

CASE 7

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

Jaelyn Kloepfer, BSc, MPH (MPH Class of 2017)

Fatih Sekercioglu, MSc, MBA, PhD

Manager, Safe Water, Rabies and Vector Borne Disease, Middlesex-London Health Unit)

Amardeep Thind, MD, PhD (Professor, Western University)

Lance Sewell, Manager of the Environmental Health Team at the Middlesex-London Health Unit (MLHU), stepped out of the rainstorm and into his office. Sewell set down his umbrella to dry off and checked his email. June is a busy month for the Environmental Health Team with inspections, outdoor pools reopening, new vector borne disease programming, and private well water programming; this meant emails are continuously flowing in with updates from the team.

Sewell clicked on the first email, opening a draft for a heat warning to approve, for June 11th to June 12th. As part of the Heat Alert Response System (HARS), the Health Unit issues a heat warning when Environment Canada's forecast calls for:

- a temperature of 31° C or higher with a low of at least 20° C for two consecutive days, or;
- a Humidex of 40 or higher for two consecutive days.

An extended heat warning is issued when either of these conditions is expected to last for longer than two consecutive days.

This was the first heat warning for 2017. In 2016, the Health Unit issued its first heat warning on July 6th, nearly an entire month later than the warning in 2017. Sewell marked this email as a priority item due to the time sensitive nature of sending it out and the need for a public service announcement. In addition to approving the heat warning, Sewell added the topic of extreme heat to the next team meeting's agenda. The team will need to discuss prevention messaging about heat-related illness and make sure the community has the information they need to be safe for this heat event and for future warnings. Since extreme heat events are happening earlier in the season and are expected to become more frequent and more intense, the team needs to make sure the prevention messaging about heat-related illness is reaching the community in a timely and effective manner.

This heat warning is not the only extreme weather event that has hit the Middlesex-London community this year. Multiple rainfall warnings and flood watch notifications had also been issued for the region. News reports of flooded streets, homes, and farmland within the Middlesex-London region, neighbouring regions, and other Canadian provinces had been very frequent this year.

The Environmental Health Team is aware that extreme weather events are expected to increase in the Middlesex-London region in the future. But is the public aware? Extreme

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

weather events may be defined as: a weather variable, such as rainfall, that occurs near the upper or lower range of values that are regularly observed for that variable (IPCC, 2012). According to climate change projections, Southwestern Ontario is expected to see an increase in the frequency and intensity of flooding, extreme temperatures, severe winter storms, and an increase in the spread of disease vector species (Berry, Paterson, & Buse, 2014). It is clear the Middlesex-London region is already experiencing these impacts through heat warnings, rainfall warnings, and increased Lyme disease risk (Lyme disease risk area shown in Exhibit 1).

How can the MLHU increase preparedness, reduce risks, and prevent injury when it comes to climate change-related health impacts? Does the Health Unit's current messaging, initiatives, and strategic planning reflect climate change projections? Who is the MLHU currently reaching with their messaging? These were all questions Sewell planned to pose to the team at the Environmental Health Team meeting next week. Given the current extreme weather events and future projections, Sewell decided he needed to mobilize his team to develop a plan for addressing climate change adaptation and preparedness within the community. The first step will be a strategic communication plan to ensure the Health Unit effectively communicates risk and personal protection measures to the community moving forward.

BACKGROUND

The Ontario Ministry of Health and Long-Term Care published the *Ontario Climate Change and Health Toolkit* in 2016, which provides tools and guidelines for health units to conduct local climate change adaptation and vulnerability assessments. It also provides tools for identifying climate change vulnerability indicators, local projected changes to health risks, and tools for prioritizing action items. These tools can assist Ontario's health units in supporting Ontario's Five Year Climate Change Action Plan (2016-2021) and Ontario's Adaptation Strategy and Action Plan (2011-2014). The Adaptation Strategy outlines priority actions related to human health and climate change (MOE, 2011), including:

- Raising public awareness about Lyme disease
- Raising awareness about the health hazards of climate change
- Supporting the development of risk management tools to manage heat-related diseases
- Integrating adaptive solutions into drinking water management
- Developing guidance for storm water management

The MLHU is already engaged in initiatives that address many of the actions listed above—for example, increasing public awareness about West Nile Virus and Lyme disease. This priority action also falls under the mandates of the Ontario Public Health Standards. These standards provide a framework for public health programming (MOHLTC, 2008). The modernized standards, effective January 2018, include a new section, Healthy Environments, which identifies climate change as a topic area to address. Climate change is clearly a priority area for the province and for local health units.

Sewell reviewed the draft of the modernized Standards and decided to bring up some of these key points at the next team meeting to emphasize the importance of aligning climate change initiatives with the new Standards and with the provincial Action Plan. He added this action item to the meeting agenda after the discussion points around heat warnings.

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

CLIMATE CHANGE & HEALTH IMPACTS

There are six health impact categories related to climate change that are presented in the *Ontario Climate Change and Health Toolkit* (Ebit et al., 2016):

- Temperature extremes
- Extreme weather events and natural hazards
- Air quality
- Water and food borne diseases
- Infectious diseases transmitted by vectors
- Stratospheric ozone depletion

These health impact categories may have varying effects on communities within Ontario, depending on geographic, economic, social, environmental, and political determinants.

THE MIDDLESEX-LONDON REGION

Within Ontario, Canada, there are 36 public health units. The Middlesex-London Health Unit serves the City of London and the eight municipalities that make up Middlesex County (see Exhibit 2). The City of London and Middlesex County are collectively referred to as the Middlesex-London region. This is a landlocked region. The City of London is a large urban centre with a population of 383,822 (City of London, 2017). Middlesex County is a rural area made of towns, villages, hamlets, and agricultural land and has a population of 71,704 (Statistics Canada, 2017). This rural area of the County also covers a large geographic area (see Exhibit 2).

For the Middlesex-London region, climate change is expected to create conditions for earlier spring run-off, more frequent and intense storm surges, and heavy precipitation (Berry, Paterson, & Buse, 2014). Extreme precipitation may increase the frequency and severity of flooding in Ontario.

In addition to extreme precipitation, Southwestern Ontario is expected to face extreme temperatures and severe winter storms. A greater number of winter storms with freezing rain are expected, and freezing rain may result in power outages, where entire communities are vulnerable to medical care and health services disruptions, road closures, accidents, and cold-related illness (Berry, Paterson, & Buse, 2014). At the opposite end of the spectrum, Southwestern Ontario is expected to experience a greater number of extreme heat events during the spring and summer, which, in turn, may result in an increase in heat-related illness (Berry, Paterson, & Buse, 2014; Ebi et al., 2016). This is evident in hospitalization data in Southern Ontario, which show an 11% increase in emergency department visits during extreme heat events (Bishop-Williams, Berke, Pearl, & Kelton, 2015).

HEALTH PROMOTION CONSIDERATIONS FOR RURAL COMMUNITIES

Rural areas, as a whole, are often categorized as vulnerable due to their large geographic area, inadequate public transportation, and lack of access to health services and community resources when compared to their urban counterparts (Health Canada, 2011). These factors must be addressed when planning health promotion programming and communication strategies for rural communities.

Populations vulnerable to climate change impacts, such as extreme heat, may include the homeless or under-housed, individuals that work outside or spend a lot of time outside (exercising or active commuting), the elderly, infants and children, and individuals with chronic illness or disabilities (Health Canada, 2011). These populations may present differently in urban versus rural areas. For example, there may be a greater homeless population in the

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

urban centre, and health units may target interventions to this priority population. Whereas in rural populations outdoor workers, infants, and the elderly may be the focal target populations. The elderly and those who live in isolation in rural areas may have less access to communication channels (e.g. social media, internet) to obtain timely information. Rural residents may have less access to community supports than those in urban centres due to greater distance from community centres and from their neighbours (Health Canada, 2011). Individuals who do not have access to reliable transportation may have trouble accessing services in the town centres. The distance from hospitals may also impact timely treatment of heat-related illnesses for those who live in rural communities.

Occupational exposure to climate change effects is another key factor for rural communities. In Middlesex County, construction and agriculture are amongst the top five industries that employ the residents (Statistics Canada, 2013). Outdoor workers may be exposed to extreme heat from spending extended hours outdoors.

Access to resources is another key consideration (TORC, 2009). Health Canada (2011) identifies cooling facilities and clean drinking water as key aspects of being prepared for a heat-related emergency. Heat adaptation initiatives have been found to be unevenly distributed between urban and rural areas – the majority are located in cities and municipal town centres (Nayak et al., 2015). Many rural areas do not have large community centres or organizations that provide access to air-conditioned areas. This is evident in the lack of available information on cooling centres in Middlesex County. The City of London provides information on community centres and public pools for residents to cool off during a heat warning, but there is no mention of cooling centres that are available throughout the rural area of Middlesex County. There is a clear gap in services and communications for rural residents during an extreme heat event. Additionally, Middlesex County does not have a public transportation system, so individuals who lack mobility or who do not own a vehicle may not have easy access to cooling centres even if they were available. Availability of information, effective communication channels, and access to services are key considerations when planning communications campaigns and associated programming for rural areas.

CLIMATE CHANGE-RELATED COMMUNICATIONS AT THE MLHU

The MLHU currently uses social media and online communication channels (e.g. the Health Unit's website) to disseminate messaging around extreme heat. The Environmental Health Team attends some community events to engage with members of the community each year, and many of these events are located in the urban or town centres.

Communication channels and community partnerships are better established in the urban areas that the MLHU serves (e.g. City of London) and it is time that the team put effort into making sure information reaches the rural community as well. The MLHU does not currently have a strategic communication plan in place to disseminate climate change-related information to the rural community. Considering the expected increase in the intensity and frequency of extreme weather events, it is important that the rural residents understand the risks, where to get information, personal protective measures, and adaptation strategies.

How can the team better reach the rural population with health messaging? What other channels exist to reach the rural population that have yet to be used or that could be enhanced? Strategies should be based on best practice recommendations and implementation depends on the team's budget and resources. Sewell decided to put together

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

a list of some potential communication challenges and opportunities that he could present to the team for discussion at the meeting.

COMMUNICATING WITH RURAL POPULATIONS

Challenges

- A challenge for the Health Unit is the large geographic area of Middlesex County. If the Health Unit staff would like to engage with the rural population or disseminate information at community events this will require more staff time, travel time, and attending a greater number of local events to engage with the public. The City of London has a greater population density and hosts many events that may have large number of city residents passing through. Urban event attendance may therefore have a larger reach. The team will have to look into outreach opportunities within the rural areas.
- When planning communication strategies occupation is an important consideration, especially when determining how best to reach agricultural communities. How can the team best reach communities whose residents work long, irregular hours? It can be difficult to reach these communities in the spring and summer seasons.
- Language can be another barrier to effective communication. There are populations in the rural community who speak Low German and many migrant farm workers who speak Spanish. Are appropriate educational resources available for organizations and agricultural operators to provide to these populations about responding to extreme heat events?
- Social media can be an affordable channel that reaches a large population. But who is following the MLHU Twitter, Facebook, and Instagram accounts? What do those demographics look like and would heat messaging reach the intended target population?
- The MLHU has strong community partnerships within the city, whereas, partnerships still need to be established in the rural areas. Partnerships can allow for increased message dissemination through expanding social networks. These could be web-based connections where resources are shared through partner websites, or partners may disseminate print materials at events or within their organizations. Partners may also display digital screens or host presentations related to extreme heat. The MLHU has a strong partnership with the rural libraries but there may be an opportunity to expand partnerships with municipalities, conservation authorities, recreation centres, and smaller rural organizations.

Opportunities

- The MLHU surveyed rural residents in 2017 to gain a better understanding about how they obtain weather related information. The team can utilize this data to inform their communication strategy. Survey respondents reported obtaining weather related news and information from the following sources: mobile phone-based applications, websites, friends and family, the local radio, and news reported on television. The team may be able to enhance communication through some of these local channels. Local media and farming magazines have been identified as methods to communicate with the agricultural community (Asplund, Hjerpe, & Wibeck, 2013). This may be a strategy the MLHU team could explore moving forward.
- Additionally, the use of interpersonal channels may be an effective strategy for communicating with rural populations (Health Canada, 2011; Williams et al., 2013). Community champions, peer-learning, workshops, and participatory decision-making (where the public has the opportunity to contribute ideas to prevention and adaptation

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

strategies) are all successful ways to engage the community and exchange knowledge (Schmidt-Thomé et al., 2013; Stewart & Rashid, 2011; Woodall, White, & South, 2013). Sewell and his team have to decide which channels are the most appropriate and effective for increasing communication and engagement with the rural population.

- Other teams at the MLHU already have connections in rural schools for school health and dental programming. These connections may be useful for any youth-targeted communication planning.

CONCLUSION

Sewell approved the draft public service announcement for the heat warning, and finalized the meeting agenda for next week.

The team will need to enhance communication efforts for each of the climate change topic areas but each topic has different messaging, partners, and considerations, and cannot be addressed all at once. The team will develop a communication strategy for their heat-related messaging first. The team has already developed some communication material for this topic area and can work on expanding partnerships and communication channels into the rural community.

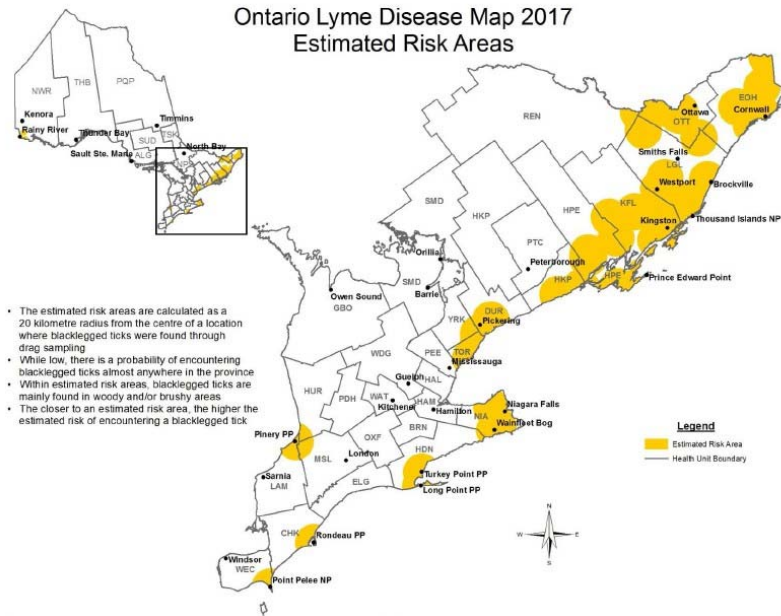
Sewell hoped that a small, enthusiastic, working group can be formed to take on this challenge. The group will need to prepare a proposal to present to the Health Unit's communications team by the end of the month, in order to have any communication material developed by the summer.

The team will need to develop a communication plan outline, defining exactly who their target population is, what communication channels they will employ, key stakeholders and engagement strategies, materials, and a budget outline. With the recent extreme heat events, the sooner the team can enhance its communication and engagement with the rural population who they serve, the better prepared this population will be for future events.

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

EXHIBIT 1

Estimated risk areas for Lyme disease in Ontario including county boundaries

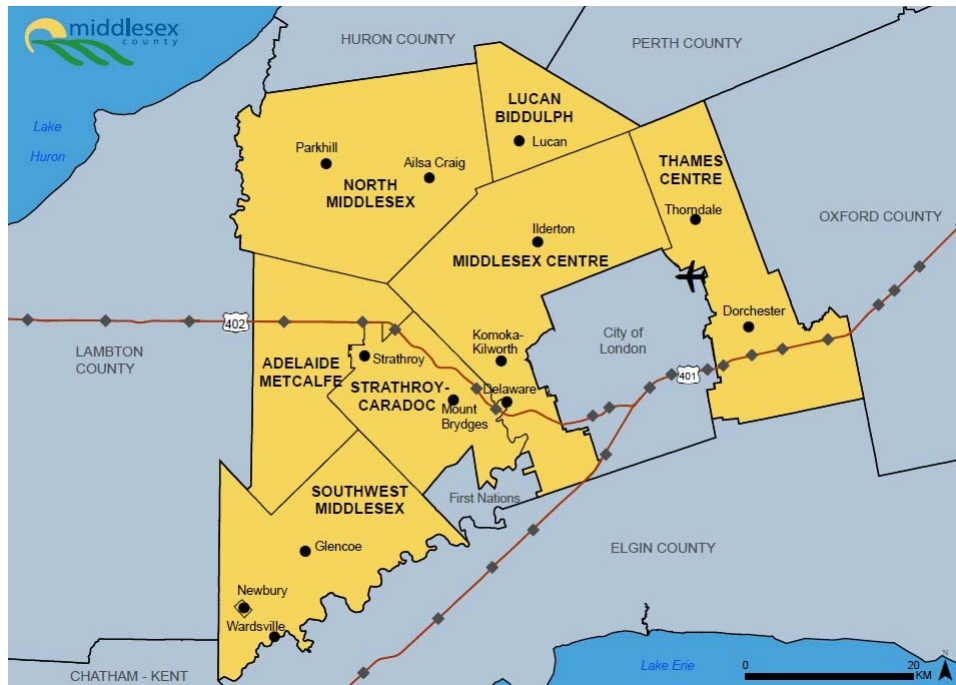


Source: PHO, 2017.

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

EXHIBIT 2

Map of Middlesex County, highlighting the eight municipalities



Source: Middlesex County, 2016.

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

REFERENCES

1. Asplund, T., Hjerpe, M., & Wibeck, V. (2013). Framings and coverage of climate change in Swedish specialized farming magazines. *Climatic Change*, 117, 197-209.
2. Berry, P., Paterson, J., & Buse, C. (2014). Assessment of vulnerability to the health impacts of climate change in Middlesex-London. London, ON: Middlesex-London Health Unit. Retrieved from <https://www.healthunit.com/uploads/assessment-of-vulnerability-to-the-health-impacts-of-climate-change-in-middlesex-london.pdf>
3. Bishop-Williams, K.K., Berke, O., Pearl, D.L., & Kelton, D.F. (2015). A spatial analysis of heat stress related emergency room visits in rural Southern Ontario during heat waves. *BMC Emergency Medicine*, 15(17), 1-9.
4. City of London. (2017). City of London: Community Profile. Retrieved from www.london.ca/About-London/community-statistics/city-profiles/Pages/City-Profile.aspx
5. Ebi, K., Anderson, V., Berry, P., Paterson, J., & Yusa, A. (2016). Ontario Climate Change and Health Toolkit. Ministry of Health and Long-Term Care. Retrieved from http://www.health.gov.on.ca/en/common/ministry/publications/reports/climate_change_toolkit/climate_change_toolkit.pdf
6. Health Canada. (2011). Communicating the health risks of extreme heat events: Toolkit for public health and emergency management officials. Retrieved from https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/climat/heat-chaleur/heat-chaleur-eng.pdf
7. Intergovernmental Panel on Climate Change (IPCC). (2012). Glossary of terms. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Cambridge University Press, Cambridge, UK, 555-564. Retrieved from https://www.ipcc.ch/pdf/special-reports/srex/SREX-Annex_Glossary.pdf
8. Ministry of Health and Long-Term Care (MOHLTC). (2018). Protecting and Promoting the Health of Ontarians. Ontario Public Health Standards: Requirements for Programs, Services, and Accountability. Retrieved from: http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/docs/protocols_guidelines/Ontario_Public_Health_Standards_2018_en.pdf Middlesex County. (2016). Communities in Middlesex County. Retrieved from: <https://www.middlesex.ca/sites/default/files/MiddlesexCommunities.pdf>
9. Ministry of the Environment (MOE). (2011). Climate ready: Ontario's adaptation strategy and action plan, 2011-2014. Retrieved from <https://www.ontario.ca/document/climate-ready-adaptation-strategy-and-action-plan-2011-2014-0>
10. Nayak, S.G., Lin, S., Sheridan, S.C., Lu, Y., Graber, N., Primeau, M., Rafferty, C.J., & Hwang, S.A. (2017). Surveying local health departments and county emergency management office on cooling centers as a heat adaptation resource in New York State. *Journal of Community Health*, 42(1), 43-50.
11. Ontario Agency for Health Protection and Promotion (PHO). (2017). Ontario Lyme Disease Estimated Risk Areas Map. Toronto, ON: Queen's Printer for Ontario; 2017. Retrieved from https://www.publichealthontario.ca/en/eRepository/Lyme_Disease_Risk_Areas_Map_2015.pdf
12. Schmidt-Thomé, P., Klein, J., Nockert, A., Donges, L., & Haller, I. (2013). Communicating climate change adaptation: from strategy development to implementation. *Climate Change Adaptation in Practice: From strategy development to implementation*, 1-9.
13. Statistics Canada. (2013). Middlesex, CTY, Ontario. National Household Survey (NHS) Profile. 2011 National Household Survey. Statistics Canada Catalogue no. 99-004-

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

- XWE. Retrieved from <http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E>
14. Statistics Canada. (2017). Middlesex, CTY [Census division], Ontario and Ontario [Province] (table). Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Retrieved from <http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CD&Code1=3539&Geo2=PR&Code2=35&Data=Count&SearchText=Middlesex&SearchType=Begins&SearchPR=01&B1=All>
 15. Stewart, R.M., & Rashid, H. (2011). Community strategies to improve flood risk communication in the Red River Basin, Manitoba, Canada. *Disasters*, 35(3), 554-576.
 16. The Ontario Rural Council (TORC). (2009). The TORC report on rural health—November, 2009. Rethinking rural health care: Innovations making a difference. Retrieved from <http://www.ruralontarioinstitute.ca/file.aspx?id=1fb3035d-7c0e-4bfa-a8d7-783891f5c5dc>
 17. Woodall, J., White, J., & South, J. (2013). Improving health and well-being through community health champions: a thematic evaluation of a program in Yorkshire and Humber. *Perspectives in Public Health*, 133(2), 96-103.

INSTRUCTOR GUIDANCE

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

Jaelyn Kloepfer, BSc, MPH (MPH Class of 2017)

Fatih Sekercioglu, MSc, MBA, PhD

(Manager, Safe Water, Rabies and Vector Borne Disease, Middlesex-London Health Unit)

Amardeep Thind, MD, PhD (Professor, Western University)

BACKGROUND

Climate change is expected to increase the frequency and intensity of extreme weather events and extreme temperatures (heat and cold) in Southern Ontario. Climate change-related impacts (i.e., flooding, heat, storms, tornados, etc.) may increase the risk of heat-related illness, respiratory disease, food-, water-, and vector-borne disease, and injuries in the Middlesex-London community. The Ontario Public Health Standards mandate local public health units to increase awareness of environmental health hazards, to prevent or reduce exposure to health hazards, and to work to create healthy environments. The Middlesex-London Health Unit (MLHU) conducts surveillance for vector-borne disease, disseminates heat warnings to community partners, and prepares for emergency planning in the community. The MLHU has identified a need to increase communication and awareness of climate change-related health impacts in the rural population of Middlesex County, focusing on extreme heat. There is currently no strategy in place for reaching the rural population with heat-related health messaging. To fill this gap, the health unit needs a comprehensive communication strategy targeted at the rural population.

OBJECTIVES

1. Develop clear goals and/or objectives for a health communication strategy.
2. Analyze the differences between urban and rural areas with respect to the communication channels available, barriers or enablers to receiving information, and access to health-related services.
3. Apply course tools and theories to develop effective strategies, appropriately segment an audience, and demonstrate the ability to develop targeted messaging.
4. Recognize the challenges associated with communicating information on a complex topic.

DISCUSSION QUESTIONS

1. What are some of the health effects associated with climate change? Who is most at risk?
 - a. Are there potential opportunities associated with climate change? For who?
2. What needs to be considered when developing communication strategies for rural populations? Describe differences between urban and rural areas with respect to communication channels and vulnerabilities.
 - a. What are some barriers to communicating climate change science?
 - b. Are there barriers to communicating with rural populations?
 - c. Describe strengths of rural communities that could be used when developing communication strategies.

Local Climate Change Adaptation: Developing a Communication Strategy for Rural Populations

3. What health promotion model(s) or theories could be applied in developing a competitive communications strategy?
4. How might community partnerships assist with message dissemination and what are some challenges that exist when collaborating across sectors?

KEYWORDS

Communication strategy; climate change; rural health; community engagement; knowledge translation; adaptation.