

Shop & Cook & Serve your Public Health Data with NHSNLink

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- Chief Innovation Officer at Lantana
- Co-chair of HL7 FHIR Infrastructure Work Group (FHIR-I)
- Member of the HL7 Technical Steering Committee (TSC)
- Co-editor of many FHIR and CDA implementation guides (IGs) like C-CDA and C-CDA on FHIR

Mission:

- Improve healthcare through health information technology (IT)
- Lead the industry through our consulting and volunteer practice

Services:

- Software & standard development & implementation
- Terminology, data governance, and education
- Strategic advice for health IT planning, design, and purchasing

NHSN is an extensible surveillance platform that serves as a resource for healthcare event reporting, quality measurement, and other functions

Nation's most widely used healthcare-associated infection tracking system

Central-line associated bloodstream infections	Catheter-associated urinary tract infections	Surgical site infections
Ventilator-associated events	Hospital-onset C. difficile	Hospital-onset MRSA
Antibiotic Use ~2,300 facilities	Antibiotic Resistance ~1,000 facilities	Late-onset sepsis & meningitis in very low birthweight babies

Settings

- Acute care facilities
- Long term care facilities
- Dialysis centers
- Outpatient procedural settings

Numbers

- Enrolled facilities: 37K+
- Patients: 39 million+
- Number of distinct email addresses: 126K+
- Data Imports: 82 million+

- ✓ **Web-based** system, accessed through secure portal
- ✓ **Publicly available** to all U.S. healthcare facilities
- ✓ **Data analytics and quality checks** integrated into reporting
- ✓ **Data risk-adjusted** (e.g., using national referent)
- ✓ **Prevention resources** linked with reporting

Current Approach for NHSN Reporting

- Develop an IG for a specific use case
- Vendors and facilities implement the IG
- Begin receiving/analyzing data
- Repeat as updates are needed

Issues with the Current Approach

- Long implementation lag times, changes take months or years to roll out
- From concept to receiving data, requirements and clinical practice may have moved on

Cook This For Me Will You?

It's a bit like creating a recipe, then handing it off to someone else to shop and cook for you.

Maybe it's time to learn how to shop and cook for ourselves



Measure Twice Cut ... er ... Cook Once

Modernizing with Measures

- Fully executable digital quality measures (FHIR Measure resource + CQL + terminology, etc. aka **DQMs**)
- Pull data in real time
- Update measure logic in real time
- NHSN use case: Report data for populations matching specified criteria that will be later analyzed against complex metrics



Measure Data Requirements

FHIR APIs, Bulk Data



Supplement With Converted Non-FHIR Data

Evaluate the Measure Resource



Produce/Consume Report(s)

Public Health

- Timely data
- Dynamic measure updates

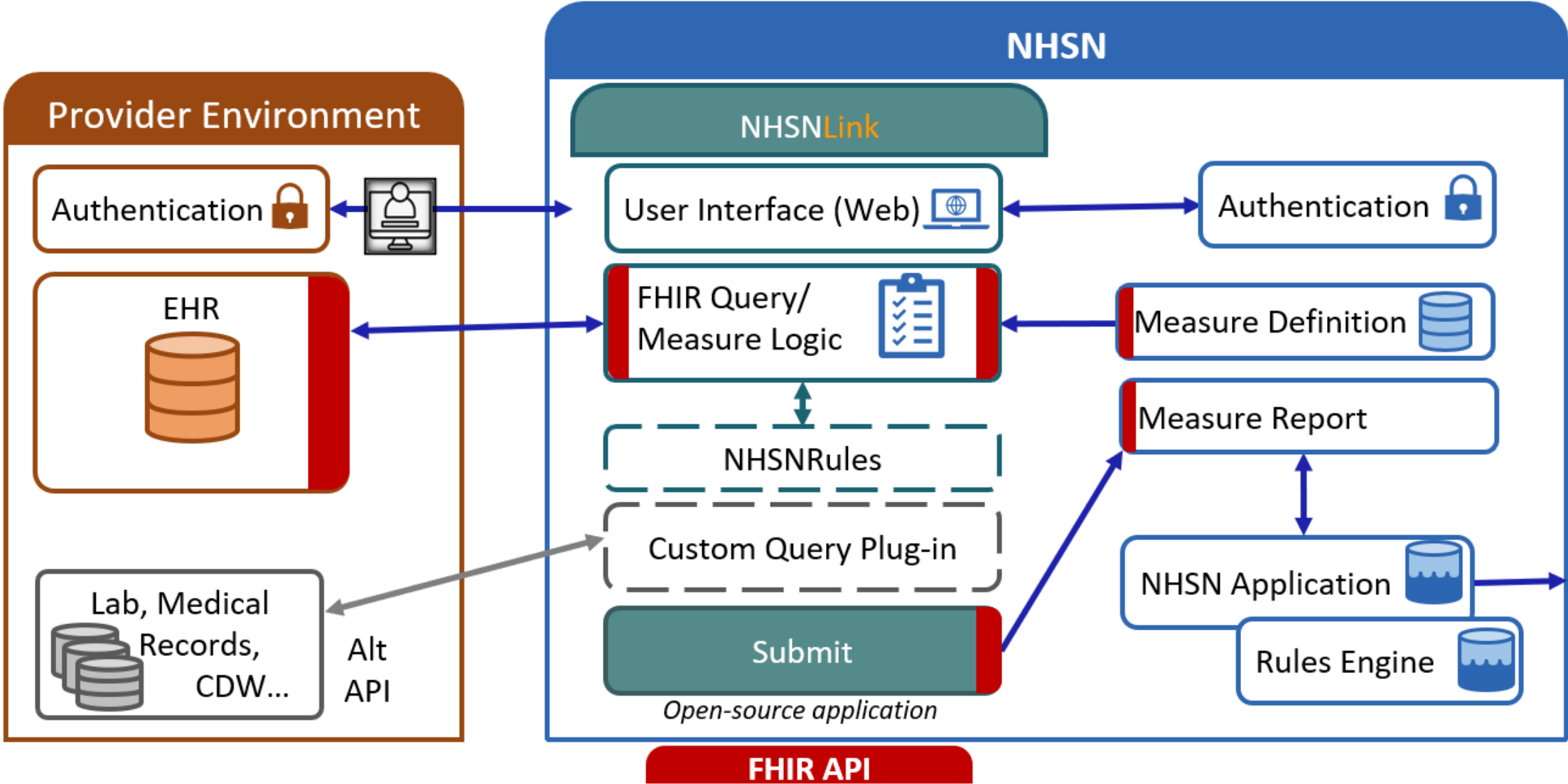
Vendors:

- Less time implementing IGs when using new approach
- More time to expand API support

Providers

- Reduced reporting burden
- Expanded APIs for reporting and internal use cases

- Open-source, FHIR-compliant
- Powered by DQMs
- Can run in cloud or on-premises, on a schedule or with a user interface (UI)
- Aggregates data, calculates measures for patients matching NHSN surveillance requirements
- Generates and submits Measure Report bundle files including line-level Patient data to NHSN on behalf of sites
- Piloting with multiple reporting sites



Electronic Health Record (EHR) FHIR Implementations Missing Key Resources

- Medication Administration is an example (Medication Request is not sufficient)
- United States Core Data for Interoperability (USCDI)/US-Core IG not sufficient
- Quality Improvement Core IG (Qi-Core) is better but not widely implemented
- Time for Consolidated Core?
- May need to gather data from other sources and convert to FHIR
 - Electronic Medication Administration Record [eMAR]
 - HL7 V2 data



Push vs. Pull

- Public health has a long history with the push paradigm
- Big shift in mindset and policy to shift to querying for dynamic data in real time vs. pushing static reports
- A mix may be a needed compromise for some organizations



One Patient at a Time

- Limited ability to query across patients in EHRs
- Example: Get me all patients with COVID-19
- Need workarounds that can pre-supply patient IDs

More Patient Data than Needed

- Lack of filters such as date
- Often need to pull all resources of a given type, then filter after the fact
- Mitigation: sites can use permissions/scope to limit what is returned



- Pilot new paradigm
- Analyze results and report findings (has its own challenges)
- Champion expanded support for expanding APIs, resource support, CQL, Bulk Data, etc.

