API Current State Assessment

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API Landscape Assessment

Objectives

- Present findings from a current-state assessment of API use in health care
- Discuss implications for app development

Areas of Focus

- Clinical use cases and standards for APIs
- Challenges and technical concerns for read and write capabilities
- Outlook for future development of write capabilities
API Landscape Assessment Methods

We used the following methods to conduct the current-state assessment:

- **Literature Review**: Peer reviewed and grey literature
- **Key Informant Interviews**: 13 stakeholders, representing 3 different stakeholder types
- **EHR App Gallery Review**: Publicly available and vendor-curated galleries
- **Technical Expert Panel**: 13 subject matter experts representing different stakeholder perspectives
API Landscape Assessment Limitations

- The categorization of app end-users and app purpose was derived from publicly available information that was not consistently available across apps or app galleries.
- The assessment was conducted in mid-2018; considerable progress has been made in standards and app development.
Key Findings: Landscape Assessment
Primary Use Cases for APIs in Healthcare

**Use Case 1. APIs Used for Bi-Directional Data Exchange**: Data can be pushed or pulled from an EHR or external system and written into the database.

**Use Case 2. APIs Used to Contribute Data to the EHR**: Enables outside sources to push data to an EHR; data may be read or written into the system.

**Use Case 3. APIs Used to Aggregate Data**: Involves pulling/querying data from multiple EHRs and aggregating the data.
Primary Use Cases for APIs in Healthcare cont.

Use Case 4. APIs to Facilitate Clinical Decision Making: Involves pulling and integrating information from multiple data repositories into an EHR for clinical decision support and care management.

Use Case 5. APIs for Bulk Data Access: Enables download and/or query of multiple records from multiple patients.
Architectures for APIs/Apps

Apps can run in different configurations:

- Apps can be standalone
  - Cerner
  - Apple Health Record
  - Apigee
  - Epic (soon)
  - Appriss Health

- Apps can be embedded:
  - Aggregate data from multiple EHRs
  - Cleaning or standardizing data
  - Adding security or monitoring
  - Changing the protocol

Data Source

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App Gallery Review

- Review Vendor App Galleries
- Review Publicly Available Apps

Categorize App Characteristics

- Audience
- Purpose
- Functions
App Gallery Review

- 271 applications available, as of August 2018
- The majority (69%, 186 of 271) were provider-facing apps

![Pie chart showing application category]

- Provider & Patient facing 17% (46 Apps)
- Patient-facing 14% (39 Apps)
- Provider-facing 69% (186 Apps)
App Use Cases

- EHR vendors support a variety of use cases

![Bar chart showing the number of applications for different purposes.](chart)

- Patient Engagement and Education: 74
- Analytics and Population Health: 54
- Clinical Decision Support and Patient Safety: 63
- Care Coordination: 66
- Administration: 36
- Financial: 24

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Common Characteristics of Provider-Facing Apps

- Use both proprietary and standards-based APIs
- Support both read and write functionalities
  - Write functionality is limited
  - Write implementations use proprietary APIs
- Undergo more rigorous vetting than patient-facing apps
Common Characteristics of Patient-Facing Apps

- Support read functionality almost exclusively
- Use FHIR-based APIs
  - Published FHIR end-points satisfy 2015 Edition Health IT Certification Criteria
- Undergo little or no vetting by EHR vendors
  - Authentication can be initiated via patient portals
API Development and Use
Key Issues to Advancing Provider- and Patient-Facing API Use

- A robust, stable, and widely used normative standard for FHIR
- Expansion of the US Core Data for Interoperability (common clinical data set) for clinical and administrative data
- Industry-accepted FHIR implementation guides for high-value write access use cases
- Data provenance rules and guidelines
- Sound data governance practices
- Transparent app vetting procedures or rubrics
High Value Use Cases for Patient-Facing Apps

- **Questionnaires:** Writing questionnaire responses back into the EHR (e.g., smoking cessation, PROs, SDOH)

- **Meaningful aggregation of PGDH/PRO data:** So it is presented with summary-level and/or actionable information at point of care

- **Patient Data Correction:** Developing an app that allows patients to contact their providers and request edits to their record (e.g., medication lists)

- **Care Plan Creation and Adherence:** Scheduling and reminding patients about preventive care screenings, follow-up visits, monitoring medication adherence

- **Use of CDS Hooks:** Leveraging APIs to process data and provide clinical decision support
Conclusions

Ongoing Assessments of App Marketplaces are Warranted

- Types of use cases apps can support
- Measures of adoption and use
- Number of vendors participating in voluntary vetting, code of conduct arrangements
- Availability of well-documented API specification for app developers
Thank You!
Resources

Thank You!