

2015 APHL[™] ANNUAL MEETING

and ninth government environmental laboratory conference

The Status of NGS in PHLs

Where We Are and Where We're
Going



Next Generation Sequencing

- **Has the potential to significantly change how we generate and analyze data**
- **Applications in many areas of public health and agriculture laboratories**
- **Important to determine the status and needs of APHL member labs**

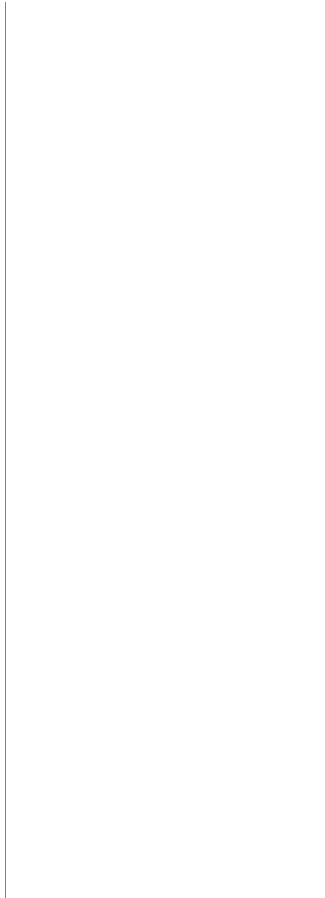
APHL NGS Survey

Where are we?

APHL Next Generation Sequencing Survey

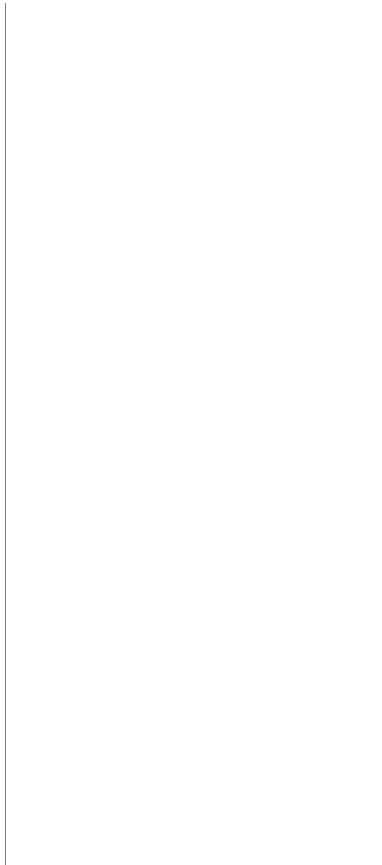
- **Fielded on October 27, 2014 and officially closed on December 24, 2014**
- **50 of 51 SPHLs responded (98%)**
- **18 of 46 LPHLs responded (39%)**
- **Overall response rate 70%**

PHLs with NGS Instruments - Currently



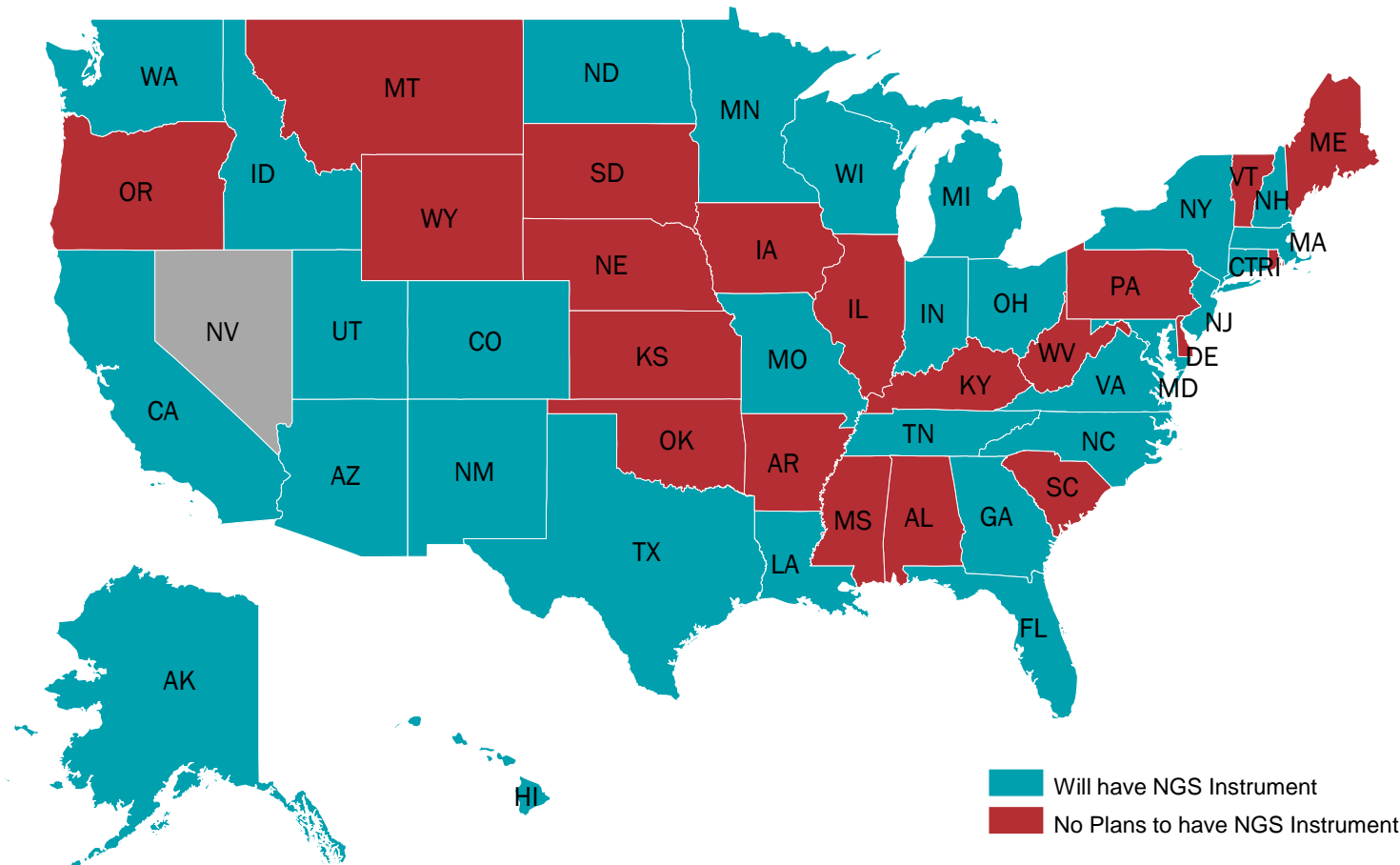
21/50
SPHLs with
Instruments

Plans to Purchase in Next 12 Months



**9 of 29 SPHLs
Plan to
Purchase
Instruments in
2015**

Potential NGS Landscape at the end of 2015 (30/50 SPHLs)



Teal Will have NGS Instrument
Red No Plans to have NGS Instrument

Reasons for Not Purchasing NGS Instrumentation in SPHLs

- 20 SPHLs with no plans to purchase
- Most common reasons cited:
 - No available funding (19)
 - Waiting for applications to be more fully developed (10)
 - Technology Too Expensive (9)
 - Insufficient staffing (8)

PHL NGS Applications: Current

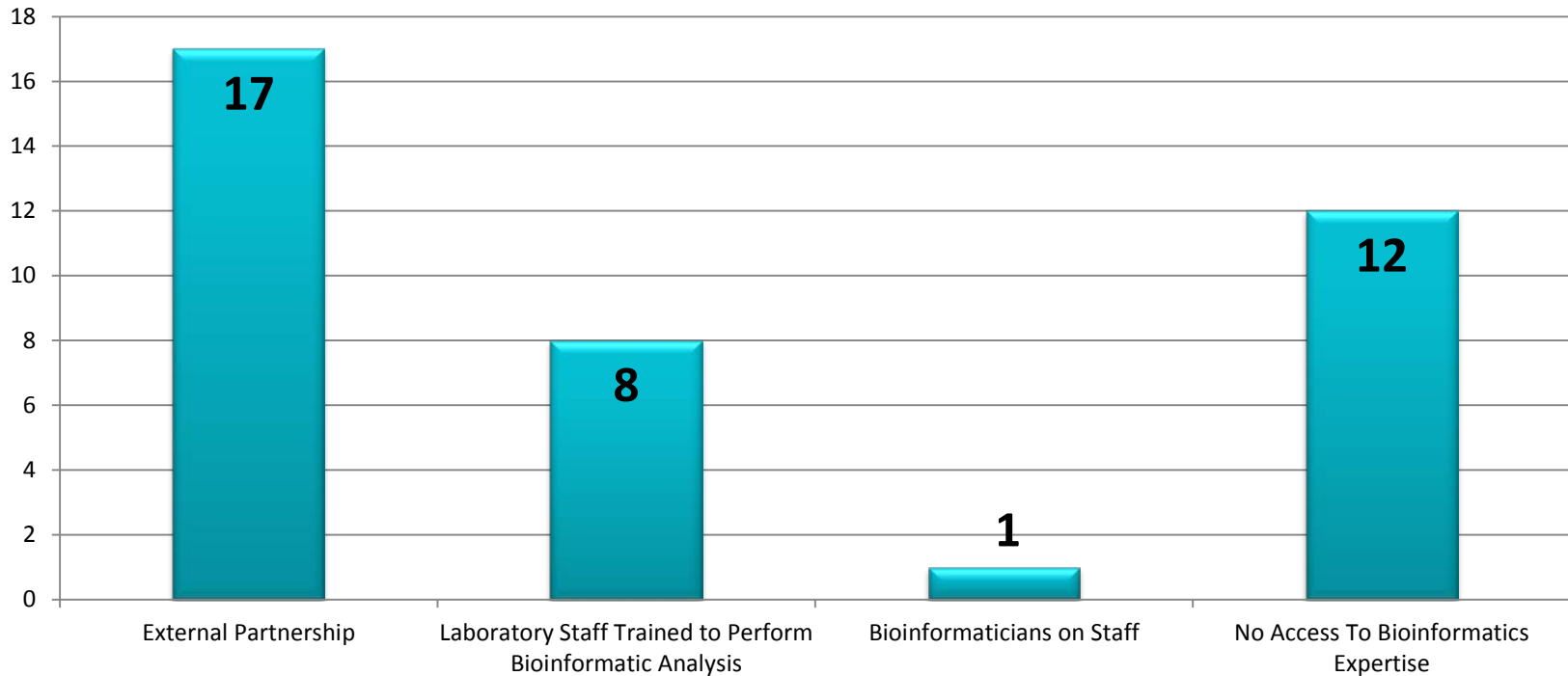
Foodborne Pathogens! (21/21)

And everything else:

- **Mycobacteria (6)**
- **CRE/ KPC (5)**
- **Newborn Screening (3)**
- **HCV (2)**
- **Influenza (2)**
- **Other Respiratory Pathogens (2)**

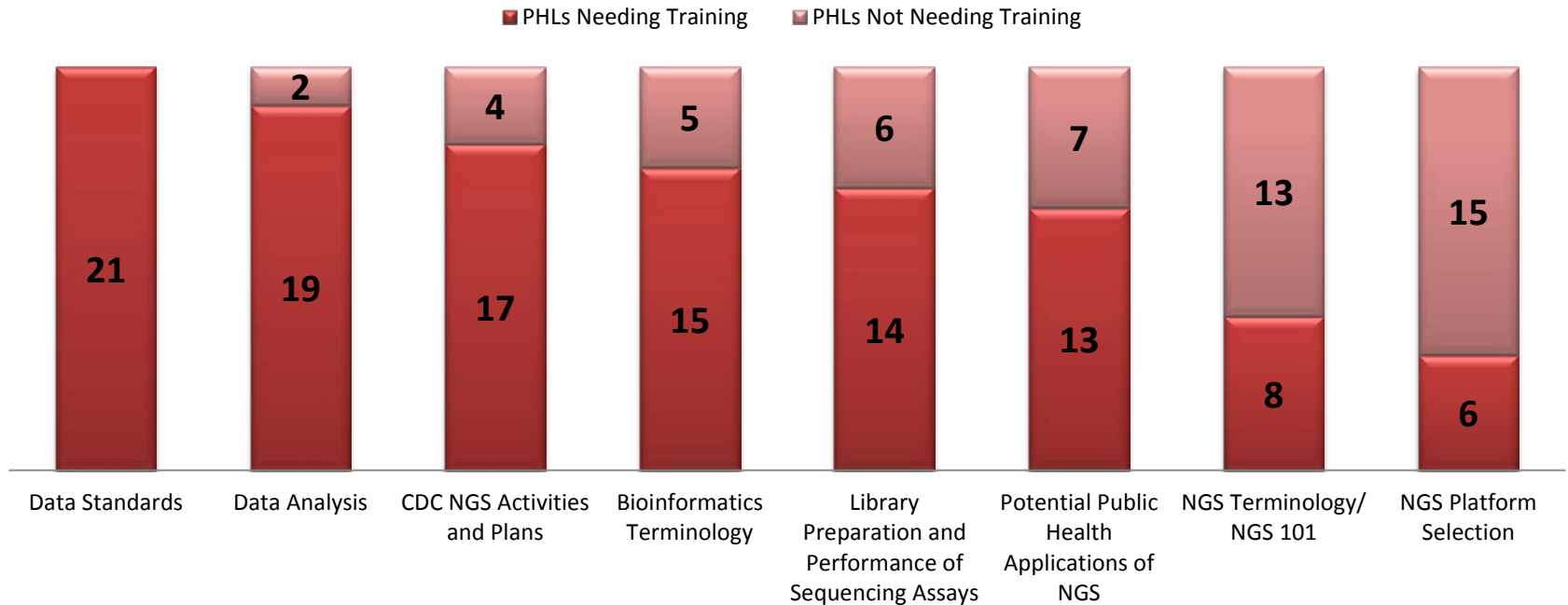
Bioinformatics

Sources of Bioinformatics Expertise in PHLs (n=33)



Training Needs

Training Needs in PHLs with Existing Instrumentation (n-21)



NGS Gaps; Where to Go From Here

- **Utility of NGS for foodborne pathogens well understood, but...**
 - Concordance of NGS and epidemiological data still being studied
- **Define applications and role of PHLs beyond foodborne pathogens**
 - Need to engage stakeholders
- **Transmission of NGS data**
 - Define mechanism, funding, IT infrastructure, data storage
 - Establish data sharing agreements
- **Training of PH laboratorians in NGS testing procedures, bioinformatics, and NGS data standards**
 - highlighted as a critical need

AMD Roadmap

Where are we going?

CDC's Advanced Molecular Detection Initiative

- 5-year initiative with a goal of transforming disease detection and response through technological innovation
- Investment in projects to increase NGS and bioinformatics capacities
- Projects span multiple CDC labs and includes state and local partner laboratories

CDC/APHL AMD Strategic Mapping Session – 2015

- **Purpose**

- Broadly outline future directions for engagement of public health system in AMD implementation
- Includes building capacity for NGS and bioinformatics in state and local public health jurisdictions
- Ensure integration into CDC's agency wide approach to AMD

- **Organizations Represented**

- State and Local PHLs, CDC, CSTE, and ASTHO

- **Outcomes**

- Development of a strategic map

CDC/APHL Advanced Molecular Detection (AMD) Strategic Map
Strategic Map: 2015-2017

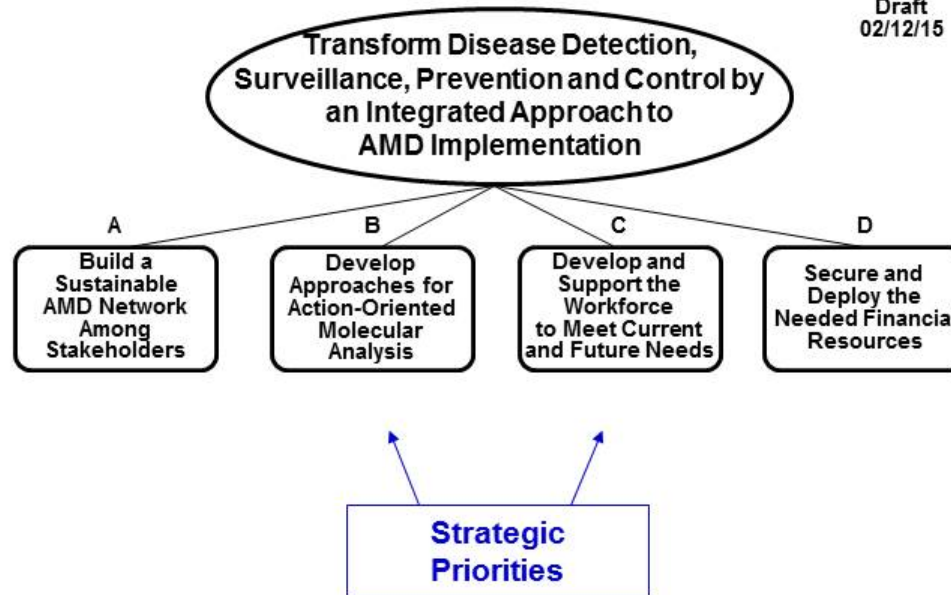
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Transform Disease Detection,
Surveillance, Prevention and Control by
an Integrated Approach to
AMD Implementation

Central Challenge

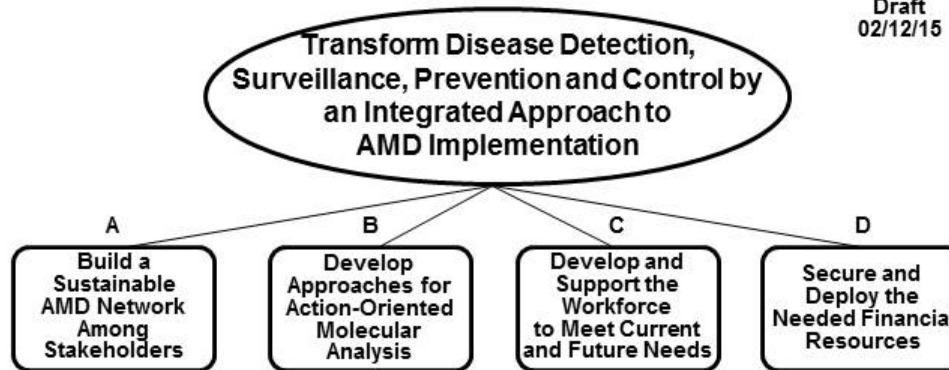
**CDC/APHL Advanced Molecular Detection (AMD) Strategic Map
Strategic Map: 2015-2017**

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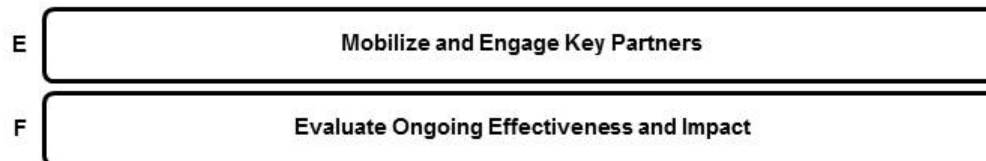


CDC/APHL Advanced Molecular Detection (AMD) Strategic Map
Strategic Map: 2015-2017

Draft
02/12/15



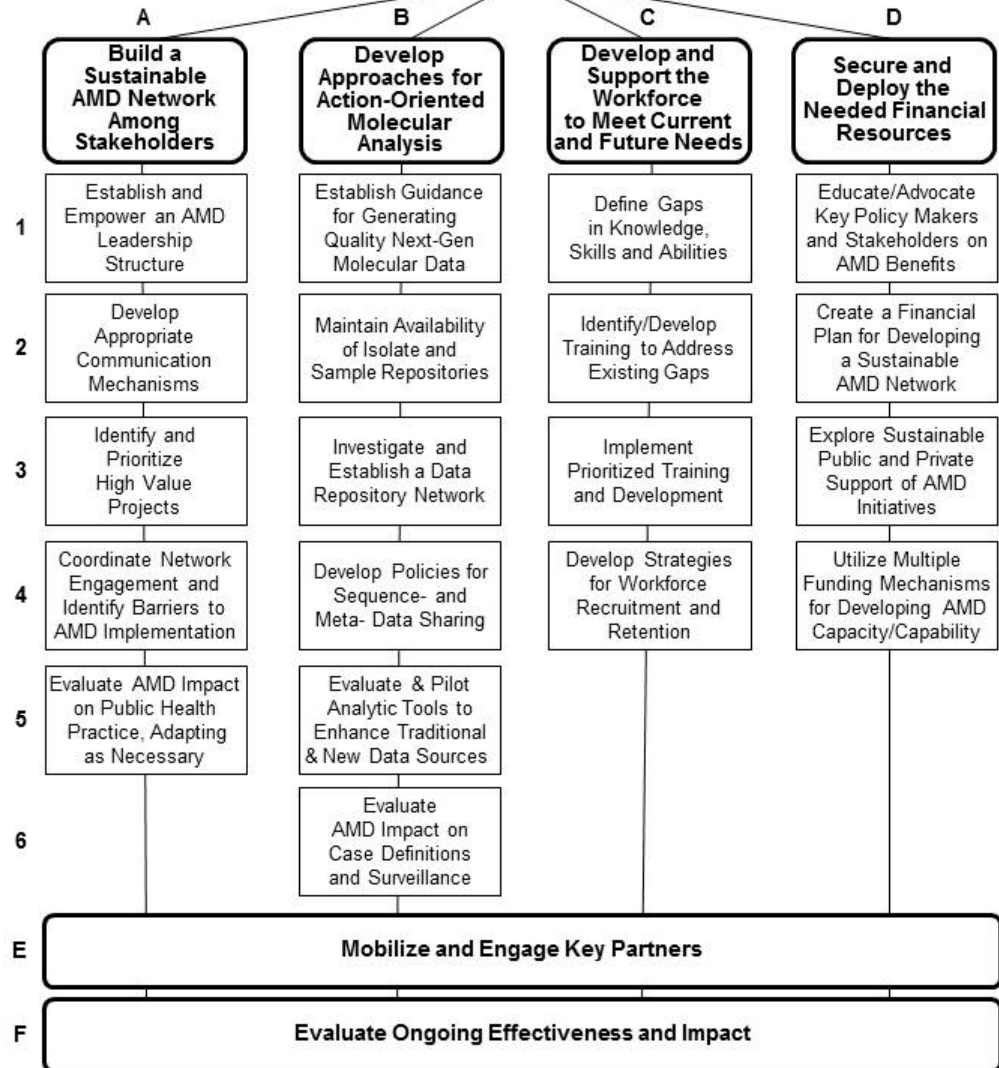
**Cross-Cutting
Strategic Priorities**



**CDC/APHL Advanced Molecular Detection (AMD) Strategic Map
Strategic Map: 2015-2017**

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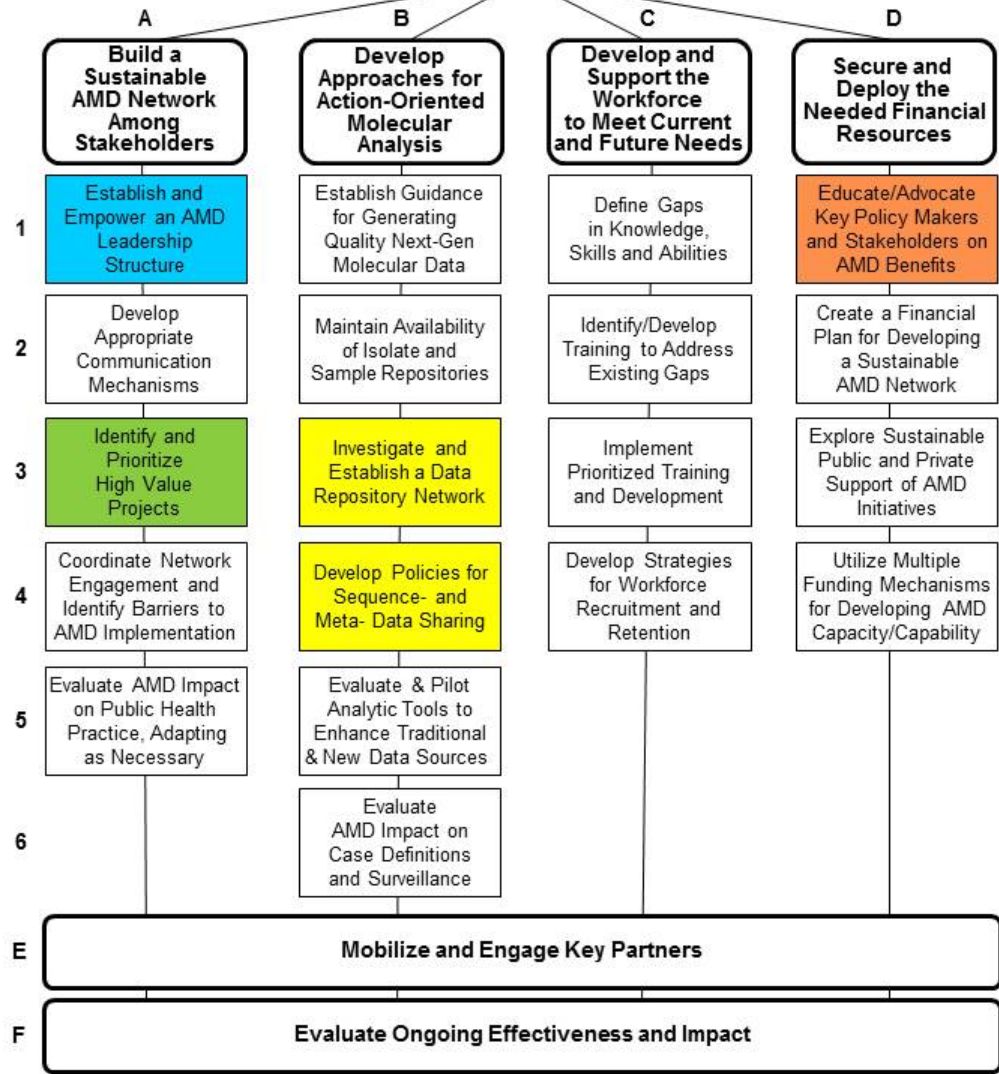
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**CDC/APHL Advanced Molecular Detection (AMD) Strategic Map
Strategic Map: 2015-2017**

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Conclusions/ Next Steps

- Reinforce importance of AMD to policy makers
- Establish leadership structure
 - Ensure implementation of the strategic map
 - Representation from stakeholders
- PHL representatives will join CDC’s “AMD State Working Group”
 - Provide state perspective on ongoing AMD projects
 - Identify high priority/ impact projects.

