University of California
Research eXchange (UC-ReX): A UC Shared Resource

UC-ReX
UC Davis, UC Irvine, UC Los Angeles
UC San Francisco, UC San Diego
“Enable researchers and quality improvement specialists to query clinical data from all UC Health campuses for research or quality improvement purposes under a common cross-institutional IRB approval process”

--UC Research eXchange (UC-ReX) proposal, 2010
Governance Structure

UC BRAID
- PI from each UC CTSA
- Budgetary oversight
- Review quarterly status reports
- Roadmap oversight

UC ReX Steering
- 1 voting + 1 non-voting member from each UC
- Simple majority
- Rotating Chair
- Program Manager

Working Groups

Technical Implementation
- (Lisa Dahm, UCI)

Data Harmonization
- (Davera Gabriel, UCD)

User Support
- (Lattice Armstead, Mini Kahlon, UCSF)

Technology Strategy
- (Lisa Dahm, UCI)

UC Office of the President Funding for Cross-UC Data Sharing
- $5 million/5 years (July 2011-2016)
- plus local support

http://www.ucbraid.org/informaticsmdashuc-rex.html
Accomplishments and Lessons

Accomplishments

- Established representative governance structure and initiated working groups
- Demonstrated collaborative decision making
- Partnered with Recombinant to install i2b2 infrastructure
- Piloted UC ReX Data Explorer virtual clinical data launched ucrex.org
- Loaded top 150+ labs, vital status, (4) medications
  * Full Enterprise Go Live, October 2013
    - Data Explorer Tool Demo

Lessons Learned

- Real time development requires flexibility
- Results of analysis and variation in campus readiness impacted scope
- Federated model supported expedient delivery and has known limitations
- i2b2 SHRINE function and its role as the initial UC ReX program deliverable requires targeted communication
- Sustainability is required to support ongoing work and plan/develop new capabilities
UC ReX: UC’s Data Broker

UC ReX will develop core capabilities to serve as UC’s Clinical Data Broker by developing strategic partnerships to support:

• Data Explorer Cohort Identification

• Automated Honest Broker

• Cross UC Predictive Analytics
1. Expand ReX Infrastructure for Data Explorer Cohort Identification

   Enables investigators and quality analyst to validate study and quality hypotheses

   a. Partner with Recombinant to:
      i. Implement development network
      ii. Upgrade to i2b2 version 1.6

   b. Extend searchable data elements: Lab Values (top 150+ labs); Medications; BMI; Microbiology Labs; CA Death Registry Pilot
2. Develop & implement cross-UC Honest Broker Process

Provision data under a collaborative process that delivers data to a common storage location

a. Develop automated provisioning capability

b. Technology alignment with UC Share & CG Hub to provide clinical correlates for genomics
3. Provide Predictive Analytics Platform
   a. Partner to provide aggregate data for cross UC business intelligence platform to support analytics needed for quality improvement & cost management initiatives for UCOP
   b. Pilot Cross UC Predictive Analytics Platform (UCI, UCD, UCSF) to provide 30-day Readmit Risk Assessment
4. Expand Data Explorer content

a. Map UC Biobanking data to Data Explorer
   i. Adds value to UC ReX as a shared UC Resource
   ii. Strengthens industry proposition – UC can accelerate clinical trials by providing quick access to high quality, targeted patient data.

b. Add lab values, medications and BMI data

c. Implement CA Death Registry proof of concept
5. Develop new program capabilities to support future strategy

a. Develop processes/capability:
   i. Data Quality – informed by user feedback
   ii. Proposal Assessment – ability to assess effort and cost
   iii. Expansion of ReX Network – to add new nodes
Challenge: Sustainability

• Partnership with CIOs at each University
• Strong Governance Structure
• Dedicated Program Manager
• Vendor supported systems
• Enterprise supported infrastructure

UC ReX is a program of UC Biomedical Research Acceleration, Integration & Development (BRAID) funded by a generous grant from UCOP.
Appendix 1
UC Health Systems Statistics

UC HEALTH

- 5 Academic Medical Centers
- 10 Hospitals
- 144,000 admissions / year
- 3.9 million out-patient visits / year
- 290,000 emergency room visits /year
- 50% of all transplants in California
- 25% of extensive burn care in California
- ~20% of all care delivered in California
- $490 million in charity care (2011)
- 18 health professional schools
## APPENDIX 2

UCReX Data (Source / Years)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>UCSF</th>
<th>UCSD</th>
<th>UCLA</th>
<th>UCI</th>
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<th>UCI</th>
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<table>
<thead>
<tr>
<th>Data Not Yet Included</th>
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<th>UCLA</th>
<th>UCI</th>
<th>UCD</th>
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# APPENDIX 3
## UC ReX Data Metrics

<table>
<thead>
<tr>
<th>UC ReX Data Elements</th>
<th>Year 1-2 Data</th>
<th>Year 3 Data</th>
<th>UC CAMPUS</th>
<th>DEMOGRAPHICS</th>
<th>DIAGNOSIS</th>
<th>PROCEDURES</th>
<th>LABS</th>
<th>VITAL STATUS</th>
<th>MEDS (4)</th>
<th>PATIENT DATA ELEMENTS COMMENTS</th>
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<tbody>
<tr>
<td><strong>TOTAL PATIENT DATA ELEMENTS</strong></td>
<td></td>
<td></td>
<td>UCSD</td>
<td>82,610,531</td>
<td>6,891,004</td>
<td>10,614,282</td>
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<td>65,033,266</td>
<td>4,396</td>
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<td>UCI</td>
<td>52,651,819</td>
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<td>10,332,268</td>
<td>21,240,149</td>
<td>858,073</td>
<td>18,733,969</td>
<td>1,478,806</td>
<td>8,554</td>
<td>Demographics &amp; ICD9 Dx and Px from 1992. Lab and Meds from 2009. Children's data limited to a few clinics.</td>
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<td>UCSF</td>
<td>254,976,654</td>
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<td>178,988,224</td>
<td>3,731,125</td>
<td>156,064</td>
<td>70,649,908</td>
<td>1,437,870</td>
<td>13,463</td>
<td>Procedures data included for 2012 only.</td>
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<td>UCD</td>
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<td>10,921,320</td>
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