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Texas Public Health Journal

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President's Message

Melissa Oden, DHED, LMSW-IPR, MPH, CHES



Answer? “Only 1, but the light bulb has to WANT to change first.” In our public health world, the joke could go something like this: “How many public health practitioners does it take to change a community?” Answer? “Only 1, but the community has to WANT to change.” Only....it isn't a joke, is it?

Most all of us choose this field because we want to change the world around us. However, just like my social worker colleagues, when we get out into the field, we realize that sometimes we want that change more for the community than the community wants it for themselves. And then there are those moments where we realize that WE are the ones who need to change. Some of you may have bristled when you read that part, and I know what you're thinking: “Why should I have to change? I am the public health professional here! I should know what's best for people, and they should listen! It's for their own good, after all!” Do any of those words sound familiar?

It is in these moments that I have found it helpful to get back to basics. In this case, for me, that requires me to go back to Social Work 101 and Community Health 101 where we are taught that bees make honey and honey attracts all sorts of things! We (the bees) may have the best grant in the world with all sorts of money that we need to spend and we want to do it in THAT community because they need it so badly and we really want to share our money (honey) with them! That's what we think, anyway. The reality is, that may not be the kind of honey that community is looking for at all. As public health practitioner bees, we may need to find another honey pot to operate out of until the community is ready for the honey we really want to share with them. (This analogy is particularly meaningful to me because my name, “Melissa” means “Honeybee”, and my family nickname for

me, “Missy”, means “Busy Bee”.)

Here is my point: I am personally and professionally invested in the community we call the Texas Public Health Association. I have been a part of this association for well over a decade of my life now. I began my membership as a master's level public health student and have spent the years since learning and growing and serving this organization of public health practitioners because the work we do is important to me and, more importantly, to the people we serve in our respective communities. The honey that attracted me to this association is the same honey that keeps me working in this association even now, and I can summarize it in one word: Relationships. I count myself amongst one of the most blessed women on the planet because of the people with whom I have shared this public health journey for the last twelve years. It has, indeed, been a sweet journey (pun intended).

What I have learned over the years is that not all bees can make and offer the same honey. The things that motivate people to engage in the activities of their community are as varied as the people themselves. I have found this to be true in our TPHA community as well. Something besides the lifelong relationships you build in TPHA may be what motivates you, and that is absolutely okay. However, to continue fulfilling our mission of improving the health and safety of Texas through leadership, education, training, collaboration, mentoring and advocacy, we need some worker bees! I can promise you, based on my experience in leadership in TPHA for the last several years, that the Officers, Governing Council, and Executive Board simply cannot do all of the work that needs to be done to sustain this association. **We need YOU.**

As of this writing, we are in the process of creating several different “honey pots” for our members to choose from to help perpetuate our mission. These opportunities for service have, in fact, been available for many years to our members, but what your leadership is doing is putting those opportunities into a format that will be easy to access and easy to understand so that you will have a plethora of opportunities to choose from. These opportunities will be long-term and short-term, to give everyone an opportunity to engage in service activities that fit

your current work life. These opportunities will be available for you to peruse on our web site shortly.

Let's make no mistake: We are ALL busy. But I believe that everyone has time to contribute to this association, whether on a big scale, or a smaller scale. EVERYTHING our members do for TPHA is important, and it matters. I want to extend a special invitation for you to contact me directly (drmissy2011@gmail.com) if you want to discuss any opportunities for service. If you

know where you want to serve and need help getting plugged in, I can help. If you have an idea that is not on our list and you want to take the lead on it, I will help you. I am fully committed to making sure that our members feel valued and know they have a place to utilize their skills and talents in this organization. We need you. We cannot do this without you. Our hive will only be as strong as the worker bees who help build it. So let's get buzzing!



Commissioner's Comments

The Flu is Back, and so is Flu Surveillance

Dr. John Hellerstedt

Texas Department of State Health Services

October marks the return of flu season, and while influenza cases in Texas don't usually reach their peak until December and January, our flu surveillance efforts are already in full swing.

Surveillance is an important part of understanding the flu because it helps us see when and where influenza activity is occurring, identify which viruses are circulating, detect changes in the viruses, and track flu-related illness and deaths. It's also a great demonstration of how health agencies at the local, state, and national levels work together on a project that can only be accomplished jointly.

Influenza surveillance is made up of lots of pieces, and I want to highlight where our local partners play a particularly important role. The reporting of pediatric flu deaths, as required by state law, is vital information in tracking the impact of influenza on a vulnerable population. Healthcare providers and laboratories must report within one work day to their local health department which then shares the information with DSHS. Additionally, vital statistics offices in seven cities in Texas, among 122 nationwide, report all flu or pneumonia deaths by age group to the CDC each week.

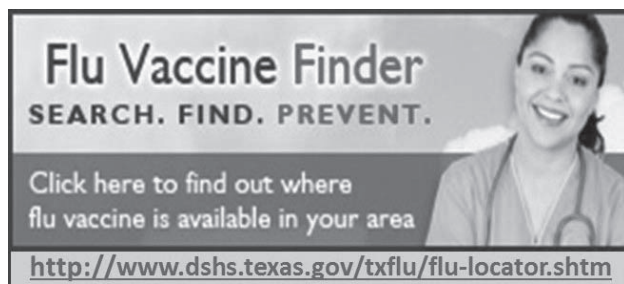
Health departments play a big part in outbreak surveillance, collecting information on school absenteeism and clusters of

illness in schools and long-term care facilities. We also rely on local health departments for laboratory surveillance by identifying providers to send specimens to DSHS and Laboratory Response Network labs for flu testing to identify those that are positive and the strains involved.

On the vaccine front this flu season, the recommendation remains that everyone six months old and older should be vaccinated, with only very rare exceptions. The biggest change this year is that the Advisory Committee on Immunization Practices has recommended providers not use the live attenuated influenza vaccine, commonly called the "nasal spray" vaccine and sold under the trade name FluMist. Research during the last flu season measured no protective benefit from the LAIV. Combined with lackluster performance in the previous two years, ACIP chose to recommend against its use.

There has also been a small change in the recommendation for providers vaccinating someone with an egg allergy. It's no longer recommended to observe such a patient for 30 minutes. Providers should instead consider observing all patients for 15 minutes after vaccination to decrease the risk of injury in case they faint.

Once again, thank you for all you do for flu surveillance in Texas. It truly makes a difference by helping us understand the burden of influenza and how to combat it every season.



Dry Ice: A Potential Halloween Hazard

Mathias B. Forrester

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Poison centers receive calls throughout the year. However, certain types of exposures may occur more frequently around certain holidays. For example, mistletoe and poinsettia ingestions are more likely to occur around Christmastime.^{1,2} An uptick in snake bites may occur around Memorial Day and Independence Day.³ And exposures to glow sticks most frequently occur around Halloween.⁴⁻⁶

Another potentially hazardous exposure around Halloween involves dry ice. Dry ice (solid carbon dioxide) is commonly used to preserve food and, in combination with water, creates a dense, low lying fog. Dry ice can cause freezing injury if it contacts the skin and asphyxiation if it sublimates in an enclosed room.

During 2000-2015, Texas poison centers received 370 calls about exposures to dry ice, ranging 6-58 in a given year. Although dry ice exposures were reported throughout the year, 34.9% occurred in October. Furthermore, 28.9% of the exposures occurred during October 25-November 1, and 14.6% (one in seven) occurred on Halloween (October 31).

The patient age distribution was 8.4% five years or less, 34.6% 6-12 years, 17.0% 13-19 years, 37.3% 20 years or older, and 2.7% unknown age; 50.8% of the patients were male, 37.6% female, and 11.6% unknown gender. The exposures occurred by multiple routes: 64.1% ingestion alone, 17.0% inhalation alone, 12.2% dermal alone, 3.5% ocular alone, 1.4% ingestion and dermal, 1.1% inhalation and dermal, 0.3% ingestion and inhalation, 0.3% ingestion and dermal and ocular, and 0.3% unspecified other. The majority (56.8%) of the exposures occurred at the patient's own residence, 24.1% at school, 8.6% workplace, 4.6% other residence, 2.4% public area, 0.3% restaurant/food service, and 3.2% unspecified or unknown. The preponderance (88.4%) of the exposures were unintentional, 9.7% intentional, and 1.9% for other or unknown reasons.

Most (82.2%) of the patients were managed on site (outside of a healthcare facility, such as at home), 10.8% were already at or en route to a healthcare facility when the poison center was contacted, 5.1% were referred to a healthcare facility by the poison center, and 1.9% were managed at an unspecified loca-

tion. The medical outcome was 23.8% no effect, 10.8% minor effect, 4.6% moderate effect, 0.5% major effect, 12.2% not followed-judged as nontoxic, 37.3% not followed-minimal effects possible, 1.9% unable to follow-potentially toxic, and 8.9% effect unrelated to the dry ice exposures. No deaths were reported.

Adverse clinical effects were reported in relatively few of the exposures. The most common such effects were headache (9.7%), dermal irritation/pain (7.0%), throat irritation (5.9%), dizziness/vertigo (4.3%), superficial dermal burns (4.1%), abdominal pain (4.1%), and nausea (4.1%). The most common treatments were dilution/irrigation/wash (38.9%) and fresh air (12.7%).

In summary, dry ice exposures reported to Texas poison centers were most likely to occur around Halloween. The patients are most often adults followed by children age 6-12 years. Most of the exposures occurred by ingestion followed by inhalation and dermal contact. Although over half of the exposures occurred at the patient's home, almost one-quarter occurred at school. The majority of exposures were managed outside of a healthcare facility and did not result in serious outcomes. Even so people should be warned to take care while using or around dry ice. This is particularly true around Halloween.

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Niacin Ingestions Reported to Poison Centers

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Niacin (aka nicotinic acid, vitamin B3) is a dietary supplement. It also is used for the treatment of hyperlipidemias, hypercholesterolemia, pellagra, and hypoalphalipoproteinemia.¹ In fairly high doses, niacin may also lower low density lipoprotein (LDL or "bad" cholesterol) and raise high density lipoprotein (HDL or "good" cholesterol) and thus may be taken

to reduce the risk of heart attack and stroke.² Among adults in Texas in 2010, the prevalence of heart attack was 4.3% and of stroke was 2.8%.³

Niacin is relatively inexpensive and available over-the-counter, although it also is available by prescription. Niacin use

has been reported to have tripled between 2002 and 2009.³ According to a study published in 2009, almost 700,000 persons in the United States were prescribed niacin every month, costing over \$800 million a year.^{2,4}

Reports have suggested that niacin may actually be of little benefit in preventing heart attack and stroke and may have significant health risks.^{2,4} Adverse reactions reported with niacin use involve the skin (flushing, itching, burning), gastrointestinal system (nausea, vomiting, heartburn, diarrhea), and cardiovascular system (hypotension, tachycardia, syncope), among others.¹ Treatments of adverse exposures include decontamination, such as through lavage or administration of activated charcoal, and supportive care. Aspirin or ibuprofen may reduce flushing of the skin.¹

During 2000-2015, 2,953 ingestions of niacin as a single-component product (i.e., not as part of multiple-component products, such as multivitamins) were reported to Texas poison centers - 718 in 2000-2003, 816 in 2004-2007, 833 in 2008-2011, and 586 in 2012-2015. There was no seasonal pattern to the ingestions. The distribution by patient age was 29.8% 0-5 years, 1.7% 6-12 years, 9.8% 13-19 years, 58.1% 20+ years, and 0.6% unknown; 50.6% were males, 49.2% females, and 0.2% unknown gender. The ingestion was unintentional (i.e., accidental) in 56.3% of the ingestions (including 14.8% therapeutic errors), intentional in 13.9%, adverse reactions in 29.1%, and unspecified or unknown in 0.6%. The ingestions occurred at the patient's own residence in 94.9% of the cases.

Niacin was the only product ingested in 2,501 (84.7%) of the cases. (In the rest, in addition to the single-product niacin, there were other products.) Of these single-product ingestions, 80.9% of the patients were managed outside of a healthcare facility, 13.5% were already at or en route to a healthcare facility when the poison center was contacted, 4.4% were referred

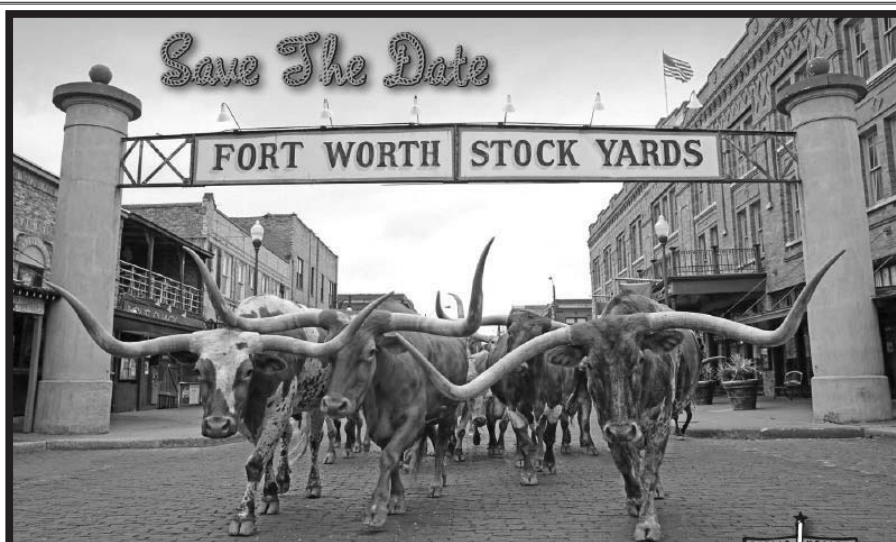
to a healthcare facility by the poison center, and 1.2% were managed at an unspecified or unknown location. The outcome was not serious in 90.9% of the cases, serious in 7.6%, and unrelated to the niacin in 1.4%; no deaths were reported.

Among the ingestions of niacin alone, the most common adverse clinical effects were erythema or flushed (56.4%), itching (17.0%), vomiting (7.1%), nausea (5.3%), dermal irritation or pain (5.1%), and rash (4.9%). The most frequently reported treatments were dilution (42.1%), antihistamines (13.4%), and food or snack (9.4%).

Thus, although the number of niacin ingestions reported to Texas poison centers increased during 2000-2011, it declined since then. The majority of patients were adults and slightly over half were male. Over 40% of the ingestions were due to therapeutic errors or adverse reactions to the niacin. Most of the ingestions occurred at the patient's own home and did not involve other substances. Of these single-product ingestions, the most common adverse clinical effects were dermal or gastrointestinal in nature and consistent with the literature. The most frequently reported treatments likewise were consistent with the literature.

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Wind Ensemble Infectious Disease Risks II

A Microbiological Examination of Condensate Liquids in Woodwind Instruments

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ABSTRACT

Objective: To determine if the condensation that forms from playing woodwind instruments contains bacterial flora that could represent a health threat to others using the rehearsal area.

Methods: Thirty-seven fluid samples were obtained from seven types of woodwind instruments (flute, oboe, bassoon, clarinet, bass clarinet, alto saxophone, tenor saxophone). These were processed as environmental cultures.

Results: Thirteen bacterial species were recovered including three gram positives and ten gram negatives. Two species were cocci, nine were bacillus and two coccobacillus. Thirteen samples had no growth. The isolates were predominantly aquatic and either normal flora, opportunistic pathogens or both.

Conclusions: The liquids which are released by woodwind instruments, generally do not pose a threat. There may be some situations in which the secretions could be harmful, such as exposure to these fluids by persons with immunosuppression, cancer, HIV or chronic diseases.

Key Words: band, condensation, saliva, woodwind, bacteria, immunosuppression

INTRODUCTION

This paper is the second in a series of studies that examine the possibility of disease transmission from the fluid that accumulates in musical instruments and is released into the rehearsal room environment. In part one Mobley and Bridges examined the bacterial content of fluid released through the water keys of brass instruments.¹

Band and orchestra rehearsals and individual practice sessions occur daily in elementary schools, secondary schools, colleges, and universities. During these rehearsals and practice sessions, wind instruments are warmed from room temperature to body temperature. Through this process, condensation forms. It either evaporates or drips onto the flooring or other furnishings. In these band and orchestra rehearsals large groups of people are exposed to the condensate from wind instruments.

Unlike brass instruments, woodwind instruments are made from a variety of materials. Flutes are generally nickel or silver; oboes, bassoons, and clarinets may be made from plastic or wood; saxophones are made of brass. Woodwind instruments produce tones by the movement of air over a reed causing it to vibrate or by blowing air across an aperture. On single or double reed instruments, the vibrating reed is made of cane, a very porous material, which collects moisture and substrate and may support bacterial growth. The bacterial content of mouthpieces and reeds of woodwind instruments has been studied by many researchers,²⁻⁵ but little is known regarding

the bacterial content of the fluids released from the instruments onto the rehearsal hall floor. Enough concern about transmission of disease from instruments existed for the Massachusetts Legislature to enact H4384, an instrument sterilization bill which was signed into law January 7, 2015.⁶

Is the bacteria that has been found on reeds and mouthpieces transported into the instrument and, subsequently, into the environment by the force of the air or the dripping of the fluid from the reed into the instrument? There is usually no water key on woodwind instruments (some saxophone models being the exception) so the fluid accumulates inside the instrument and drips to the floor. In the case of saxophones and bassoons, the water accumulates in the bow (saxophone) or boot joint (bassoon). The player has to empty the fluid to prevent it from interfering with the tone quality of the instrument. If the fluids are predominantly condensate with little or no oral bacterial flora, then there would be less concern regarding the possibility of disease transmission.

LITERATURE REVIEW

Previous research has focused on the possibility of instruments causing disease to the person playing the instrument. There has been no research to discover if there is a risk to others from fluids released into the rehearsal halls. In 1956 Bryan tested reeds and mouthpieces from seventy-five band members for bacterial content and found predominantly oral flora.² He believed these mouthpieces to be dangerous and that disease transmission through sharing of the instrument was possible. Walter and Chaffey in 1959 tested mouthpieces for bacteria in an attempt to identify an effective cleaning method. They primarily worked with brass mouthpieces but did test one saxophone mouthpiece and concluded that bacteria in the mouthpiece might remain viable for several days.³ Woolnough-King took samples from the mouthpieces of wind instruments and the players' noses and throats in 1994. Both streptococci and staphylococci were present in high numbers at seventy-two hours after use of the instrument.⁴ He concluded that staphylococci and beta-hemolytic streptococci may grow in the mouthpiece after use and storage. Glass et al conducted a study of the bacterial flora of band instruments in 2010. They identified 295 bacterial isolates. They swabbed two oboes, two clarinets and two saxophones. Oboes grew twenty-one species of bacteria, clarinets twenty-seven and saxophones twenty-two.⁵ In an interview published in Science Daily, Dr. Glass associated contaminated instruments with asthma and yeast lip infections.⁷ Metzger et al described a case of hypersensitivity pneumonitis ('saxophone lung') in a 48-year old amateur saxophone player in 2010.⁸ Molds recovered from the saxophone were consistent with antibodies

in his serum. The saxophone player's respiratory condition improved after he began cleaning and drying his instrument. As a part of this investigation, fifteen other saxophone players and their instruments were examined. Fungus colonization was found in thirteen of fifteen instruments. Examination of the saxophone players did not reveal evidence of infection or sensitization to the molds. In an associated editorial, Cormier stated that hypersensitivity pneumonitis ('saxophone lung') from contaminated instruments may decrease lung function, making it difficult for a wind musician to continue playing.⁹ 'Saxophone lung' was first reported in 1988 by Lodha and Sharma.¹⁰ The case report in Chest described a 65-year old saxophone player admitted to the hospital for shortness of breath and bloody sputum. The reed was thought to be the most likely source of infection since *Candida albicans* and *Candida famata* species were found on the mouthpiece. This musician improved when he stopped playing his saxophone and when he began to clean his instrument and mouthpiece regularly. In 2011, Dr. Stuart Levy of Tufts University School of Medicine studied survival of bacteria, mold and yeast in clarinets, flutes and saxophones. Viable species were found on all instruments. The study did not look at the risk to others from the condensate secretions from the woodwind instruments.¹¹ Both the Claflin University Department of Music and Butler University School of Music musician manuals discuss the need for cleaning and not sharing instruments and mouthpieces. However no mention is made of the risks from fluids which accumulate on the rehearsal room floors.^{12, 13}

OBJECTIVE

To determine if the condensation that forms from playing woodwind instruments contains bacterial flora that could represent a health threat to others using the rehearsal area.

DESIGN, SETTING AND PARTICIPANTS

The study design was a descriptive ecologic study. Samples were taken from woodwind instruments from the Del Mar College Wind Ensemble, the Corpus Christi Municipal Band and the Veterans Band of Corpus Christi. The Del Mar College Wind Ensemble is comprised of college students, most of whom are aged 18-24 years. The Corpus Christi Municipal Band is a group of mostly adult musicians many of whom are band directors. The Veterans Band of Corpus Christi is made up exclusively of military veterans, most of whom are aged 65 to 90 years. Seven types of instruments were sampled, clarinet, bass clarinet, alto saxophone, tenor saxophone, flute, oboe and bassoon. All musicians were informed of the purpose and design of the study. Samples were obtained from the location most likely to discharge fluids. The swabs were processed as environmental specimens by Clinical Pathology Laboratories, Austin, Texas. Since this was an environmental study with no intervention, there was no risk to the instruments or the musicians from the study. Institutional Review Board approval was not requested. Culture results were obtained and categorized by instrument.

RESULTS (Tables One through Six)

A total of thirty-seven specimens were processed. Sixteen samples (43%) were obtained from the Del Mar College Wind Ensemble, eighteen from the Corpus Christi Municipal Band

(49%) and three from the Veterans Band of Corpus Christi (8%). The specimens grew thirteen different species. Ten specimens (77%) were gram negative, three (23%) were gram stain positive. Two species (15%) were cocci, nine (69%) were bacillus and two (15%) coccobacillus. Nine instruments grew two species. Thirteen instruments had no bacterial growth including eight flutes and both oboes. We hypothesize that flutes had little bacterial growth because of their simple design and

TABLE 1: INSTRUMENTS

INSTRUMENT	NUMBER	PERCENT
Alto Saxophone	5	14%
Bass Clarinet	2	5%
Bassoon	2	5%
Clarinet	14	38%
Flute	11	30%
Oboe	2	5%
Tenor Saxophone	1	3%
Total	37	100%

TABLE 2: SOURCE OF SPECIMENS

ORGANIZATION	AGES	NUMBER	PERCENT
Delmar College Wind Ensemble	18-24	16	43%
Corpus Christi Municipal Band	21-75	18	49%
Veterans Band of Corpus Christi	65-90	3	8%
Total		37	100%

TABLE 3: SPECIES BY INSTRUMENT

INSTRUMENT	BACTERIA	NUMBER
Alto Saxophone	<i>Chryseobacterium indologenes</i>	1
	<i>Diphtheroids</i>	1
	<i>Staphylococcus (coagulase negative)</i>	1
	<i>Vibrio alginolyticus</i>	3
	No growth	1
Bass Clarinet	<i>Vibrio alginolyticus</i>	2
Bassoon	<i>Pseudomonas fluorescens/putida</i>	1
	<i>Stenotrophomonas maltophilia</i>	1
	<i>Vibrio alginolyticus</i>	1
Clarinet	<i>Acinetobacter lwoffii</i>	2
	<i>Alcaligenes faecalis</i>	3
	<i>Chryseobacterium indologenes</i>	1
	<i>Diphtheroids</i>	3
	<i>Pastuerella multocida</i>	1
	<i>Photobacterium damsela</i>	1
	<i>Pseudomonas fluorescens/putida</i>	2
	<i>Streptococcus viridans</i>	1
	<i>Vibrio alginolyticus</i>	2
	No growth	2
Flute	<i>Hemophilus parainfluenzae</i>	1
	<i>Staphylococcus (coagulase negative)</i>	2
	<i>Streptococcus viridans</i>	1
	No growth	8
Oboe	No growth	2
Tenor Sax	<i>Chryseobacterium indologenes</i>	1
	<i>Proteus penneri</i>	1

TABLE 4: BACTERIAL SPECIES

BACTERIA	CHARACTERISTICS
<i>Acinetobacter lwoffii</i>	Aquatic. May be normal flora. Associated with pneumonia and meningitis. Opportunistic for patients with impaired immune systems. ^{18,19,20.}
<i>Alcaligenes faecalis</i>	Found in moist areas including brass instruments. ¹ Rarely a pathogen but can cause infection in immunocompromised individuals. ²¹
<i>Chryseobacterium indologenes</i>	Rarely a human pathogen but infections have been associated with a high mortality rate. ²² "Vast majority associated with immunocompromised patients." ²³
<i>Diphtheroids</i>	Commonly regarded as contaminant but may cause subacute bacterial endocarditis in a haemodialysis patient. ²⁴
<i>Hemophilus parainfluenzae</i>	Normal flora in the human oral cavity. Generally has low pathogenic potential but may become a pathogen 'when impaired airway defenses delay bacterial clearance.' ^{25,26}
<i>Pasteurella multocida</i>	Found in the normal oral flora of dogs and cats. Has been recovered from the respiratory tract of humans. Associated with infections from animal bites and scratches. ²⁷
<i>Photobacterium damsela</i>	(formerly <i>Vibrio damsela</i>) Marine bacterium. Causes infections and fatal disease in a wide range of marine animals and humans. ²⁸
<i>Proteus penneri</i>	Nosocomial pathogen believed to cause kidney stone formation. May cause nosocomial infection in ICU and those with respiratory and urinary tract infections. ^{29,30}
<i>Pseudomonas species</i>	Uncommon cause of skin and soft tissue infections. May cause illness when associated with "trauma or immunocompromised state." ³¹
<i>Staphylococcus (coagulase neg)</i>	Normally found on skin and mucous membranes. May cause bacterial endocarditis and urinary tract infections, especially if indwelling catheters or artificial heart valves. ^{32,33}
<i>Stenotrophomonas maltophilia</i>	Found in aqueous habitats. Also found in respiratory tract infections and has a significant case fatality ratio. "A particular concern for immunocompromised individuals." ³⁴
<i>Streptococcus viridans</i>	Part of the normal flora of the oral cavity and is associated with subacute bacterial endocarditis. "May infect damaged heart valves and leukemia patients." ^{35,36}
<i>Vibrio alginolyticus</i>	Found in marine environments. Infection may occur when traumatized skin is exposed to seawater or infected animals. ^{37,38}

TABLE 5: BACTERIAL MORPHOLOGY

BACTERIA	NUMBER	PERCENT
Bacillus	25	54%
Coccus	6	13%
Coccobacillus	2	4%
No Growth	13	28%
Total	46	100%

TABLE 6: GRAM STAIN DISTRIBUTION

BACTERIA	NUMBER	PERCENT
Gram Stain Positive	9	20%
Gram Stain Negative	24	52%
No growth	13	28%
Total	46	100%

high silver content.

DISCUSSION

This is a small data set that provides at best a glimpse of the bacterial milieu of woodwind instruments. Corpus Christi is a warm humid environment. It is possible that the Texas climate could have influenced the types and amounts of bacterial species recovered. Greg McCutcheon, director of bands at Birdville Independent School District stated that “a hot, humid climate like that in Texas can also wreak havoc with brass instruments.”¹⁴ Also illnesses and health conditions of the musicians may affect the bacterial content and pathogenicity of instrument’s released fluids. Woodwind instruments comprise a very heterogeneous group resulting in a wide variety of bacterial species recovered. Most are generally not human pathogens but may become pathogenic in specific circumstances such as persons with impaired immune systems or chronic disease. In general the liquid from the woodwind instruments does not pose an environmental hazard to persons with normal immune systems. Even so, it is important for musicians to maintain their instruments and to use at least some consideration when ridding their instrument of the fluids that have accumulated. Some musicians, especially older ones, may have health conditions which would make them vulnerable to opportunistic bacterial infections.

Although musicians are generally healthy, there is the potential for significant disease to spread through band members and others using the rehearsal area. In 2015, The Cavaliers Drum and Bugle Corps cancelled a performance because of an outbreak of viral illness among the members.¹⁵ Bands and wind ensembles are composed of a wide variety of individuals ranging from preteens to octogenarians and older. The discipline and physical demands of playing in a wind ensemble have many benefits ranging from increasing memory capacity and time management skills to improving mathematical ability, reading and comprehension.¹⁶ Some studies indicate that students who take music lessons have increased intelligence quotient (IQ) levels.¹⁷ Although there are numerous articles detailing the risks of instrument playing, the authors of this article believe the benefits of playing a wind instrument far outweigh the risks.

RECOMMENDATIONS

Band directors and section leaders should be aware of their members and especially if there are musicians or other participants who would be vulnerable to released fluids. It is a good musical and health practice to clean instruments regularly. By drying the instrument after each practice session or rehearsal, the moisture level is reduced which reduces the substrate that supports bacterial growth.

Reeds can be cleaned via a few solutions that won’t render the reed useless. Reeds should be stored in a reed case that will maintain the proper amount of moisture needed to preserve the quality of the reed. The proper storage of reeds allows for the mouthpiece of the instrument to dry which will reduce bacterial contamination and the scaling that frequently happens on plastic mouthpieces.

Good practices will reduce the amount and the diversity of the bacteria found in the condensation that forms in the instrument. Instrumentalists should also consider a healthy life style, including appropriate amounts of rest, proper hydration, healthy eating, and frequent hand washing. These practices coupled with maintaining a clean instrument should be helpful in cultivating a healthy woodwind section and in advancing the health of the entire ensemble. Care of musicians and musical instruments will reduce the risk of self acquired infections and spread of infection to other persons using the rehearsal area.

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Stressors and Coping Strategies among Female South Asian Community Health Workers in Dallas, Texas

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ABSTRACT

Background: Although immigrants from South Asia are the fastest growing ethnic group in the U.S., this group has not routinely been included in previous studies of burden among community health workers (CHWs). The objective of this study was to identify stressors and coping strategies of immigrant female South Asian CHWs residing in the Dallas/Fort Worth metropolitan area of Texas.

Methods: A focus group was conducted with six female CHWs who immigrated from South Asia (age range 40 to 61 years; median years in U.S. = 22; countries of origin: Bangladesh, India, Pakistan) to determine perceived stressors and identify coping mechanisms. The social ecological model was used to evaluate individual health behaviors as influenced by intrapersonal, interpersonal, community, and public policy/environmental factors, while the transactional model of stress and coping was used to evaluate the impact of stressors as mediated by individual appraisal of the event and sociocultural resources. Content analysis was used to determine themes.

Results: The three major themes that emerged were (1) motivation to be a CHW, (2) stressors, challenges, and demands, and (3) coping mechanisms and strategies. Community-related factors were the most prominent subthemes identified among both stressors and coping mechanisms.

Conclusions: Community-related stressors and coping mechanisms should be taken into account when designing CHW training and supportive programs for this population.

INTRODUCTION

In Texas, community health workers (CHWs) are increasingly being used to facilitate health promotion activities; from 2012 to 2013, the number of certified CHWs in Texas increased 28%.¹ CHWs are trusted community members that link underserved populations to health services by providing a variety of services such as outreach, health education, and social support.^{1,2} While CHWs may serve in this role to gain a sense of importance,² respect from their communities,³ and/or to improve the lives of others,⁴ the demands of being a CHW can undermine the perceived benefits of serving in this position.⁵

Stressors reported by CHWs include limited supervision and support, lack of resources, incongruence in expectations, lack of training, and a high workload.^{2,3} Such constant stressors could lead to eventual burnout.⁵ Studies examining burdens among CHWs, however, have primarily focused on populations outside of the U.S. such as Uganda, Rwanda, and Taiwan.^{2,3,5-7} Additionally, standard quantitative instruments for measuring stress may yield invalid results among some populations due to different cultural interpretations of the questions.⁶ Therefore, a qualitative study that can identify the unique sources of stressors and coping mechanisms among immigrant CHWs is needed.

In 2015, Dallas/Fort Worth (DFW) saw a significant rise in South Asian immigrant women seeking training to serve as CHWs in their communities. Although immigrants from South Asia are the fastest growing ethnic group in the U.S.,⁸ this group has not, to our knowledge, been included in previous studies of stress and burden among CHWs. This study identifies stressors and coping strategies of immigrant female South Asian CHWs residing in the DFW metropolitan area of Texas.

METHODS

To be included in this study, participants had to be female immigrants from South Asia, willing to be audio-recorded in a focus group setting, and either currently undergoing training to be a CHW or had prior experiences as a CHW. Participants were recruited through the Texas Public Health Training Center (TPHTC) and invited to take part in a focus group that met for one hour at a local community center. The researchers emphasized that participation was voluntary and would have no effect on their status with the TPHTC. Participants signed an informed consent document and completed a de-identified demographic questionnaire prior to the focus group discussion. During the session, the researchers asked all the questions from the focus group guide along with follow-up probing questions as needed. This project was approved by the University of North Texas Health Science Center Institutional Review Board.

The focus group guide was developed based on the social ecological model and transactional model of stress and coping (see Table 1). The social ecological model posits that an individual's health behaviors are influenced by intrapersonal, interpersonal, community, and public policy/environmental factors,⁹ while the transactional model of stress and coping holds that the impact of stressors are mediated by both the individual's appraisal of the event (primary appraisal) and sociocultural resources available (secondary appraisal).¹⁰ The researchers theorized that the CHW within an immigrant community would be impacted not only by personal sources of stress and coping, but by external stressors from her larger environment as well. This theory-based perspective, known as direct content analysis, was used to develop the questions for the focus group, the codebook, and coding hierarchy.¹¹

The focus group was audio-recorded and transcribed by two trained graduate researchers using content analysis.¹² Both graduate researchers were trained in qualitative methods. The researchers individually coded and analyzed the data using NVivo software version 10 and then merged the data. Coding disagreements were discussed until consensus was reached.

RESULTS

Of the eight identified women who met the inclusion criteria for the

Table 1: Focus Group Guide

Focus Group Questions
1. Before starting the training program, what did you think a lay health worker was? <i>a. Additional prompt: Roles and responsibilities</i>
2. What made you decide to become a lay health worker?
3. How have your views changed, if any, on what a lay health worker does since you've started the program?
4. What kinds of challenges have you encountered as a lay health worker?
5. How have the demands of being a lay health worker affected your personal life?
6. When you feel stressed from your role as a lay health worker, what do you do to take care of yourself?
7. What gets in the way of you being able to take care of yourself when you are stressed because of your role? <i>a. Additional prompts: other obligations, family, time</i>
8. What do you need to be a good lay health worker? <i>a. Additional prompts: training, self-care, stress management, social support</i>
9. If you had unlimited resources, what other things would you want in order to become a good lay health worker?

study, six participated in the focus group discussion. They were between 40 and 61 years of age and had resided in the U.S. for at least 15 years (see Table 2). All of the participants had at least a high school education and all but one were employed at least part-time. The South Asian countries of origin represented by this group included India, Pakistan, and Bangladesh.

Table 2: Demographic Characteristics of Focus Group Participants

	Number
Age (range, years)	40-61
Age (median, years)	56
Countries of Origin	
Bangladesh	1
India	1
Pakistan	4
Years Lived in U.S. (range)	15-34
Years Lived in U.S. (median)	22
Marital status	
Married	4
Single	1
Widowed	1
Number of Children (range)	0-3
Education	
High School Graduate	4
Graduate Degree	2
Employment Status	
Part-time employment	3
Full-time employment	1
Self-employed	1
Other	1

Overall Themes

Three broad themes were identified: (1) motivation to be a CHW, (2) stressors, challenges, and demands, and (3) coping mechanisms and strategies. See Figure 1 for key themes and sub-themes.

Motivation to be a CHW

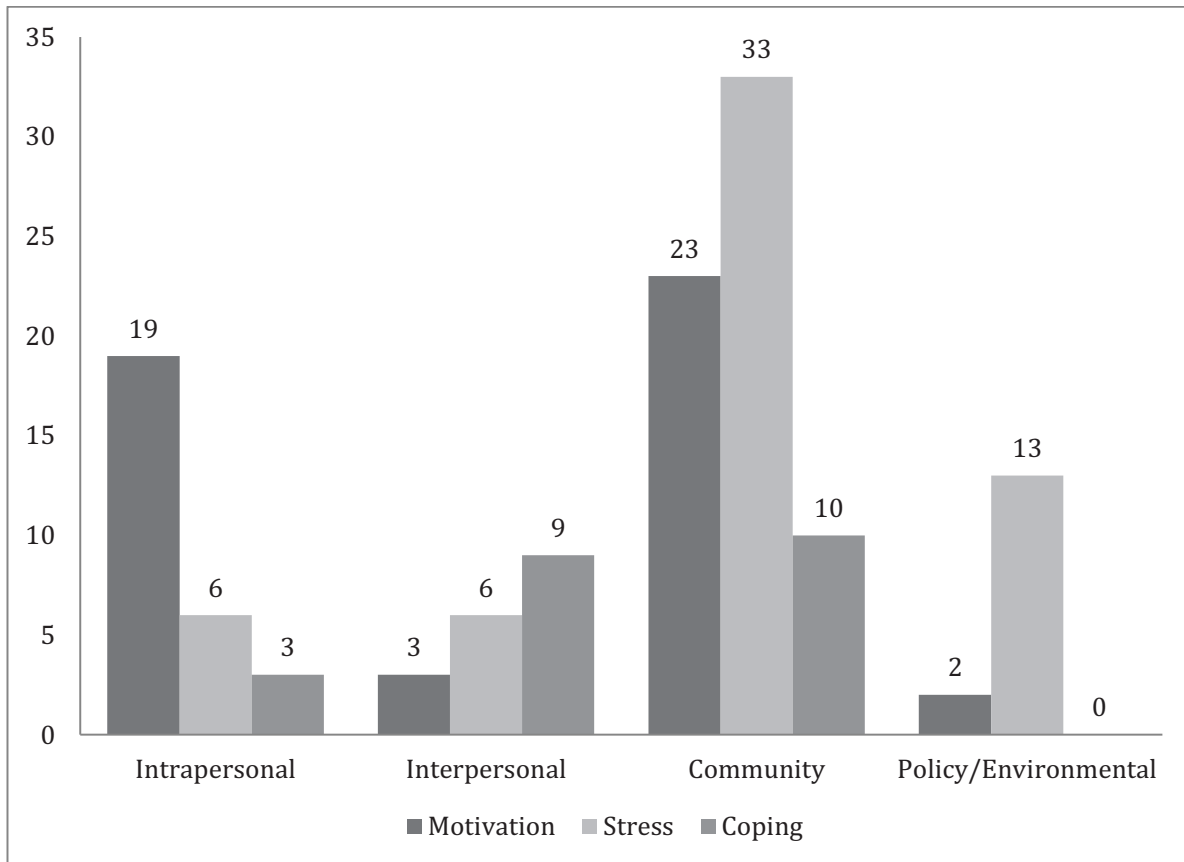
The most prominent motivation sub-themes were community-related and intrapersonal. Community-related themes included the desire to serve the community, to increase awareness of health issues and resources, and to serve the elderly, such as the following quotes: “and service to humanity is the most basic principle of our community” and “we have to do something that can help the community.” Frequently mentioned intrapersonal themes were a desire to increase one’s knowledge, career, and professional and personal skills (“I think it’s really good to us to learn, first for ourselves and then go back and help to our communities”), as well as personal interest and a sense of responsibility (“we are trying our best...to learn as much as we can so then we can give back to our communities”).

Stressors, Challenges, and Demands

The most prominent stressors were community-related factors followed by political/environmental factors. Most community-related challenges were related to changing lifestyle, lack of awareness about health issues or the role of a CHW (“we know about the nursing profession, we know about the doctor profession. But nobody knows about this”), cultural barriers (“they’re different culture, different lifestyles, so very hard to change, very challenging”), and issues specific to the elderly.

Though political/environmental factors were mentioned less frequently, they covered important issues such as lack of awareness of outside resources, concerns about finding employment as a CHW, concerns specific to non-documented

Figure 1: Frequencies (%) of Major Themes and Sub-Themes



community members, and cultural barriers.

Coping Mechanisms and Strategies

Community-related factors and interpersonal relationships were the main sources of coping when faced with challenges. Community-related coping mechanisms included participating in religious activities and helping others, for example: “for quite a few people that’s relaxing, that’s stress reliever... to forget your own problems, to solve other people’s problems.” Interpersonal relationships included meals with family (“and at least we have one meal a day with our family...that’s the best way that the stress relief”) and social support (“...you have to just make few phone calls and somebody will be there to help you”).

DISCUSSION

Although stressors was the theme referenced the most, participants displayed resiliency and positive attitudes toward their role as CHWs. Similarly, a survey of female student health visitors in Pakistan found that the majority were happy with their career choice (64.4%), though a significant proportion also reported indicators of stress (50-82%).⁷ Therefore, the presence of stressors may not significantly reduce job satisfaction among South Asian female health workers. Additionally, the primary stress appraisals voiced by our participants indicate a high level of personal motivation, even a sense of responsibility, to serve their community despite potential challenges.

The prevalence of community-related coping mechanisms has also been reported in other populations. For example, major coping mechanisms identified among volunteer medics in eastern Myanmar included peer support, group activities, and religious activities.⁶ Additionally, a study of HIV-positive CHWs in Ethiopia found that spirituality, reliance on family and friends, and a sense of purpose were their primary coping mechanisms.¹³ The secondary stress appraisal themes mentioned by our sample of CHWs (e.g., support from family and friends and self-care) emphasize the importance of such factors. Thus, community-related interactions and family support may provide significant benefits to diverse populations serving in stressful roles as health workers.

Serving the elderly was a significant recurring theme. Traditionally, South Asian women are responsible for caring for elderly family members.¹⁴ Although the women in our study expressed a great deal of honor and respect toward the elders in their community, they also recognized unique challenges in addressing their health issues. Other studies have found that volunteers and caregivers of elderly immigrants from Asia struggle to maintain a balanced and professional relationship that meets the demands involved in providing this care.^{15,16} Such challenges may be anticipated within our population as well.

Our findings about CHW motivations and stressors among South Asian immigrants differed from those of other CHW

populations. For instance, Ugandan and Rwandan CHWs have reported that a sense of importance, the opportunity for social and financial ability, and respect from the community are all primary motivations for serving in this role,^{2,3} while our CHWs reported community-related factors such as a desire to serve others more frequently. Ugandan and Rwandan CHWs also reported a number of stressors related to lack of proper training and supervision, overwhelming workloads, and unrealistic expectations from clients.^{2,3} In contrast, our sample described community-based cultural and lifestyle factors that posed barriers to their work. Although the CHWs in our sample live and work in a different context than these CHWs, it is worth noting that their motivations and concerns seem to be more community-oriented than what has previously been reported in the literature.

A significant limitation of our study is the small sample size. However, because the participants all came from the same community and shared similar characteristics, we were able to frame this study to target a specific population that has experienced expeditious growth in the U.S. Although Dallas is one of the top five U.S. metropolitan areas for South Asian groups,⁸ little research is available on South Asian immigrants who are CHWs. Therefore, the close-knit nature of this community suggests our results may be transferable to the growing number of South Asian immigrant CHWs. Another limitation is that most participants were in training to become CHWs. Therefore, it is likely that their stressors and coping strategies may change over time. Nevertheless, by conducting this research early on in their careers, we were able to identify areas of opportunity to address potential stressors.

CONCLUSION

As the CHWs profession continues to gain traction within the American health care system, use of CHWs to link immigrant populations to care will become increasingly important. Our findings indicate that female South Asian immigrant CHWs are highly motivated to serve in this role but face a number of unique challenges that have not been thoroughly acknowledged or explored. In order to provide the best preparation and support for this population, training centers should modify their materials to take these challenges into account. The women in our study made many positive references to the knowledge they were gaining in their CHW courses while also discussing additional areas of training they would like to engage in. The more prepared CHWs are to serve their communities and the greater support they have, the more equipped they will be to address stressors and demands that arise from serving in this capacity. Further research is needed to identify and test new training strategies for female South Asian immigrant CHWs and to identify best-practice methods that will aid them in coping with stressors throughout the course of their service.

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Needed: An Urgent Response to Health Disparities in East Texas

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INTRODUCTION

The area stretching from the Texas-Louisiana border west for approximately 100 miles and defined on the south by the Gulf of Mexico and to the north by the Texas-Oklahoma border comprises what is known as East Texas. East Texas has been repeatedly devastated by hurricanes arising in the Gulf of Mexico during the past 20 years, leaving considerable damage to homes and businesses from the Port Arthur – Beaumont area all the way to Tyler. Lack of recovery has contributed to the decline of medical, educational and economic conditions in the area.^{1,2} Because of the poor socio-economic situation, “how do we get more doctors” has been a challenge for East Texas.^{3,4} Past and present policies have not helped East Texas respond to the challenges of social, financial, and cultural issues.^{5,6} The inequity of the East Texas population’s access to preventive, diagnostic, surgical, and emergency services is compounded by the paucity of health care that plagues Louisiana.

While the population of the Rio Grande border area experiences many of the same issues facing East Texas and often appears to perform as poorly, unlike residents of East Texas, reportedly the residents of the border region (including the uninsured) often cross the border into Mexico to access health services.⁷ We explored the current status of Texas counties using County Health Rankings & Roadmaps Data,⁸ a database revealing a snapshot of how health is influenced by where we live, learn, work, pray, and play. Our goal was to identify priority issues and propose appropriate structural responses that would support and sustain healthy lives in East Texas while potentially being useful statewide as well.

Continuous Low Rankings among Counties in East Texas

Mapping 2011- 2016 Texas Rankings Data, clearly showed that the poor rankings for the counties on the East side of Texas have persisted over the past six years (Figures 1 and 2). All measures in this dataset were standardized and each county was given a rank according to its performance relative to the performance of other counties in the same state.⁸ The higher the ranking, the poorer the performance (less healthy). When “place” is considered as the crossing in time and space of various forces such as people, history, and natural resources, continuous poor rankings indicate significant social vulnerability and inequity. Literature emphasizes that it takes additional focus and efforts to grow economic scales in areas vulnerable to natural disasters.⁹ More evidence-based interventions to improve population health through well designed and coordinated system approaches are recommended.¹⁰ Most important of all, collaborations within a county and across counties

of East Texas are strongly needed to ensure enough capacity for future growth, bring better outcomes, and reduce cost to society as a whole.

Unspoken Challenges through County Health Rankings & Roadmaps Data

The “Health Outcomes” rankings are composed of length of life and quality of life factors.⁸ The “Health Factors” rankings are composed of health behaviors, clinical care, social and economic factors, and physical environment factors reflects only the ratio of population to physicians. Of great concern is the distance between the population and the closest healthcare providers, which is not reflected. This is a significant limitation of using Rankings data. Patients are likely to perceive that the value of healthcare is low because they have additional out-of-pocket expenses such as transportation and day-care for their children. Therefore, any intervention aiming at a single unit or seeking to change behavior in an individual is less effective at achieving population health improvement than an intervention seeking to change the processes or conditions that contribute to those behaviors. Our findings suggest that initiation of more prevention and education programs will more effectively respond to these urgent needs. We suggest that such programs will improve the social power of this population to a greater degree than simply expanding health insurance coverage.

CONCLUSION

The East Texas region has had consistently lower health rankings over time. Despite data limitations, and given the results of our mapping method, our group recommends the implementation of education and prevention programs that integrate new investments with innovative use of existing resources. It is our hope that these findings will encourage further effort among multiple stakeholders to reach out to individuals who are at risk of poor health, especially for those who are geographically isolated. Ultimately enhancing social well-being will lead to an enhanced level of health for these communities.

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Figure 1. Health Outcomes Rankings in Texas from 2011 to 2016

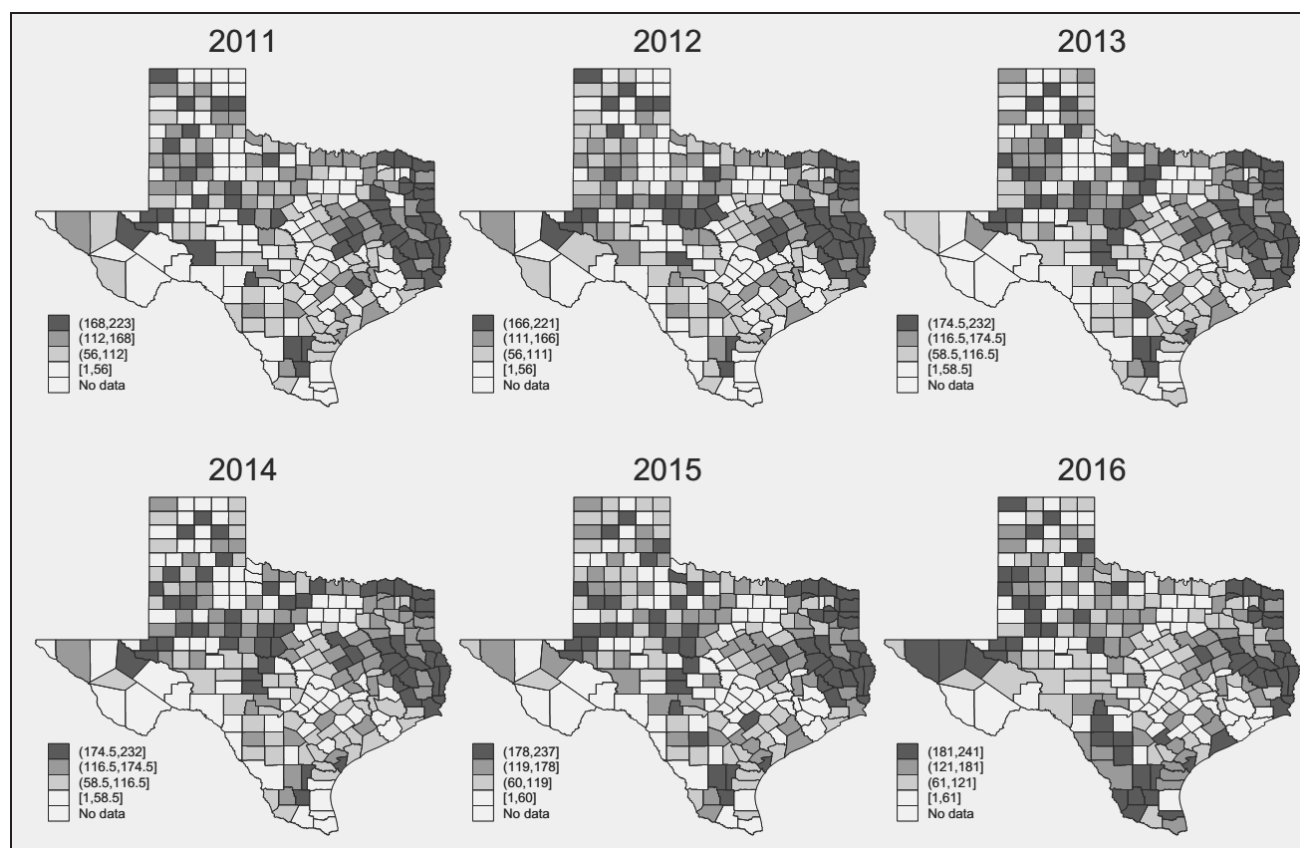
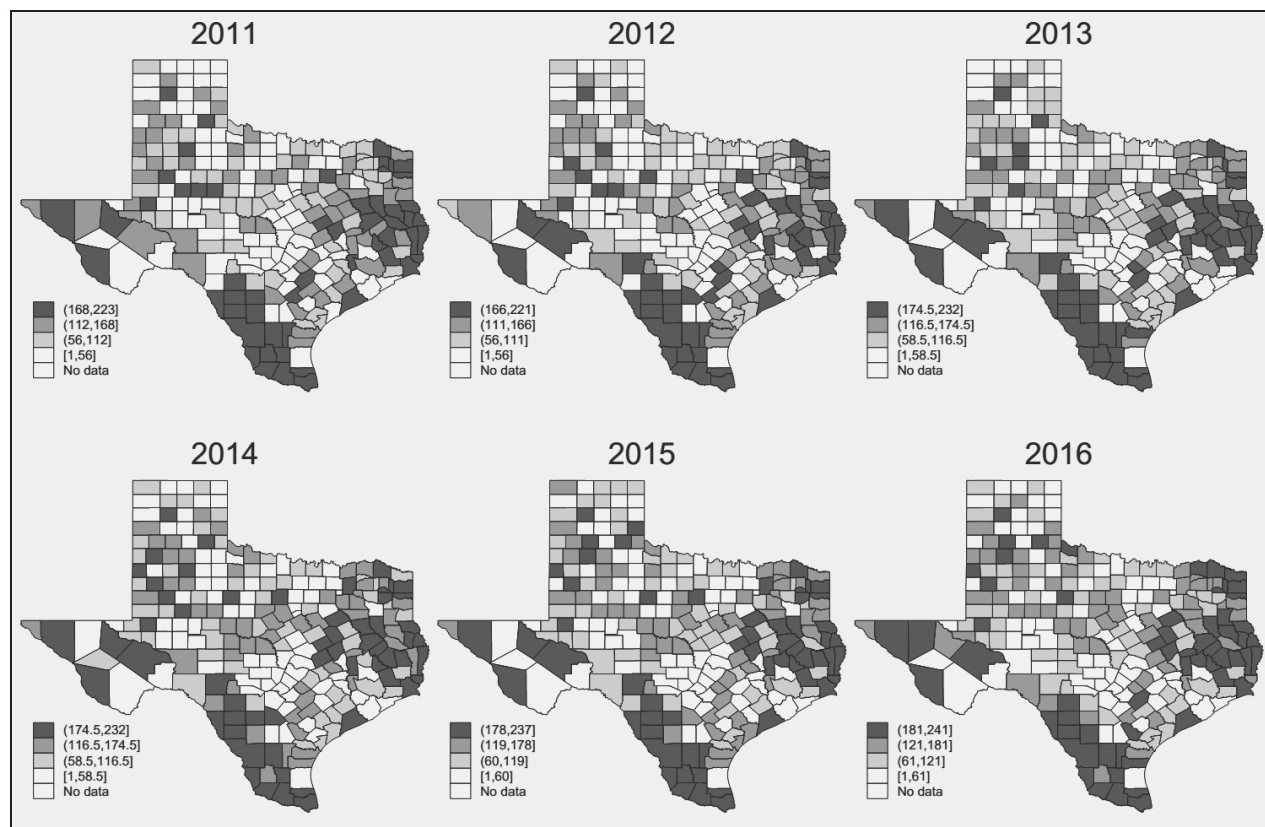


Figure 2. Health Factors Rankings in Texas from 2011 to 2016



The latest public health info source ... And it's all crap

Carol Galeener, PhD

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Some of the sharpest minds on the planet are immersed in pooh, and the folks at MIT's Underworlds project could not be happier about it. Underworlds looks to the wastewater systems flowing beneath the world's urban areas to identify what infectious microbes are circulating among the local population and what chemicals – legal or otherwise – people are consuming. This approach to studying the communal microbiome has the potential to make our sewage a key input into the public health sentinel system.

Underworlds is the brainchild of MIT's Carlo Ratti, an engineer and architect, and Eric Alm, a computational microbiologist.¹ Ratti is Director of the Senseable City Lab in the Department of Urban Studies and Planning and Alm heads a lab in the Department of Biological Engineering. Several other labs have since joined the effort, making Underworlds a truly multidisciplinary project. But Underworlds is not only multidisciplinary in nature it is also international in scope. In 2015 Underworlds received a \$4M multi-year funding commitment from the Kuwait-MIT Center for Natural Resources and the Environment.² MIT's home city, Cambridge, served as the pilot location, and expansions are expected later this year to Boston and Kuwait City.

Luigi is one of the project's initial infrastructure deliverables. A svelte robot, Luigi can be lowered on command from a mobile app down a manhole to do the nasty and potentially

dangerous work of sample collection, a job not even graduate students line up to do. Luigi represents a first step toward making the urban sewerage system sentient if not downright intelligent.³

While we are in the very early stages of the project, Underworlds and similar projects in other institutions suggest the potential to identify on a near real-time basis a strain of virus currently attacking the community or an exposure to food-borne illness. This is the early payout. Over the longer term such intelligence should help us determine if our diets are changing and if our drug habits are evolving. This would help us determine the efficacy of public health educational and promotional activities. That is the longer term payout. Who knew that in the vein of "The Internet of Things," over the next few decades we might also see "The Internet of Poop."

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Ruth McDonald

Ruth McDonald passed away on March 17, 2016 after a short illness. She was born on April 18, 1921 in Bessemer, Michigan and was raised in Nashwauk, Minnesota. The oldest of the family, she was preceded in death by two sisters and a brother.

After graduating from Nashwauk High School, Ruth received her RN degree from the Ravenswood Hospital School of Nursing in Chicago, Illinois. She entered the Army Nursing Corp as a 1st Lieutenant in 1943 and served in the South Pacific during WWII earning the Bronze Star Medal in 1945 in recognition of service above and beyond the line of duty.

Ruth married Floyd McDonald in 1948, settled in Weslaco, Texas and worked in public health for the State of Texas for over 40 years. After her husband's death she relocated in 1995 to Alexandria, Minnesota to reside with her sister, Judith Ryding. In 2011 she moved into Grand Arbor apartments and enjoyed independent living up until her death.

Ruth loved to read and worked daily crossword puzzles to keep her mind sharp. She led a quiet and gentle life of service devoting her time and talent to numerous clubs, organizations and philanthropic causes.

She is survived by her loving family members and her many dear friends, and will be greatly missed by all. She is interred with her beloved spouse at Highland Memorial Park in Weslaco, Texas. There will be a gathering to celebrate her life at 1:00 p.m. on Wednesday, April 27th in the Community Chapel at Grand Arbor.

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