



Documenting the Data Context of Clinical Decisions

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3.2 Documenting the Data Context of Clinical Decisions

Architectures must support and maintain the data context of the clinical decision making process, provide efficiencies, and support secondary data use

- **Primary Clinical Decision Making Processes**
 - Information Capture & Retrieval (PHR, EMR, EHR)
 - Trends (graphical) & Correlations
- **Secondary Data Use: (Capture once, Use many)**
 - Data aggregation
 - Data mining: PHDs, Research, Disaster Support
- **Efficiencies (LOE, Process, Sustainability Through \$ Savings)**
 - Time savings at all levels: patient, physician, clinician, support, services
 - Repeated queries, stored procedures and processes
 - Access, storage, and distribution efficiencies
- **Security and Privacy** Capture, storage, distribution, data sharing
 - HIPAA compliant, State compliance, Organizational compliance



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Elements of the clinical decision making process are highly context-dependent:

- **Clinical History (capture, understanding)**
- **Understanding rationale for previous clinical decisions**
- **Timing and context of procedures, diagnoses, treatment modalities**
- **Trends that lead/led to clinical decisions (textual, graphical)**
- **Care Team evaluation, decision-making process**
- **Cross-physician decision-making, base, build, collaborate**

Critical inputs will facilitate, or impinge, on this process:

- **Internal organization management (asserted individually)**
 - **Care organizations**
 - **Hospitals, practices, clinical service support organizations (labs, pharmacies)**
 - **Care organizations: labs, radiology, home health, extended care**
- **Physician support**
- **Clinician and caregiver support**
- **Patient driven access controls**
- **Provider access to PHR data (support clinical decision making)**
- **EHR data exchange between clinicians, organizations, and (eventually) service providers**
- **Population health management**



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Required Architectural Features will create capacity for :

- **Balancing clinical decision-making through role-based access**
 - Clinicians' need to know
 - Respect consumer data management needs (all levels)
 - Support for *patient management* of data and access to their data
- ***Context* of the clinical decision-making process: logic of actions**
- ***Extent* of the clinical decision-making process: evidence of actions taken**
- ***Traceability*: who did it, when they did it, how they did it, why they did it**
 - Audit Trails (all levels)
 - Layered consumer driven access control (internal, external, personal)
 - Layered management of data: data gathering, data delivery, anonymization, etc.



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Supporting data persistence:

Different Architectures Support Required Use of Data

Treatment	Referral	Research
Physician Practice	Hospital Care	Extended Care
Specialist	Internist	Academic
PHR	EMR (longitudinal)	EHR
Public Health First Responder Peer Review	Payer Research Quality Organizations	Public Health Disaster Support CRO's
Pharma Research	Clinical Trial Support Post Release Tracking	



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Data persistence to support subsequent retrieval and review

- Identify
- Reproducibility of data
- Foundation to build dynamic clinical picture

- Pros

- Centralized models allow for storage of context AND data
- Decentralized models minimize extra-local storage
- Hybrid Models may allow for SNO/NHIN storage of selected context meta-data, while leaving source data local

who knew what, when
underlying decision processes
now into future

- Cons

- Centralized model requires greater data volume maintained outside care organization's walls
- Decentralized models will require extensive metadata tagging
- Decentralized models will involve increased network traffic



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Reconstructing the context for previously queried data

- What type of data was seen at the time decisions were made?
 - How did this data relate to other data available?
 - How was the data presented?
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- | | |
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| <ul style="list-style-type: none">• <u>Pros</u>• Central / Hybrid persisted data offers 'frozen' snapshot capability• Targeted queries in a decentralized model could lower network load | <ul style="list-style-type: none">• <u>Cons</u>• Decentralized model requires more data traffic in repeated queries• Decentralized models do not maintain persistent context |
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Need for re-use of data from previous queries

Clinical data is dynamic; individual data items are rarely viewed in isolation. Such data is usually grouped to create a coherent picture of a patient or process, using:

- Trending over time
- Correlation
- Aggregation How do we know data only counted once?

Pros

- Central/Hybrid models recording prior retrievals of data could generate targeted re-queries
- Centralized/local models would speed retrieval

Cons

- Purely decentralized models would need to store context data locally and transmit with source data. This would still be limited.
- Decentralized models pose a challenge for aggregation