Central Florida Community Collaborative Model for Emerging Pathogen Preparedness and Response

Executive Summary

Background: Several factors increase the probability of our community (the City of Orlando, Orange County and adjacent counties, Central Florida region) receiving a patient with a highly infectious disease; and it will be up to our community, including our major health systems to care for a patient with a one of these conditions of public health significance. Central Florida is one of the largest tourist destinations in the world (e.g., Visit Orlando data suggest 68 million visitors to Orlando in 2016); theme parks bring in in record breaking numbers of visitors - in 2014 the Magic Kingdom brought in over 19 million guests and numerous special events that involve > 100,000 people.
When our community receives a highly infectious disease patient we are all going to be impacted by that incident, not just one healthcare facility. The specific referent communicable disease units for the two large health systems in Central Florida (Orlando Health and Florida Hospital) have been established to take in such patients, in the context of the 2014-5 Ebola epidemic. In the spirit of fostering a **"whole community" approach** for communicable disease containment and mitigation, a community collaborative model may be a value-added component that leverages limited resources, facilitates interagency coordination and streamlines planning & response efforts for best outcomes.

Mission: There are several drivers that impact the need for a broader discussion, including a well-coordinated community response to such high impact, low probability pathogens and infectious disease patients. These include community priorities, health system mission alignment, population health/community well-being and health protection, and many other factors. So we propose a "**community collaborative model"** with an overall two-fold mission: *1) to render timely, efficient, effective, coordinated and sustainable care for patients with any communicable disease threat of public health significance who arrive in Central Florida; and 2) facilitate continued operations of individual hospital facilities, reduce strain on hospital-specific resources, and demonstrate community resilience through a unified effort aligned with local, regional, state and national directives and strategy.* Health systems can demonstrate leadership by convening a range of public and private sector stakeholders, collaborating with key partners and coordinating efforts to implement this model.

Description: Several components would be required to have a solid community collaborative program as an alternative option, including but not limited to: e.g., sound facility infrastructure within patient care treatment rooms; appropriate patient transportation methods being implemented; commensurate laboratory capacity; appropriate levels of sustainable trained staff and robust environmental services in place, not to mention proficient clinical management capacity and effectiveness of risk communications. A hybrid model tailored to the needs / capacities of Central Florida could be based on the best elements of the Chicago experience (Chicago Ebola Response Network or CERN) or other similar partnerships that bring together a variety of key stakeholders. Advantages include ***shared expertise, shared risk and shared resources.*** Inclusion of many different disciplines would ensure that "***all hands are on deck***" – with a wider set of stakeholders engaged and more robust set of resources being activated. These include (not limited to) the area hospitals/health systems, Florida Department of Health, City of Orlando and Orange County government leaders (Mayor, Police Chief, Fire Chief, Emergency Management Director), and many others. The facility would serve a prominent assessment function (based on the alignment with e.g., Infection Control Assessment and Response program (ICAR); the Florida Dept. of Health (Ebola response). After initial assessment and when deemed safe to transport, patients would be transferred to a larger more advanced facility – such as Emory/CDC in Atlanta or the University of Nebraska.

Location: The best suitable location for this standalone center would be within a close (yet to be defined) distance of a given hospital belonging to one or both of the health systems (e.g., Orlando Health and Florida Hospital). The pros of a community collaborative effort far outweigh each organization having to commit their own efforts and the center needs to be cross-purposed in the event of an infectious disease emergency; otherwise used daily for other clinical purposes, serving other patient populations.

Final recommendations: The entire process from inception to full operation will take some time but getting everyone together on the same page is a huge step in the right direction. Multiple next action steps are feasible, advisable and outlined in this document. Initial internal discussions, plans for collaboration and efforts to identify key stakeholders would be followed by strategy meetings, exploration of funding support and building consensus for implementation.

Detailed Information (Q/A format)

What is the rationale for taking a "community resilience" approach to disaster preparedness and response efforts, especially in the context of communicable diseases of public health significance, e.g., Ebola, MERS-CoV, pandemic flu, bioterrorism, etc?

- Since 9/11, the perspective and need to engage local and regional communities in the mitigation, planning, response and recovery of a variety of threats of public health significance has been established. Operationally, this partnering between many societal sectors has manifested through the development of **"healthcare coalitions"**, especially involving health systems with their critical emphasis on e.g., medical surge capacity and related needs. [1,2]
- In the context of facing limited resources and improving community health overall, a newly formulated paradigm focuses on a **"whole community"** approach.[3,4,5]
- Communities with healthcare coalitions have the opportunity to address important social determinants and improve population health. [6]
- Best practices have been developed and implemented to focus on Ebola response exercise through healthcare coalitions. [7] Florida in particular has examples of regional "whole community" approaches – such as the Tampa Bay Health and Medical Preparedness Coalition. [8]

What is causing us to consider planning efforts for highly infectious disease patients?

- Several factors increase the probability of our community (the City of Orlando, Orange County and adjacent counties, Central Florida region) receiving a patient with a highly infectious disease. It will be up to our community, including our major health systems to care for a patient with a one of these conditions of public health significance.
- Notable factors:
    - Central Florida is one of the largest tourist destinations in the world.
        - There were 68 million visitors to Orlando in 2016.
        - The Orlando International Airport received over 38 million passengers in 2015.
        - The cruise industry along our eastern coastline had over 5.5 million travelers in 2014.
        - The theme parks are bringing in record breaking numbers of visitors; in 2014 the Magic Kingdom brought in over 19 million guests.
    - Special events in the area are attracting very large crowds to include: the Winter Park Art Festival with 300,000 people, Red Hot and Boom event in Seminole County with 150,000 people, and Fireworks at the Fountain in Orlando with 100,000 people.
    - Special sporting events are being brought to our area with international participants.
        - Examples are the Invictus Games at WDW with participants from 15 nations and 2 COPA FIFA Soccer matches at the Citrus Bowl Stadium which are expected to sell out.
    - Our area is getting very big into the conference/convention business with numerous large meetings to include; the McDonald's Corporation Worldwide Conference 2016 with 15,000 people attending from numerous nations with 12,000 hotel rooms booked, International Sign Association with 18,000 people attending from 89 countries, and the International Builders Show in 2017 which will host 92,000 people.

Implications of a communicable disease pathogen/highly infectious disease patient arriving in the area:

- When our community receives a highly infectious disease patient we are all going to be impacted by that incident, not just one healthcare facility.
    - As evidenced with the MERS-CoV patient at DPH in 2014 one patient doesn't begin to show signs and symptoms and immediately go to the hospital for care they remain in the community with their family, friend, or co-workers.

- There are numerous emerging pathogens across the world including but not limited to: Hemorrhagic fever viruses (including Ebola, Marburg, Lassa Fever, Crimean Congo Hemorrhagic Fever), MERS-CoV,other highly pathogenic coronaviral diseases (such as SARS), Nipah and related henipaviral diseases, Rift Valley Fever (RVF), novel and pandemic strains of influenza virus, etc. [9]
- Hospital preparedness issues – for handling patients with highly infectious diseases:
    - The 2014 Ebola epidemic resulted in raising critical awareness of 1) the roles and responsibilities of health systems to manage such conditions, 2) institutional capacity needs, and 3) specific challenges inherent in being able to do the appropriate assessment, intake, triage, isolation, management, care coordination, and community engagement.
    - The guidance provided by the Centers for Disease Control and Prevention to hospitals and health systems in 2014 in the Ebola context has not been updated; that said, local health systems are in the process of updating their "all-hazards" planning to deal with communicable disease emergencies of public health significance.

Why is it important for our community to be involved in responding to a "Black Swan" event?[10]

- Several aspects come into play with this topic to include: community priorities, health system mission alignment, population health/community well-being and health protection, and many other factors.
    - There are several requirements for health systems for appropriate levels of preparedness and response capacities. Organizations need to be ready and accept these types of patients.
        - Most prominently the CMS Emergency Medical Treatment & Labor Act (EMTALA) which ensures public access to emergency services regardless of ability to pay. Hospitals are required to provide stabilizing treatment for patients with emergency medical conditions. Hospitals are required to screen, stabilize or transfer a patient to another facility.
        - The Joint Commission requires hospitals to be prepared and respond to these types of situations as well.
        - The CMS Emergency Preparedness Rule which establishes national emergency preparedness requirements for healthcare to plan adequately for both natural and man-made disasters, and coordinate with federal, state, tribal, regional and local emergency preparedness systems.
        - Additionally, there is a national goal of having "a multipronged strategy to ensure vigilance and capability to respond to all health threats".
    - Mission alignment in the context of a Black Swan event goes beyond the level of care and expertise provided to the patient.
        - The possibility exists of two patients with a highly communicable disease (e.g., Ebola) arriving in Central Florida and requiring hospitalization concurrently. In the situation of differential outcomes such as death in one health system and stabilization/resolution in the other, the media and families will likely have

questions/concerns related to variation and potential disparities in health care at the two institutions.
    - This kind of situation could also generate significant financial impact for involved health systems, based on the differential outcomes.
    - Enterprise-borne risk is significant, especially in the context of continuing normal operations and the provision of critical service needs (e.g., trauma, surge capacity, etc).
- Population health/community well-being refers to our healthcare system being able to provide adequate health protection for patients, their loved ones, and the community as a whole regardless of a patient's condition. Trust in the health systems and community level of engagement and alignment with general public health protection measures will also be inevitable drivers for a community response.[11]

What is the overall mission of the community collaborative model?

- The overall two-fold mission of this community collaborative model - is *1) to render timely, efficient, effective, coordinated and sustainable care for patients with any communicable disease threat of public health significance who arrive in Central Florida; and 2) facilitate continued operations of individual hospital facilities, reduce strain on hospital-specific resources, and demonstrate community resilience through a unified effort aligned with local, regional, state and national directives and strategy.*

What is needed for the community to support a collaborative effort?

- There are several components that would be required to have a solid program in place:
    - Coordinated preparedness and response.
    - Sound facility infrastructure within patient care treatment rooms.
    - Permanent location.
    - Appropriate patient transportation methods being implemented.
    - Commensurate laboratory capacity - laboratory with proper policies and procedures (P&Ps).
    - Appropriate levels of staffing to support patient(s).
    - Proper training to educate staff for their roles.
    - Appropriate and adequate amounts of PPE with proper P&Ps.
    - Appropriate waste management resources and P&Ps.
    - Sound worker safety programs.
    - Robust environmental services in place to clean and disinfect areas.
    - Proficient clinical management capacity that include requisite technical capacity.
    - Appropriate levels of adherence to P&Ps.
    - Effectiveness of response – for operations coordination and communications.
    - Electronic Health Records (HER) utilization.

What would be the primary function(s) of a community collaborative effort?

- Caveat: it will be up to the CDC in collaboration with the Florida Department of Health as to whether they will allow the patient to be continued to care for within this community collaborative care center or sent to one of the treatment hospitals such as the ones established for the national Ebola response – e.g., Emory or Nebraska. If the Central Florida facility serves only the initial assessment, triage and holding functions, the center may be required to care for the patient for up to 5 days.

- This community collaborative model for highly infectious disease patients would be:
    - A hybrid model tailored to the needs / capacities of Central Florida and engaging best elements of the Chicago experience (Chicago Ebola Response Network or CERN) or other similar partnerships that bring together a variety of key stakeholders. Key concepts/excerpts from this initiative include:
        - *"…the healthcare and public health community in Chicago rapidly responded with a unique and scalable partnership that shared responsibility among academic medical centers while ensuring the greatest benefit for citizens in the community it serves."*
        - Advantages include ***shared expertise, shared risk and shared resources***
            - Shared expertise included multiple subject matter experts in a myriad of disciplines and domains drawn from multiple organizations and sectors – all working together
            - Shared risk implied emphasizing *"the benefits of cooperation, while reducing the financial and public relations challenges in becoming unfortunately stigmatized as the single "Ebola Hospital." And… "Public fears can also be allayed: With numbers comes strength, and the public health response is seen as robust and coordinated, not siloed and ad hoc."*
            - Shared resources meant having *"increased capacity within a single region"* and a *"reserve capacity for a variety of scenarios, including a shortage of healthcare workers, PPE, and laboratory equipment, or other disaster-related situations that might affect a facility."*
        - Refer to:
            - City of Chicago response.
            - Lessons learned from Ebola – preparation for a major public health event.
            - Political support for the initiative.

Multi-disciplinary approaches germane to a truly "whole community" coalition could involve:

- Inclusion of many different disciplines to ensure that "***all hands on deck***" – with a wider set of stakeholders engaged and more robust set of resources being activated:
    - Including but not limited to the area hospitals/health systems, Florida Department of Health, City of Orlando government leaders (Mayor, Police Chief, Fire Chief, Emergency Management Director), Orange/Seminole/Lake/Osceola County government leaders (Mayor, Sheriff, Fire Chief, Office of EMS-Medical Director, Emergency Management Manager), local/regional laboratories, nongovernmental agencies (American Red Cross, Salvation Army), federal partners including the CDC, VA system (Orlando area) and possibly some of our academic institution leaders.
- Having a prominent assessment function (based on the alignment with e.g., Infection Control Assessment and Response program (ICAR); the Florida Dept. of Health (Ebola response).

- The best case scenario would be a collaborative effort where there is one facility, in one area, with one team, one training program, one set of equipment, one set of credentials, and one set of protocols to respond to such a case:
    - Ideally given enough forewarning the patient would be directly transported to the community collaborative care facility.

- If a hospital received a patient with a highly infectious disease the staff would stabilize the patient for long enough within their Emergency Department until this center and its team activated to respond to the incident.
    - Once the center is in place and the operation is mission ready the patient can be sent from the hospital Emergency Department to the center for care.
    - The County Department of Health and EMS Medical Director would be there to assist with any crisis standards of care issues that may arise throughout the process. Their teams would be available to assist with any needed resources or subject matter experts.
- If all entities supported this effort there would be cost sharing amongst all parties.

Where and what would this center look like?

- Strategically positioned to maximize coordination with transfer mechanisms to a definitive care facility (a designated national/regional hospital where longer term more complex management can be rendered) and minimize exposure to the general public, tourist population, etc.
- For sustainability and maintenance integrity, the center needs to be cross-purposed in the event of an infectious disease emergency; otherwise used daily for other clinical purposes, serving other patient populations.
- The best suitable location for this standalone center would be within a close (yet to be defined) distance of a given hospital belonging to one or both of the health systems (e.g., Orlando Health and Florida Hospital). Other factors to consider if possible include (but not limited to):
    - Ease of travel for any family that may have to come to town, to facilitate e.g., a family reception center at a local hotel.
    - Ease of travel for emergency responders that may be required to assist.
    - Community-sensitive – remote location or at least not immediately juxtaposed to major industries, businesses or thoroughfares.
- Structurally, this would be a standalone facility:
    1. Operational characteristics and capacity needs include, not limited to:
        - Supporting at least 3 patient care treatment rooms, a laboratory, anteroom leading to this aforementioned space with an emergency shower.
        - Negative air flow pressure in each of the 3 patient care treatment rooms.
        - Medical gas connections in each of the 3 patient care treatment rooms.
        - Each patient care treatment room should include; the patient bed, sharps containers, waste bins, supply cabinet, a private bathroom, a seat for staff, and a report/documentation location.
        - Equipped with a push button intercom system so that effective communications can be in place with the command center and management staff.
        - The lab should include a biosafety hood.
        - A command center location to coordinate and control efforts should be created outside the anteroom area.
        - Family and friends of patients or caregivers need a platform for interactivity (e.g. have a place where they can skype/facetime with either the patient or staff member working within the facility).
        - There should be accommodations for staff members at this location as well to include; locker rooms with showers, bathrooms, kitchen area, lounge for rest, and a report room(s).

2. Suitable to withstand at least a category 2 hurricane; lightning protection & avoiding a floodplain.
3. No windows to allow for better protection of the facility, people, and HIPPA requirements.
4. Relatively inconspicuous and not warranting undue attention.
5. Equipped with adequate physical security measures in place surrounding and leading to the facility itself to include; badge access to enter the parking location, bollards installed surrounding any parking areas next to the facility, CCTV cameras on the exterior of the building, badge access into the facility, fenced in parking lot, etc.
6. Include emergency power (generator) to sustain/maintain operations should a power outage occur.
7. With alternate means of providing water such as a water tank in case of water outages.
8. An autoclave should be in the area to help with disinfection efforts.
9. There should be a loading dock area on the backside of the facility where supplies can be delivered.
10. An onsite space to isolate, confine, and secure waste generated from the incident.
11. Any insignia within the premises should include logos, or names, of all of the organizations that support this effort.

- Staffing models appropriate to an interim "ICAR-type hospital/platform" should follow requisite guidance from the CDC, Emory University, Nebraska Center, and our healthcare partners (i.e. Florida Department of Health and Healthcare Coalitions).
- Staffing would be limited to the fewest number and type of practitioners who could be potentially exposed during patient management – e.g., 1-2 RNs, a physician, RT – with of course the immediate deployable availability of other experts/team members, e.g., infection preventionists, epidemiologists, Infectious Disease physicians, other representative specialties (e.g., pulmonary/critical care, surgical, etc.), nurses (both adult, OB, and pediatric), clinical techs, radiology techs, respiratory therapy techs to ensure there is adequate care being provided to patients during the monitoring period.
- A thorough practical "**Checklist for Healthcare Coalitions for Ebola Preparedness**" is available. [12]

Other recommendations in the absence of a community collaborative care center:

- There are a few options if a collaborative center and/or approach effort are not available although none are as favorable as the single site and they are as follows:
    - A collaborative team to identify one remote center where staff from varying facilities ideally not only train together but form a cohesive team that is deployed for a Black Swan event once the center is activated.
    - A collaborative team to select one site that already exists within one of a hospital/hospital system's owned locations to identify as the community center for all healthcare providers,
    - A collaborative team to utilize a trailer in a remote location to manage the incident,
    - A network of approved centers within several hospital/hospital systems that would have access to subject matter experts from a collaborative team to assist in their response efforts.
    - Each hospital system to identify a space within one of their current facilities so a single hospital does not have to continuously care for a patient,
    - Each hospital identifying a space within their current facility to care for these patients.

- **Pros and cons:**
  Things to consider - 'single facility per health system vs a community collaborative effort.
    - Factors supporting the former model include a theoretically greater level of efficiency, ease of coordination, scope of involvement, and level of autonomy.
    - However other negative factors that offset these perceived benefits include potential silos being developed, increased cost and liabilities, greater levels of resource commitment & scrutiny.

- The pros of a community collaborative effort far outweigh each organization having to commit their own efforts. To sum them all up a community collaborative effort would imply the multi-stakeholder commitment for all activities involved in the basic planning, groundwork, stakeholder engagement, community participation and goal alignment is present. In the era of budget shortfalls in healthcare organizations, reduction in public health funding, and scares resources and expertise having a collaborative effort will assist with public and private partnerships, sharing resources and expertise, and sharing of responsibility will yield a more efficient, effective, and comprehensive program.

- Several excellent resources exist that can guide next steps, especially gaining the necessary information and insight needed to address key challenges and barriers. The National Ebola Training and Education Center along with key regional and national institutions with expertise are very helpful. [13] For example a personal communication via their web portal yielded a comprehensive and practical listing of strategies that can be employed to recruit, incentivize and retain staff to work in even an Ebola Treatment Center (such as University of Nebraska) – see Table 1 (next page). These suggestions would of course need to be tailored or modified for an Ebola Assessment facility and/or Frontline Hospital.

TABLE 1.

(guidance acquired through the NETEC web portal upon request):

Strategies that can be employed to recruit, incentivize and retain staff (found to work in Nebraska) for a Ebola Treatment Center *(these would need to be modified for applicability to an Assessment Hospital Facility and/or Frontline Hospital setting)*

Recruiting:

- Having staff recruit their colleagues whom they know to be good team players and excellent clinicians.-Same at Emory
- We have a position posted on the Nebraska Medicine jobs site for RN's, Respiratory Therapists and Care Techs.
- We have spoken at the new employee orientation about out unit.-Same at Emory
- We also go to other department staff meetings to talk about our unit and what is required to be a team member.
- Also speak with nurse leaders

Incentivizing and staff retention:

- Involve staff in the development of policies and procedures as this gives them a sense of ownership and control.
- Bonus pay if activated (although, our staff were not motivated by extra pay).
- Make training/ drills fun. Include staff in drill committees and training planning.
- Provide an annual calendar of training activities.
- Team building events/ activities (i.e. family outings, ropes course, volleyball, icebreakers at meetings, NBU biocontainment t-shirts or other gear/"swag")
- Invite staff to special events.
- Pay for conference attendance and time (we send our staff to a Bio-preparedness conference each year that is held in Omaha or Lincoln).
- Support staff to present at conferences and professional meetings
- Empower staff to help train others; allow them to own their practice
- Develop a shared governance model (similar to what is stated in first bullet point)
- Encourage and allow staff to get involved in special projects (i.e. become super users of the simulation equipment, research activities etc).
- Have staff be the 'face' of the unit for photo shoots and media events.
- Communicate with staff often (but not too much)
- During the annual appraisal period, we send personalized letters of each staff member's involvement to their primary managers.
- Above all, make sure they know they are valued.

Final recommendations for a "whole community" approach / community collaborative model:

- The recommendation is for all of the aforementioned entities identified stakeholders to come together and agree to building out a collaborative effort where we all are prepared for the next case of a highly infectious disease patient. It is understood that the entire process from inception to creation will take some time but getting everyone together on the same page is a huge step in the right direction. Something to this scale should include stakeholders from the above mentioned list as well as the State of Florida DOH Secretary, State Political Officials, and the State Division of Emergency Management Director. The true marker of success would be when there is one center with one team trained and credentialed to one accord and ready for patients with highly infectious diseases that may present within our community. This will ensure our healthcare system is sustainable and poised for current and future threats which is a big advantage over reliance on a single organization no matter the expertise and capacity of the organization's center.
- A burgeoning coalition that decides to take this collaborative "whole community" approach needs to develop specific action steps (draft):
    1. Identify health systems stakeholders and gain consensus/support from health systems stakeholders for the collaborative model.
    2. Establish a plan of action for the specific collaborative goals and related efforts.
    3. Conduct a strategy meeting to identify:
        a. Building a collaborative community team made up of both internal and external stakeholders.
        b. Naming of center.
        c. Naming of team.
        d. Identifying leadership of effort and team.
        e. Identification of gaps/potential issues that would have to be remedied.
    4. Identify funding models for collaborative model.
    5. Keep internal and external stakeholders updated of progress through regular emails/meetings.
    6. Develop a specific timeline and articulate associated projected costs, staffing needs, and related details.
    7. Develop a specific plan for staffing (including recruitment, incentives, and succession plans for team members), benefits, occupational health management, training, deployment, and scheduling / logistics.

[1] Biosecur Bioterror. 2009 Jun;7(2):153-63. - Healthcare coalitions: the new foundation for national healthcare preparedness and response for catastrophic health emergencies. Courtney B et al. Accessed 7/20/17
[2] Health Secur. 2017 Feb 1; 15(1): 8–11. Healthcare Preparedness: Saving Lives. Toner E. Accessed 7/20/17
[3] https://www.cdc.gov/phpr/documents/whole_community_program_report_october2013.pdf
[4] https://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf
[5] https://www.domesticpreparedness.com/preparedness/public-health-a-whole-community-approach-partner/
[6] https://www.hsaj.org/articles/228
[7] https://www.phe.gov/Preparedness/planning/hpp/events/Pages/kentucky-ebola.aspx
[8] http://tampabayhmpc.org/wp-content/uploads/2015/03/mscctier2jan2010.pdf
[9] http://www.who.int/blueprint/priority-diseases/en/
[10] http://www.acting-man.com/?p=33526
[11] http://aon.cdnist.com/wp-content/uploads/2017/05/Black-Swans_-What-Pandemics-Can-Teach-Us-About-Risk-Management.pdf
[12] https://www.cdc.gov/vhf/ebola/pdf/coalition-checklist-ebola-preparedness.pdf
[13] https://netec.org/resources-repository/