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# THE PREVENTATIVE MEASURE

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Triannual Newsletter of the National Capital Area Environmental Health Association



## 2022 BOARD

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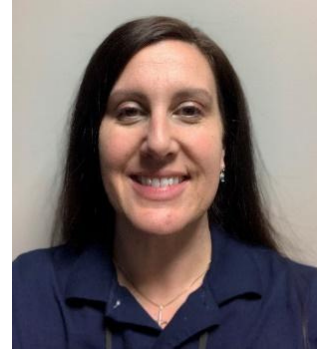
Amanda Barto

#### **Industry Liaison**

Jeanine Flaherty

## President's Message

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Spring has Sprung!

I'm excited to announce since our last newsletter and educational conference we have a full Board of Directors! Diana Rodriguez, formerly an Environmental Health Specialist II with Fairfax County Health Department is now working in the private sector, is our new Treasurer. Erin Miller, who has served on the board before as our VA Representative and is an Environmental Health Supervisor at Alexandria Health Department, is our new MD Representative.

Our new DC Representative, Amanda Barto, has been working hard to put together a full-day of differing presentations for our Spring Educational Conference to be held virtually via Zoom on Monday, April 25th from 9 a.m.-4 p.m. Topics such as Shared Kitchens, Treatment & Prevention of Campylobacter Foodborne Illness Infections, Onsite Sewage Disposal and Private Well Water Systems, Safety in Retail Foodservice Operations through Third-Party Auditing, and Moving Towards a Values Driven Practice of Environmental Health. If you haven't already, log into our website, [www.ncaeha.org](http://www.ncaeha.org), and register to attend our Spring Educational Conference. I hope to see you all April 25th!

I would also like to encourage you to register for the National Environmental Health Association 2022 Annual Educational Conference & Exhibition taking place in Spokane, Washington June 28- July 2. The NEHA AEC is so much more than a conference. It is the nexus of environmental health training, education, networking, and advancement.

This year, the AEC is a hybrid event. We all know that one of the greatest losses suffered during the pandemic was the ability to see and work with each other. The conference is both an educational opportunity, but also a chance to connect with our fellow environmental health colleagues.

I hope many of you will take advantage of this opportunity to connect, celebrate our contributions, and learn together as we continue to safeguard our communities. Please consider me a resource if you have any questions about this year's AEC. You can learn more about the schedule and offerings at [www.neha.org/AEC](http://www.neha.org/AEC).

Best regards,

Julia Balsley, NCAEHA President

# Food safety and foodborne disease in 21st century homes

Elizabeth Scott, PhD

Can J Infect Dis. 2003 Sep-Oct; 14(5): 277-280.

## ABSTRACT

Over the past decade there has been a growing recognition of the involvement of the home in several public health and hygiene issues. Perhaps the best understood of these issues is the role of the home in the transmission and acquisition of foodborne disease. The incidence of foodborne disease is increasing globally. Although foodborne disease data collection systems often miss the mass of home-based outbreaks of sporadic infection, it is now accepted that many cases of foodborne illness occur as a result of improper food handling and preparation by consumers in their own kitchens. Some of the most compelling evidence has come from the international data on *Salmonella* species and *Campylobacter* species infections. By its very nature, the home is a multifunctional setting and this directly impacts upon the need for better food safety in the home. In particular, the growing population of elderly and other immunocompromised individuals living at home who are likely to be more vulnerable to the impact of foodborne disease is an important aspect to consider. In addition, some developed nations are currently undergoing a dramatic shift in healthcare delivery, resulting in millions of patients nursed at home. Other aspects of the home that are unique in terms of food safety are the use of the home as a daycare centre for preschool age children, the presence of domestic animals in the home and the use of the domestic kitchen for small-scale commercial catering operations. At the global level, domestic food safety issues for the 21st century include the continued globalization of the food supply, the impact of international travel and tourism, and the impact of foodborne disease on developing nations. A number of countries have launched national campaigns to reduce the burden of foodborne disease, including alerting consumers to the need to practice food safety at home. Home hygiene practice and consumer hygiene products are being refined and targeted to areas of risk, including preventing the onward transmission of foodborne illness via the inanimate environment. It has been said that food safety in the home is the last line of defense against foodborne disease, and it is likely that this will remain true for the global population in the foreseeable future.

## The Incidence of Foodborne Disease

There are many indicators that point to the fact that the incidence of foodborne disease is increasing globally, and is a substantial cause of morbidity and mortality worldwide. For industrialized countries in general, it has been estimated that up to one-third of the population suffer a foodborne illness each year (1). In the United States, foodborne diseases cause an estimated 76 million episodes of illness annually (2). Although the vast majority of cases are mild, a significant number of deaths do occur and the high levels of acute infections and chronic sequelae lead to billions of dollars in medical costs and lost productivity (3).

It can be assumed that the prevalence of foodborne disease in the developing world is even higher (4), although it is difficult to obtain the data that would support this assumption. While it has long been considered that most cases of diarrhea in developing countries are waterborne, Kaferstein (5) has recently stated that it is a grave mistake to ignore the role of contaminated food and that there is an urgent need to integrate food safety, along with water and sanitation

programs, as an essential strategy to prevent diarrhea. A recent study of campylobacteriosis in developing countries (6) gave an insight into the prevalence of *Campylobacter* species, which is the most commonly isolated bacterial pathogen from children under two years of age suffering from diarrhea. Isolation rates for children under five years of age were estimated to be between 40,000 per 100,000 and 60,000 per 100,000, compared with 300 per 100,000 in developed countries. The study found that the major sources of human infection were food and environmental contamination and a survey of retail poultry sold in Bangkok and Nairobi (6) found *Campylobacter* species contamination rates of between 40% and 77%. Coker et al (6) reported that this disease is projected to remain one of the top ten isolated bacterial pathogens globally in 2020.

Campylobacteriosis is considered to be a greater burden in the developing world, partly because *Campylobacter* species-associated diarrhea and bacteremia occur in HIV/AIDS patients.

## The Role of the Home in Foodborne Disease

Although foodborne disease data collection systems often miss the mass of home-based outbreaks of sporadic infection, it is now widely accepted that many cases of foodborne illness occur as a result of improper food handling and preparation by consumers in their own kitchens, as shown in a review of studies from both Europe and North America (7). In addition, a study of *Escherichia coli* O157 outbreaks in the United States (8) found that 80% of suspect hamburgers were prepared and eaten at home. In Australia, approximately 90% of *Salmonella* species infections are generally thought to be associated with nonmanufactured foods and the home (9). Data available from Canada covering 1996 and 1997 has identified the home as the most common exposure setting for cases of *Salmonella* species, *Campylobacter* species and pathogenic *E coli* infection (10).

There are a number of factors which are likely to contribute to outbreaks of foodborne illness in the home, including a raw food supply that is frequently contaminated, a lack of awareness among the general public,

mistakes in food handling and food preparation at home and the deliberate consumption of raw and undercooked foods of animal origin, often described as 'risky eating behaviour' (4).

Raw foods, including meat and poultry, raw eggs, fish and shellfish, and fruits and vegetables, should all be considered as potential entry sources of foodborne pathogens into the home. The list of infectious agents that have been introduced into the home via food includes species of Salmonella, Campylobacter, Listeria and E coli O157 (11).

The human and animal occupants of the home can also serve as sources of foodborne pathogens. Humans and animals can both serve as symptomatic and nonsymptomatic carriers and also as postsymptomatic excretors. Pathogens can be transferred from various sources to inanimate contact surfaces in the home or directly to other foods or human occupants via transient carriage on the hands. Foodborne agents that have been introduced into the home via humans include species of Salmonella, Shigella sonnei, Staphylococcus aureus, rotavirus and hepatitis A virus (11).

The four most common mistakes in handling and preparing food at home are the inappropriate storage of food (including inadequate refrigeration, the failure to attain a required cooking and/or reheating temperature), any actions that result in cross-contamination, and the presence of an infected food handler. In a study of 101 home-based outbreaks (12), it was determined that inappropriate food storage and cross-contamination were the most prevalent mistakes, accounting for 50% and 28% of reported causative factors, respectively.

#### Factors That Impact Food Safety Inside the 21st Century Home

In order to understand the challenges to food safety in the home, it is worthwhile to consider the relevant elements that comprise a typical modern-day home in the early part of the 21st century. It is also worth noting that in many parts of the world, the home is in fact a multifunctional

setting comprising many activities that may have an impact on the need for, and practice of, food safety.

First and foremost, the home is a residence containing occupants of mixed ages and health statuses. In many parts of the world the numbers of immunocompromised individuals living in the community is on the increase and, amongst other things, these people are often at a higher risk for the acquisition of foodborne disease as well as for a more severe disease outcome. In the United States, the population of immunocompromised individuals is estimated at more than 30 million people (13). In many countries of the developed world, the elderly population is the fastest growing segment of the population, as for example in the United Kingdom, where there are currently nine million senior citizens, most of them living at home (14). For the developing world, one only has to consider the impact of the AIDS epidemic and the numbers of people living with HIV/AIDS to get some measure of the size of the immunocompromised populations in these areas (15).

With a dramatic shift in healthcare delivery, the home in the United States is increasingly playing a role as an extension to, or replacement for, traditional in-hospital care. It is estimated that eight million patients are now nursed at home, with 66% of them being over 65 years old (16). Again, this puts a renewed emphasis on the need for food safety in the home, much as might be expected if these patients were being cared for within the hospital.

Another growing home-based activity that may impact food safety in the home is the presence of young children in home-based daycare. In the United States, 75% of under-five-year-olds are currently enrolled in daycare (17), representing 13 million preschoolers and six million infants. Much of this child care is home-based, with 25% of all children cared for by relatives and 5% by in-home caregivers. There are many reports of outbreaks of infectious diseases, including diarrhea, in children's day care settings (18) and the potential for infection to spread within the home via food is

inevitably increased in these situations. In addition, small and/or unlicensed home-based daycare settings are less likely to have outbreaks reported and investigated, and may, therefore, miss advice and information about the importance of appropriate food safety practices.

In addition to its human occupants, the home is frequently shelter to a number of pets, ranging from mundane varieties to the exotic, and many zoonoses, including some that can cause foodborne infections, can be acquired from both. Salmonella species and other enteropathogens have long been recognized in association with domestic pets, such as cats and dogs (19). Household cats and dogs may also serve as reservoirs for species of Campylobacter and, thus, are potential sources of infection (20). Exotic pets may also serve as a source of enteropathogens into the home (21). More than 50% of homes in the English-speaking world have cats and dogs (14), with 14 million cats and dogs in the United Kingdom, 60 million in the United States and an estimated 17.8 million household pets in Australia, with three in every five Australian households containing at least one pet (22). The role of household pets in the acquisition of Salmonella species infections by infants was described by Schutze et al (23). It was found that infants in this study were probably more likely to have acquired infections by direct contact with inanimate surfaces, such as floors, that had been contaminated by household pets, than by the consumption of contaminated foods.

Finally, when considering the question of food safety in the home, we usually think of food that is prepared and served to the home occupants. However, we should also consider that the home kitchen may also be used for small home-based business operations that prepare food for catered functions outside of the home, as well as for bake sales, school and church picnics, etc. In all of these examples, food for catered functions outside of the home, as well as for bake sales, school and church picnics, etc. In all of these examples, food prepared at home is served to a wider community. These catering activities are



usually unregulated, often take place in kitchens with inadequate facilities and equipment, and are carried out by people who may not have taken a training course in food safety. A study of home-based catering operations in the United Kingdom noted that food was stored inappropriately in the home kitchen on 50% of occasions (12).

### **Global Impacts on Food Safety In The Home**

There are also a number of global factors that have an impact on food safety inside the 21st century home. In particular, the globalization of the food supply impacts homes all over the world.

World meat consumption is expected to double between 1983 and 2020, to 300 million metric tons, and most of this increase will occur in developing countries (24). The impact on food safety for homes in these countries may be significant, considering that meat processing may not be well regulated, home kitchens may not be equipped for storage and preparation of raw meats and the population may not be familiar with the general food safety guidelines for meat storage and preparation, especially where the consumption of large quantities of meat protein is a new phenomenon. The aforementioned study on campylobacteriosis in the developing world (6) indicates the potential magnitude of the problem surrounding poultry production.

Import statistics indicate that more than 50% of fresh vegetables in the developed world marketplace are imported from developing countries (25), prompting food safety experts to quip that consumers only have to travel as far as the local foodmarket and home again to experience 'traveller's diarrhea'.

International travel and tourism to countries with poor standards of food hygiene may also impact the home. Globally, 1.6 billion people travel by air each year (26). Rapid air travel means that people who have contracted gastroenteric infections may carry these agents back into their homes, with the potential for further spread within the family and the immediate community, both directly by person-to-

person contact and indirectly by cross-contamination into the food prepared at home. The potential for this type of transmission is seen in a World Health Organization report (27) that states that 64% of tourists exiting Thailand in 1995 were suffering from diarrhea.

### **Improving Food Safety In The 21st Century Home**

It has been said that there are three major lines of defense against foodborne disease (4). The first aims at improving the hygienic quality of raw foodstuffs; the second utilizes food processing technologies such as pasteurization and irradiation, and employs hazard analysis and critical control point (HACCP) concepts; and the third line of defense concerns the education of all food handlers, including home-based food handlers. There are a number of national campaigns, for example the Canadian Partnership for Consumer Food Safety Education in Canada (28), the Partnership for Food Safety Education in the United States (29), the Food Standards Agency in the United Kingdom (30), and international campaigns, such as the World Health Organization's Food Safety Program (31), that aim to inform and educate the general public about the need to better understand and practice food safety in the home. These campaigns are comprehensive and address real concerns, but inevitably tend to be web and print media-based and, in this respect, they are a passive form of information transfer and are likely to be taken up only by that segment of the population that is actively searching for information. In many countries, the subject of food safety was traditionally taught as a part of the home economics curriculum in schools, but in recent years the teaching of home economics has largely disappeared from many national education programs and, as a result, food safety is not taught. In addition, changes in family structure, changes in family meal practices and changes in women's roles in the home and workplace have resulted in a breakdown in the transfer of information about safe food practices within the family. With increasing concern in many countries

about the levels of foodborne disease and the huge national economic burden associated with these levels, the introduction of mandatory food safety education programs across schools should be considered as a means of actively educating and engaging the population in a basic health issue.

In practical terms, food safety education and information is increasingly incorporating the targeted hygiene approach developed and described by the International Hygiene Forum in their Guidelines for prevention of infection and cross infection in the domestic environment (32). Targeted hygiene is a risk-based approach to hygiene practice in the home, similar to the HACCP approach so widely used in the commercial food sector. Targeted hygiene assesses the relative need for a hygiene intervention based upon the source of pathogens into the home, the potential routes of transfer of pathogens within the home and the likely risk posed by the transfer of these agents to a family member. Recommendations can then be given for safe and effective hygiene procedures aimed at eliminating pathogens from those surfaces that present a risk, thereby reducing the risk of pathogen transfer to other sites and surfaces.

### **CONCLUSION**

Foodborne disease will continue to be a matter of major concern around the world in the foreseeable future, despite some important national successes at reducing the levels of certain pathogens in foods resulting from better farm practices, food processing regulations, etc. Therefore, it has to be concluded that the 21st century home will also continue to remain the last line of defense against foodborne pathogens. Public education is seen as a key factor in improving food safety practices in the home. The benefits of food hygiene education would include not only a reduction in the occurrence of foodborne illness at home, but also a population better prepared to meet the needs of the food industry and food service sectors of local and national economies.

## Announcements

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NATIONAL CAPITAL AREA  
ENVIRONMENTAL HEALTH  
ASSOCIATION

**APRIL  
25  
2022**

—  
SPRING VIRTUAL  
EDUCATIONAL  
CONFERENCE



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NOW  
OPEN**



**SEEKING VOLUNTEERS FOR:  
AWARDS COMMITTEE**  
.....

- Be a part of the NCAEHA Annual Awards/Scholarship review panel for 2022
- Collaborate with the VP of Membership to review various award types
- Task involves: reviewing submitted nomination applications; selecting awardees
- Involvement: minimal; communication is done via email

CONTACT VP OF MEMBERSHIP, NICOLE:  
NCAEHA.VP.MEMBERSHIP@GMAIL.COM

## Meet Your 2022 Board!

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It's been two years since we've been able to see each other in person, and it's about time for a reunion! Due to COVID-19 precautions, we've been holding Board meetings and Conferences virtually since 2020.

We have a few new and familiar faces on Board, let us introduce ourselves, shall we? From Left to Right: Marcella S. (VA Rep), Kendra W. (Secretary), Amanda B. (DC Rep), Nicole G. (VP of Membership and Director of Communications), Amanda C. (VP of Programs), Erin M. (MD Rep), Julia B. (President). Not pictured: Diana R. (Treasurer), Jeanine F. (Industry Rep)

## Awards and Scholarships 2022

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Now is the time to recognize a fellow individual or colleague with one of our renowned NCAEHA Awards! We are offering 9 Awards and 1 Scholarship to deserving individuals who have made great contributions to Environmental Health and our organization. Applications may be found on our website at [ncaeha.org/awards](http://ncaeha.org/awards) and are due to our VP of Membership no later than May 6th, 2022.



### **James M. Wordsworth Scholarship**

James Wordsworth has been a long standing restaurateur and advocate for the work Environmental Health Professionals do to help keep the public safe. Mr. Wordsworth is a Honorary Lifetime Member of NCAEHA and every year helps make a scholarship available to a candidate that is seeking higher education in a field related to Environmental Health.

### **Jerrold M. Michael Award**

Jerrold Michael was the Founding President of NCAEHA. He was a true leader and pioneer in the field of Environmental Health. This award is to recognize a professional in the field of environmental health that has contributed to his or her employer's environmental health mission, to the goals of the National Capital Area Environmental Health Association, and to the advancement of the environmental health profession.

### **NEHA Certificate of Merit**

Each year, NEHA recognizes one individual and one team, from each of its Affiliates, who has made outstanding contributions to the profession of environmental health. It is one of the benefits of your affiliation with NEHA. Recipients are announced in the NEHA Journal of Environmental Health.

### **Dedicated Service Award**

This recognition is awarded to Long-term members who are retiring this year. Candidates can be nominated by any member of NCAEHA. Eligibility: to be eligible a nominee must: be an Environmental Health Professional that is approaching retirement within the next year, be a member in good standing of NCAEHA for a minimum of 2 years, be actively engaged in the field of environmental health, and have performed professional duties in the field of environmental health above and beyond the usual employment requirements so as to elevate the professional status of the Environmental Health Professional.

### **Environmental Health Innovation Award**

This award is presented to a NCAEHA member or organization for creating a new idea, practice or product that has had a positive impact on improving the environment or public health and quality of life. The purpose of this award is to recognize these individuals and to encourage others to search for creative solutions.

### **NCAEHA Industry Award**

This award is presented to a company or industry which has demonstrated support to NCAEHA and has made a significant contribution to the field of environmental health and/or to NCAEHA.

### **Members of the Year - VA, MD, DC**

These members are chosen by the VP of Membership and Secretary and are awarded for their outstanding dedication to NCAEHA. Winners will have demonstrated active conference attendance, committee work, and have been active Members for 2 years or more. A selection from Virginia, Maryland, and DC will be awarded, if applicable.



# IF YOU HAVEN'T ALREADY, IT'S TIME TO RENEW YOUR 2022 MEMBERSHIP!



## BENEFITS OF MEMBERSHIP:

- ✓ Be a part of a local association in the DC, MD, and VA area that is focused on environmental health (EH)
- ✓ Network with other local EH professionals in academia, industry, government, private sector, and other areas
- ✓ Advance your career by pursuing a credential or certification with our discounted annual courses like the REHS, CP-FS, CPO, and more
- ✓ Gain more knowledge and/or earn up to 15 Continuing Education hours per year by attending our nearby Educational Conferences
- ✓ Enjoy a good time with your EH colleagues and build new connections at our social events
- ✓ Recognize an EH professional by nominating them for an award or scholarship
- ✓ Pursue local EH employment opportunities with easy accessibility through our announcements
- ✓ Stay updated through our newsletter, website, and social media and announcements on other events, trainings, webinars, and more

Memberships expire on December 31, 2021.  
Regular Membership Renewal: \$20.00  
Student and Silver Membership Renewal: \$5.00

Membership Renewal may be completed online at [www.ncaeha.org](http://www.ncaeha.org)  
by simply logging onto your profile and click the RENEW button!  
Payments are accepted online via credit card.





# 2022 SPRING EDUCATIONAL CONFERENCE AGENDA

MONDAY, APRIL 25, 2022  
9:00am - 4:00pm (via Zoom)

Please click on the Zoom link provided in your email to access the Conference. 5.5 hours of Continuing Education Credits will be granted for full attendance.

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9:00AM - 9:10AM	<b>WELCOME / OPENING REMARKS</b> AMANDA BARTO, NCAEHA DC REPRESENTATIVE
9:10AM - 10:00AM	<b>MOVING TOWARDS A VALUES - DRIVEN PRACTICE OF ENVIRONMENTAL HEALTH</b> BOB CUSTARD, ENVIRONMENTAL HEALTH LEADERSHIP PARTNERS, LLC
10:00AM - 10:50AM	<b>FAIRFAX COUNTY OS&amp;W OVERVIEW</b> ERIC HOPPIS, ENVIRONMENTAL HEALTH SPECIALIST III, FAIRFAX COUNTY HEALTH DEPARTMENT
10:50AM - 11:00AM	<b>BREAK</b>
11:00AM - 11:50AM	<b>DRIVING FOOD SAFETY IN RETAIL AND FOODSERVICE OPERATIONS THROUGH THIRD-PARTY AUDITING</b> CHRIS BOYLES, VICE PRESIDENT, FOOD SAFETY, STERITECH
11:50PM - 12:50PM	<b>LUNCH BREAK</b>
12:50PM - 1:00PM	<b>NEHA UPDATES</b> CDR JAMES SPECKHART, MS, USPHS, REGION 8 VP- NEHA
1:00PM - 1:50PM	<b>AN ENVIRONMENTAL HEALTH SPECIALIST'S 3-PRONGED APPROACH FOR THE IMPROVED DIAGNOSIS, TREATMENT AND PREVENTION OF CAMPYLOBACTER FOODBORNE ILLNESS INFECTIONS</b> DEBORA BROWN, ENVIRONMENTAL HEALTH SPECIALIST II, FAIRFAX COUNTY HEALTH DEPARTMENT
1:50PM - 2:00PM	<b>BREAK</b>
2:00PM - 2:50PM	<b>AFDO/ IFPTI RESEARCH PROJECT ON SHARED KITCHENS</b> JEMAL YASIN, SANITARIAN, DIVISION OF FOOD, DC HEALTH
2:50PM - 3:40PM	<b>CHESAPEAKE PROJECT: A JOINT PUBLIC HEALTH AND SARS-COV-2 SURVEILLANCE RESEARCH AND INVENTORY PROJECT</b> CYNTHIA JACKSON, ENVIRONMENTAL HEALTH MANAGER, SR. CHESAPEAKE HEALTH DEPARTMENT
	<b>OVERVIEW AND CURRENT STATUS OF WASTEWATER SURVEILLANCE IN VA</b> REKHA SINGH, PH.D., MPH, WASTEWATER SURVEILLANCE PROGRAM MANAGER, VIRGINIA DEPARTMENT OF HEALTH
3:40PM - 3:50PM	<b>SPECIAL ANNOUNCEMENTS/CLOSING REMARKS</b> JULIA BALSLEY, NCAEHA PRESIDENT, NICOLE GRAGASIN, VP OF MEMBERSHIP, AMANDA BARTO, NCAEHA DC REPRESENTATIVE

*\*Agenda subject to change.*