The Dallas Information Exchange Portal:  
*New Technologies for Public Health Preparedness*  

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Objectives

1. Describe the Dallas Information Exchange Portal (IEP) concept and enabling technologies

2. Disaster scenario use case: Tornado in Dallas, TX

3. Identify IEP synergies with ACA and public health preparedness
A 501c(3) non-profit research and development corporation specializing in the development of clinical prediction and surveillance software for U.S. hospitals and health systems

**Vision**
To deploy predictive and surveillance solutions around the world that make healthcare safer, simpler, and less stressful

[www.pccipieces.org](http://www.pccipieces.org)
Dallas-Fort Worth Metroplex, Texas

- Population: 6,645,678
- DFW is 4th Largest Metropolitan Area, and is one of the fastest growing areas
- One of most populous area for refugee resettlement
  - Refugees from all over the world, including Iraq, Libya, Liberia, Rwanda, Sudan, Kosovo, Albania, Bosnia, Burma, and Bhutan
- DFW Racial Diversity
  - 49.3% White
  - 28% Hispanic or Latino origin
  - 15% Black
  - 0.4% American Indian and Alaska Native
  - 5.7% Asian or Pacific Islander
  - 1.5% 2 or more Races
- 23.0% below FPL
- 20,000+ displaced after Hurricane Katrina relocated
- 10 large health systems, 134 hospitals across DFW

From diversitydata.org and Harvard School of Public Health, 2012
Highest Risk of Natural Disasters: Dallas, TX

"Where to Live to Avoid a Natural Disaster", The New York Times, April 30, 2011
http://www.nytimes.com/interactive/2011/05/01/weekinreview/01safe.html?_r=0
Highest Risk of Natural Disasters:
Dallas, TX

http://www.nytimes.com/interactive/2011/05/01/weekinreview/01safe.html?_r=0
Public Health Challenges if a Tornado Occurred

Emergency challenges
- Recovering missing persons
- Restoring loss of infrastructure

Healthcare challenges
- Injuries and fatalities
- Exacerbation of chronic disease
- Increased vulnerability to at-risk populations
- Disease outbreaks
- Scarce medical supplies

Community challenges
- Accommodating displaced persons
- Access to basic needs
- Communication and transportation needs

Government challenges
- Identifying and prioritizing needs
- Allocating and delivering aid and resources
- Tracking resources
Social-Health Information Exchange: A Vision

Dallas Information Exchange Portal (IEP)

- 400+ Community-Based Service Organizations
- Healthcare Organizations via regional HIE
- Dallas County Jail
Social-Health Information Exchange: A Vision

Dallas Information Exchange Portal (IEP)

- 400+ Community-Based Service Organizations
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- Disaster Responders
- Dallas County Jail
Technology Track 1:
Social-Health Information Exchange

Dallas Information Exchange Portal (IEP)

- 400+ Community-Based Service Organizations
- Healthcare Organizations via regional HIE
- Disaster Responders
- Dallas County Jail
Technology track 2: Pieces™ Predictive Analytics for the IEP
Pieces™ Model Timescales

- **Hours**
  - Cardio-Pulmonary Arrest*
  - Sepsis
  - Patient Safety Event
  - Surgical Complication

- **30 days**
  - Readmission to the hospital
    - CHF
    - HIV
    - Cirrhosis

- **90 days**
  - Short-Term Diabetic Complications
  - Preventable Diabetes Complications

- **5 years**
  - Chronic Kidney Disease
Technology Track 3:
Intelligent, Multi-User Interfaces for the IEP
The Dallas IEP with Enabling Technologies
# The IEP in a Tornado Disaster

<table>
<thead>
<tr>
<th>Before</th>
<th>During</th>
<th>After</th>
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<tbody>
<tr>
<td>• Builds collaborative relationships to strengthen community resilience</td>
<td>• Identify individuals or populations at highest risk to target and deliver scarce resources</td>
<td>• Communicate back to primary care providers after disaster</td>
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<tr>
<td>• Build redundancy into technology systems</td>
<td>• Assist on-the-ground workforce and resource management, coordination, and communication</td>
<td>• Help relocated individuals to thrive in new settings</td>
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<td>• Collects baseline data on community health</td>
<td>• Real-time surveillance of emergent health issues and community trends</td>
<td>• Enhance community recovery efforts, particularly for vulnerable populations</td>
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<td>• Clinical and social providers document needs in case of disaster</td>
<td>• Mitigate impact if any loss of public health infrastructure</td>
<td>• Provide data to improve disaster response planning for future disaster events</td>
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<tr>
<td>• Provides data to inform disaster resource planning</td>
<td>• Mobile tools enable response efforts in the field</td>
<td>• Long term surveillance of populations affected by disasters</td>
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Realizing the Vision: The IEP Blueprint

Detailed investigation into:

1. Clinical Needs and Workflows
2. Community Engagement and Workflows
3. Legal Framework
4. Technical Design
5. Governance Approach
6. Sustainability Model
7. Scientific Outcomes and Impact

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### IEP Supports and Enhances ACA Sections

<table>
<thead>
<tr>
<th>IEP Areas of Focus</th>
<th># of ACA Sections supported</th>
<th>Specific Supported Sections</th>
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</thead>
<tbody>
<tr>
<td><strong>Chronic Disease Management</strong></td>
<td>At least 4 sections</td>
<td>• (§2703) State option to provide health homes for enrollees with chronic conditions</td>
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<td></td>
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<td>• (§3022) Medicare Shared Savings Program (ACOs)</td>
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<td></td>
<td></td>
<td>• (§3025) Hospital readmission reduction program</td>
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<tr>
<td></td>
<td></td>
<td>• (§3503) Grants to implement medication management services in treatment of chronic disease</td>
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<tr>
<td><strong>Population Health Surveillance and Health Disparities Research</strong></td>
<td>At least 2 sections</td>
<td>• (§3015) Data Collection; Public Reporting</td>
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<tr>
<td></td>
<td></td>
<td>• (§4302) Understanding health disparities; data collection and analysis</td>
</tr>
<tr>
<td><strong>Optimizing Transitions of Care</strong></td>
<td>At least 4 sections</td>
<td>• (§3022) Medicare Shared Savings Program (Accountable Care Organizations)</td>
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<tr>
<td></td>
<td></td>
<td>• (§3026) Community-based care transitions program</td>
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<td>• (§4301) Research on optimizing the delivery of public health services</td>
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<tr>
<td></td>
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<td>• (§3501) Health care delivery system research; Quality improvement technical assistance</td>
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## IEP Supports and Enhances ACA Sections for Public Health Preparedness

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<th>IEP Areas of Focus</th>
<th># of ACA Sections supported</th>
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| **Community Resilience**   | At least 6 sections        | ▪ (§3510) Patient Navigator Program  
▪ (§3306) Funding Outreach and Assistance for Low-Income Programs  
▪ (§4003) Clinical and Community Preventative Services  
▪ (§4201) Community Transformation Grants  
▪ (§4202) Healthy aging, living well; evaluation of community-based prevention and wellness programs for Medicaid beneficiaries  
▪ (§4303 CDC and employer-based wellness programs) |
| **Surveillance**           | At least 1 section         | ▪ (§3015) Data Collection; Public Reporting |
| **Managing Scarce Resources** | At least 4 sections      | ▪ (§3026) Community-based care transitions program.  
▪ (§3505) Trauma care centers and service availability  
▪ (§3501) Health care delivery system research; Quality improvement technical assistance  
▪ (§4301) Research on optimizing the delivery of public health services |
Points of Interest for Public Health Preparedness

1. Technologies being built for non-catastrophic situations could be very useful in catastrophic situations. As cities, we should look for initiatives that could play dual roles.

2. Harness the strengths of smaller players that aren’t traditionally part of the healthcare sector, which builds in natural redundancies in the community.

3. A social-health information exchange emphasizes focus on the whole person in disaster response.

4. Predictive analytics, artificial intelligence, and natural language processing technologies could help better direct resources more intelligently during disaster situations.
Opportunities

• We are deploying these technologies in Dallas in a way that is portable and exportable. We are interested in collaborating with other cities to explore opportunities in their cities for social-health information exchange, for public health preparedness, or to support other health goals

• We are developing a national learning network on how to use these technologies for community benefit
Acknowledgements

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