

An Overview of Efforts to Bring Clinical Knowledge to the Point of Care

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Introduction

- Bringing the right information
- to the right people
- at the right time and place
- in the right format
- to help them make the right clinical decisions
- to improve important health outcomes
 - quality
 - safety
 - cost-effectiveness of the delivery of care



Vision we are trying to achieve

- Provide patient-specific,
- Evidence-based,
- Clinical diagnostic and therapeutic guidance
- Clinicians at the point of care
- Within the automated medical record system

- This is HARDER than it seems!



Requirements

- Tools to allow clinicians
 - to enter, review, and maintain the clinical knowledge
- Ability to change the knowledge,
- Test it
- Make it available



Questions that must be answered

- What information or knowledge is required?
- Who will be the recipient of the information?
- When in the patient care process is the intervention applied?
- How is the intervention triggered and delivered?
- How much patient-specific data is needed?
- How much is the intervention output customized?



Questions that must be answered

- Will the clinicians find the information useful?
- Where will the clinician be when receiving the intervention?
- What will we do with the intervention if the information becomes available at some point in the future?
- Which medium will be used to convey the message?



Where do we stand?

- Two general schools of thought:
 - 1) develop stand alone applications available to the clinician upon request
 - 2) incorporate the clinical knowledge directly into the automated medical record
- Third model enables clinician to request patient-specific help from an outside source
 - clinician makes the request for information
 - information returned can be configured based on patient information
 - possible to place an order directly to patient's AMR

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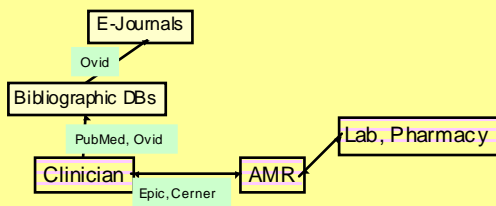
Categories of Decision Support

- Library-type applications - enable a clinician to "look-up" information in an electronic document.
- Real-time clinical decision support systems automatically deliver clinical guidance to clinicians at the point of care within the AMR.
- Hybrid systems combine aspects of knowledge-based clinical decision support systems with more library-oriented information.
- Computable guidelines to the point of care

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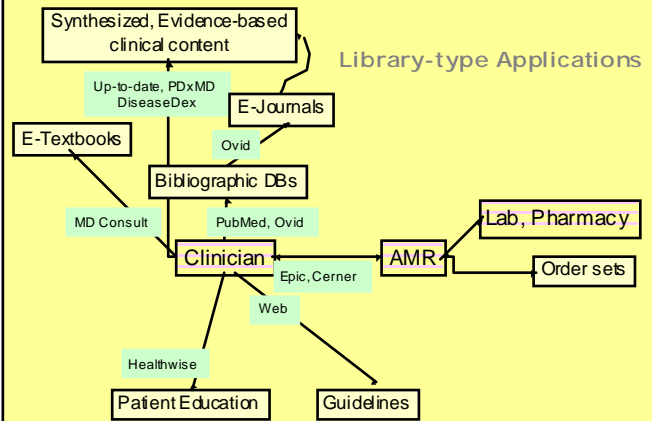
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Library-type Applications



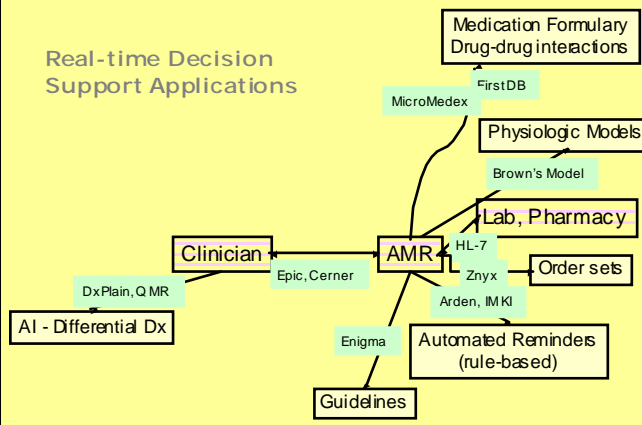
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Library-type Applications



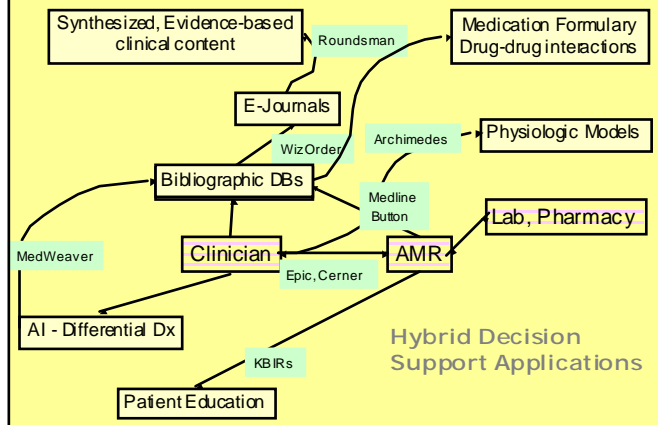
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Real-time Decision Support Applications

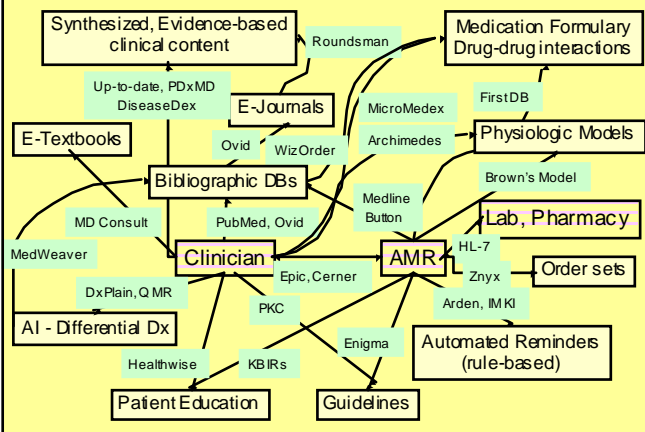


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Hybrid Decision Support Applications



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Computable Guidelines

- Research and commercial efforts are underway
- More than “if-then-else” rules
- Multi-step clinical algorithms
- Track a patient’s treatments and progress over time
- This is much, much HARDER than it seems!

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GLEE

- Academic research effort -developed at Columbia University
- System for execution of guidelines encoded in the GLIF3 format
- Provides an internal event-driven execution model
- Connected to the clinical event monitor of CIS
- Research prototype.
- No tools exist for knowledge maintenance

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GLARE - GuideLine Acquisition, Representation and Execution

- Domain-independent system for acquisition, representation and execution of guidelines
- Provides “intelligent” guideline acquisition interface
- Provides checks to develop a consistent guidelines:
 - syntactic and semantic tests
- Successfully tested in (bladder cancer, reflux esophagitis and heart failure)
- Not available for use by people outside of the research team

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Therapy Edge

- Condition-specific, stand-alone, web-based, EMR with extensive clinical decision support for HIV patients
- No integration with existing AMR
- HIV only
- No tools for knowledge based maintenance

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PRODIGY

- Guideline-based decision support system
- In use by General Practitioners in the UK
- Evaluation of PRODIGY 3 is currently underway
- Phase 4 is being planned
- PRODIGY I and PRODIGY II implemented as extensions to proprietary UK EMRs
- Utilizes a proprietary guideline model
- Available on the Web

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PREDICT

- Decision support system for delivering evidence-based guidelines to clinicians
- Integrates with existing CISs
- Uses standard internet communication protocols
- Allows clinicians to create new disease modules
- Tools to manage guideline content
- Commercially available

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eTG

- HTML-based product,
- Available for use on PCs
- Covers over 2000 clinical topics
- Updated at regular intervals (3-4 times per year)
- No integration with commercially available EMR products
- One of many stand-alone, proprietary format, internet-based, guideline presentation systems.
- None of these are significantly better than USAs or the New Zealand Guidelines Group

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AREZZO

- Decision support technology (based on PROforma), for building and running clinical applications
- Designed to provide patient-specific advice
- Guiding the user through data collection, clinical actions and decision making
- Limited to supporting decisions on pain control in cancer

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Conclusions

- Gain valuable knowledge and experience by working on projects
- At present time there is no clear-cut winner
- Advanced research prototype stage at best
- Expect considerable changes in whichever solution is ultimately successful
- In everyone's best interest to be a part of the effort in defining and experimenting with these types of systems

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Thank you

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