The hidden toll of Harvey

The flood waters are finally receding from the Texas-Louisiana Gulf Coast, but the long-term health consequences of Harvey are only just now becoming apparent. Although there were dozens of tragic deaths due to drowning and even electrocution, these were only the most obvious signs of devastation. More hazards lurk.

First let's realize that massive flooding has unleashed a gargantuan tide of raw sewage and dangerous petrochemicals. The Houston-New Orleans corridor is the epicenter of the chemical industry. The detritus spilled into the air and water will have immediate toxic effects; even more problematic will be the lingering impact on the soil in which plants grow and children play.

As rescue workers and inhabitants wade through this toxic soup, they'll be exposed to poisonous chemicals and pathogens. The potential for injury from submerged objects is huge; even small lacerations offer a portal of entry for dangerous microbes.

Earlier this year, a man died after swimming in Gulf waters within days of getting a tattoo. The cause of death was septicemia from *Vibrio vulnificus*, a cholera-like bug known to inhabit South Texas coastal waterways. The recent tattoo gave the bacteria a pathway into the bloodstream, and the victim's immune system, compromised by alcoholic cirrhosis, was overwhelmed.

Countless thousands of Houston area dwellers are virtually dependent on life support from the region's hospitals: dialysis patients, those requiring checkups to adjust their anti-coagulant medication, people who need their pacemakers adjusted, to name but a few. Others take multiple medications, some of which weren't retrieved when they hastily abandoned their homes. With hospitals and pharmacies inundated, they're running out of meds to control hypertension, diabetes, prevent blood clots, maintain tolerance to transplanted organs, and to keep mental disorders in check. Their overworked health care professionals are dispersed in distant improvised facilities, scrambling to source essential medical supplies.

Refugees from the flood, many Texans are shoehorned into relocation centers where sanitary conditions and crowding will facilitate the spread of infectious diseases, especially among the aged, the very young, and the immunosuppressed.

Stagnant groundwater will accelerate the breeding of mosquitoes that may transmit West Nile and Zika virus during the long warm months ahead.

A more insidious but equally real problem is the PTSD engendered by the experience of loss and dislocation. Harvey will cast a long shadow over the future psychological health of survivors.

But the worst scourge of all, as it is from all floods, will be from toxic mold. All surfaces that came in contact with the flood waters will be vulnerable to mold infestation. Drying and chemical treatment is insufficient to mitigate the risk;

furniture, clothing, and construction materials will need to be systematically rooted out, discarded and replaced. Houses and businesses, seemingly intact after the flood waters recede, will have to be dismantled and entirely rebuilt.

The risk posed by mold goes well beyond just asthma and respiratory symptoms. Mycotoxins from mold species like Stachybotrys are profoundly immunosuppressive and can cause a plethora of potentially life-threatening systemic health problems. The warm, humid climate of the Gulf is particularly conducive to mold proliferation, even absent the flooding disaster.

So the Texas-Louisiana Gulf Coast faces an unprecedented series of health challenges. There will be setbacks, but let's pray for the resilience of our fellow citizens. And, while far be it from me to steer you to one or another specific charitable organization, l urge you to manifest your generosity in some way to support the recovery effort.

Addendum as of 1:00 PM EDT Thursday, September 7: As yet another hurricane bears down on the Caribbean, Florida, Georgia and the Carolinas, let's offer up a prayer for the inhabitants of low-lying flood-prone regions as they brace themselves for the impact of Irma.