The Christchurch Earthquake

Lessons Learned from a health IT perspective

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Where in the World is New Zealand?
The event

• 12:51 pm Tuesday 22\textsuperscript{nd} February, 2011
  – Magnitude 6.3 earthquake hit Christchurch (pop: 350,000)
  – Followed a previous earthquake 6 months previously
    • Technically an ‘after shock’...
  – 185 people killed
    • Second largest natural disaster in New Zealand
  – CBD, and many other parts of the city devastated
  – We learned about ‘liquefaction’
From a distance
The people
The CTV Building

• Over half the fatalities were here...
The ‘red zone’

- Central city cordoned off
- Unsafe for people to go in
- Only just re-opened
After shocks

Quakes per week of magnitude 3.0 or greater (total = 2819)
Health IT infrastructure

• Primary Care
  – Individual practices, organized into a Primary Health Organization (PHO)
  – Extensive computerization of clinical data
    • However each Practice is substantially a silo of data with some electronic message based communication

• Secondary Care
  – Core systems computerized, including lab/rad
  – Clinical data otherwise substantially manual

• Regional/National
  – National Patient Identity registry
  – National interRAl system newly implemented (2 yrs)
Immediate issues

• Large number of injured
• Physical danger from debris
• Triage ‘in the street’
• Communication problems
  – Lack of power effects computers, phones, cell towers
  – Couldn’t get pharmacy dispensing records or GP records
• Transport problems
Initial Response

- Good (people) networks greatly assisted response
  - In particular the primary care PHO (Pegasus) and relationships with the local Hospital
  - Much assistance from out of town and internationally (incl. Japan)
- Plans developed for previous SARS alert helped preparedness
- Hospital managed, just.
  - Lost 100 beds
  - Almost 500 EC attendances in first 3 hours
- Primary Care mostly OK
  - Some issues with power/systems
- Aged care
  - Lost 635 beds
  - Some out-of-town evacuation required
The next few days...

- Decision to support people at home
  - Rather than evacuation centres
- The ‘student volunteer army’
  - Power of social media and motivated people
- Sanitation and Power a big issue
- Informing people increasingly important
Getting Information out

• Critical to keep people informed
• Health pathways system up within 48 hours
• Access by mobile phone
Beyond Christchurch – the displacement zone

Rural Canterbury Day One
Practice Survey
100% Rural Practices Open
Some minor building damage, no loss of power, water or sewage

Rural Canterbury Day Three
Rising numbers of displaced patients / high consult rates
Resupply medication and courier issues

Rural Canterbury Day Six
Huge numbers of displaced patients and unprecedented consult rates
Signs of doctor burnout

Rural Canterbury Day Ten
Ongoing huge Numbers / High consult rates
Lessons

• Overall, ‘the system’ stood up remarkably well
• Innovative use of unlikely systems
  – Health Pathways (for referral)
  – interRAI as a way of identifying elderly in need
    • Ad-hoc Query against structured data
  – Social media (facebook, twitter, texting) to mobilize resources
  – Using on-line services to develop app
    • Receive text based request for assistance into a Db
    • This is where HL7 standards could really come into their own...
• Message: expect people to do amazing things with structured data sets & social media. Work with them – the creativity and energy of the internet community is huge.
Lessons

• Manual phones not so vulnerable to power loss
• Paper records shown to be less reliable than well set up IT systems
• Who pays?
Lessons

• Plan for total power loss
  – Don’t assume UPS will work
  – Local system power an issue
    • Pharmacy dispensing records not available
    • GP systems automatically updated when restarted!
• Plan for total communication failure for a part of the time
  – Use radio for essential services
• Large, well maintained systems worked well
  – Labs back up in 30 minutes
  – Gmail instead of local mail servers
• Internet remained available
  – Apart from power issues with local nodes
• Get information out to people as rapidly as possible
Since the earthquake

• Increased awareness of ‘being prepared’
  – IT sense – off site backup, UPS
  – Personal – the ‘emergency kit’
    • Clothing, food, meds, light (with solar/wind-up charging)

• Community network strengthened

• Regional Clinical information systems established
  – Their value demonstrated
  – New system (Emergency Shared Care Record View - eSCRV) established
    • Core clinical data accessible to all clinicians
    • Combine data from Primary & Secondary care
    • Will extend to patients as well

• Community based care delivery accelerated
  – Was thinking before, sudden loss of 100 hospital & over 600 aged care beds made it imperative
During the response to Hurricane Katrina, Wal-Mart Chief Executive H. Lee Scott, Jr. said,

_This company will respond to the level of this disaster. A lot of you are going to have to make decisions above your level. Make the best decision that you can with the information that’s available to you at the time, and, above all, do the right thing._