



TETRADYN

*Applied Bio Cyber Sciences
in BioThreat Protection, Monitoring,
& Emergency Response*

A Thought Experiment for the Benefit of Skeptics

Fire, Flu and Fortune

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For the past few days, and apparently for at least several more, major fires have been burning in the San Bernadino Mountains and in the foothills on the north side of Los Angeles. Among other things we see as a natural and unsurprising consequence are these:

- an increasing expanse of a major metropolitan area with poor quality air, in some cases, extremely hazardous smoke and ash that forces people to leave, regardless of their determination to stay put in their neighborhoods
- high risks of fire damage to critical telecommunications infrastructure, namely, towers on mountain-tops for cellular, radio, and TV communications, including those used by police, fire, and other civil authorities.

Let's consider a particular scenario that has been and remains to be perfectly possible given the nature of wildfires in populated areas (particularly around high-population Southern California) and the nature of influenza outbreaks and, in our present case, pandemic conditions.

On the one hand we can count our blessings for present, thus-far, good timing. Evidence for a benign God. Imagine what would be the present situation in Los Angeles were there to be a large-scale flu outbreak now in that region. Reduce the number of firefighters, police, and other civil workers. Increase the number of persons having respiratory disorders and in particular those unable to breathe well in reduced quality air or to be ambulatory for evacuation. Reduce the number of doctors, nurses and other hospital workers. Add up the fatalities as well as the expanse of urbanized areas that would have been laid waste by a more free-flowing and uninhibited fire.

Also, toss in the loss of major telecommunication towers and you get the picture.

Alright. CUBIT, and CRAIDO, none of this will put out fires. No magic pill, no panacea.

However, consider the following scenario.

You have managed to move thousands of sick people around, almost miraculously, and you have been piling them in, by the hundreds and even thousands, people who are from one end of the spectrum of being ill to the other, people with only smoke exposure and other effects from the fire and general social trauma, all the way to people who have H1N1-2009, and some that have H1N1-XXX, a mutant, perhaps with some of the H5N1 genetic sequence.

Let's consider a spectrum of public health risk, ranging from 0 to 10 in three dimensions

x (vital conditions from 0 (fine) to 10 (poor))

y (risk of contagion and ease of transmission, from 0 (not so) to 10 (very much so))

z (lethality of the disease, from 0 (low risk) to 10 (very high risk))

Thus we are dealing with a cubic structure, graphically. In one corner you have (0,0,0) which is some idealistic case of obvious good health with no particular risk of fatality or need for medical attention.

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In an opposite corner you have (10,10,10) and that is probably a case that is also obvious – poor condition and probably poor prognosis without any sophisticated diagnostic tests needed (10), but also with a highly transmissible virus (10) and a highly lethal one at that (10). All around on the inside of the cube and along its edges are varying condition-types. For instance – no particular signs of devastating imminent-demise illness, but highly contagious, and perhaps also highly lethal.

You have perhaps 60,000 -100,000 people in this stadium or complex or camp. That is not an unreasonable number. Perhaps 25,000 -30,000 homes. What it is, building or stadium, does not matter. The fact is, people will be mingling, mixing, being together, and also you need to treat some people and you cannot examine and treat all, and further, people are going to be coming and going, and mostly going away from here, in a matter of days, to their homes, neighborhoods, or some other refugee camps.

Under the present circumstances, you are basically operating in the dark, blind as a bat, with regard to effect epidemic and pandemic management. You are constrained by time, by complexity, by the burdens of trying to do any on-the-fly rapid diagnosis with the resources you have, and besides, all those labs where you usually run your slow multi-day tests on influenza samples, they may be burned up or closed down.

You have a problem. Who is really sick with influenza, and of those, who has something very transmissible, and who has something very lethal?

Furthermore, what if there is some kind of H1N1-XXX going around? You don't know if it is, because you don't have the means to look for it and to distinguish it from other viral strains; you cannot notice something of which you are not aware of the distinguishing "marks" in the first place.

This is the advantage that CRAIDO, using the CUBIT-delta model, built upon established and accepted and proven RT-PCR assays, brings to the situation. CRAIDO gives you the compact, portable, easily manipulated tools. Beyond diagnostics, it gives you the informatics engine with also fault-tolerant communications. If all else fails, you have short-wave and punch in a few codes, get on the right frequency, and you are sending your packets of data into the same destination database engine thousands of miles away, and to the lab tech doing this in the small room of the portable PodLab (labstation), he or she does not really even notice the difference from having a direct broadband ethernet connection.

Without a CRAIDO labstation, you are in the present era. Slow, cumbersome, unwieldy, requiring some extra specialists no doubt, bogged down by a lot of things that don't want to work right or at all in a high-stress, high-noise, high-clutter environment. You don't even have the fast diagnostics at all, and you definitely don't have the capacity to be picking up indicators of anomalies, doing tracking, doing forecasting, and getting a bead on the person(s) who have this H1N1-XXX and where they came from and are mingling and going.

With a CRAIDO workstation, you have an Edge on the Competition. But that Competition, that is not some other person, not some other department of health or company. No, the Competition is your viral opponent, a very unfeeling but smart operator that has its goals, its objectives, its mission. You have an Edge on it because you have some better knowledge, sooner, faster, more readily and accurately distributed, that tells you something about who and where are those (10, 10, 10) or (9, 9, 9) people in your stadium or refuge camp. You are able to get a better discrimination, a better separation, of the data about which virus with what qualities and parameters, is where and within whom.

Now you have a chance at executing some type of intelligent disease management, some type of responsible epidemiological countermeasures for the benefit of all those people and also all those people "out there" with whom these people in your domain will soon come in contact. You have a

chance to separate out the ones who should be getting the most intensive care, and meds, and in some cases vaccines, and you can plan how you are going to accommodate the fact that you have some people that can just be sent on their way, either back home or to some next-stage refuge camp, and some people who should not be going to mingle with anyone until they are no longer contagious.

CRAIDO is no miracle engine. It is not the philosopher's stone nor a magic wand. It is simply a very intelligently engineered set of biomedical tools that will make epidemiological response and treatment better for more people. And it is ready to deploy right now. There are no barriers except those of bureaucracy, red tape, and some things that don't need a panel, nor a report, nor a collection of high-ranked, high-credentialed, and highly-published pundits, but rather a very small group of people who can sign their names and get the balls rolling.

"d'Accord" –

ACCORD (Accurate, Consistent, Complete, On-Time, Defensible)

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