cdc.gov/cancer



Division of Cancer Prevention and Control

Reliable. Trusted. Scientific.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.