



Exploring the Potential of ChatGPT in
Enhancing Public Health Preparedness
Activities: Creative Writing to Convey
Complex Public Health Issues to the
General Public



SGNL SOLUTIONS
www.sgnl.solutions

Public health preparedness focuses on improving the ability of communities, healthcare systems, and emergency management personnel to effectively respond to potential emergencies and disasters. Given the rapidly evolving nature of threats, it is essential to adopt innovative tools and technologies to augment the efficiency of preparedness efforts.

This project aims to explore the potential of ChatGPT, an advanced artificial intelligence (AI) language model, in enhancing various public health preparedness activities across a broad spectrum.

Objectives:

1. Investigate the potential applications of ChatGPT in diverse public health preparedness activities, such as disaster exercises, risk communication, capacity building, training and education, and resource allocation.
2. Evaluate the effectiveness of ChatGPT in supporting the development of targeted preparedness strategies by analyzing its ability to consider historical data, emerging threats, and local vulnerabilities.
3. Assess the potential of ChatGPT in providing valuable insights and information on best practices, guidelines, and relevant resources for public health preparedness, enabling stakeholders to make informed decisions in planning and response efforts.
4. Examine the role of ChatGPT in facilitating collaboration and communication between various public health stakeholders, such as healthcare providers, emergency management personnel, policymakers, and community members.
5. Explore the potential challenges and drawbacks associated with the integration of ChatGPT in public health preparedness activities, including data privacy concerns, technical expertise requirements, potential biases, and overreliance on AI.

Methodology:

The project will adopt the following methodology:

1. Use case experimentation: Conducting a series of experiments with ChatGPT in a range of public health preparedness activities to assess its effectiveness and potential impact.
2. Case studies: In-depth analysis of selected public health preparedness activities to explore how ChatGPT can be integrated and assess its potential impact on various aspects of preparedness.
3. Prototype development: Creating, testing, and sharing prototypes of ChatGPT-enhanced public health preparedness tools, such as scenario generators, risk communication platforms, and training modules.

Expected Outcomes:

1. Identification of key areas where ChatGPT can be integrated into public health preparedness activities to optimize their impact and effectiveness.
2. A comprehensive understanding of the potential benefits and challenges associated with the integration of ChatGPT in public health preparedness efforts.
3. Recommendations for best practices and strategies for incorporating ChatGPT into public health preparedness activities, addressing potential drawbacks and challenges.
4. Insights into the perspectives of various public health stakeholders on the role of AI in preparedness efforts, informing future research and policy development.

Direct any questions regarding this product to:

Justin Snair, MPA
Managing Partner and Principal Consultant
SGNL Solutions
jsnair@sgnl.solutions

About SGNL Solutions

SGNL Solutions (SGNL), a service-disabled veteran-owned small business corporation, connects across research, policy, and practice communities to identify, understand, and solve complex health security challenges. We undertake collaborative projects involving stakeholder engagement, process facilitation, data collection, analysis, evaluation, scientific writing, and product development. Our team of experienced consultants provides cross disciplinary expertise and perspectives, which fosters better understanding and integrated solutions to address our nation's most pressing issues. We become issue experts and get excited about what matters to our clients. We sift through noisy data and distractions to get at the core of persistent problems to find the signal – the real information and approaches needed to finally address problems. We work across disciplines, think creatively, and break apart silos that oftentimes prevent progress. We then work with clients to make these important issues approachable and actionable.

Learn more about SGNL Solutions at www.sgnl.solutions

Communicating public health issues to the public is a critical aspect of managing health crises and promoting well-being. However, this task is often fraught with challenges, which may include:

1. **Misinformation and disinformation:** The spread of false or misleading information can undermine public health messaging, leading to confusion and mistrust among the population. This can result in a lack of adherence to health recommendations, rendering public health interventions less effective.
2. **Complexity of scientific information:** Public health issues often involve complex scientific concepts that can be difficult for the general public to understand. Communicators must convey this information without sacrificing accuracy or nuance, ensuring that it is accessible and meaningful to diverse audiences.
3. **Emotional factors:** Health-related topics can evoke strong emotions, such as fear, anxiety, or denial, which can hinder effective communication. Public health professionals must strike a balance between informing the public about potential risks and avoiding unnecessary panic.
4. **Diverse audiences:** Communicating public health issues to a diverse population requires an understanding of different cultural, linguistic, and socioeconomic backgrounds. Tailoring messages to address these diverse needs is essential for ensuring that everyone can access and act upon critical health information.
5. **Sensationalism in media:** News outlets may prioritize sensational stories over accurate and balanced reporting, which can distort the perception of public health risks and lead to a focus on less significant issues. Public health communicators must work to counteract this effect by providing accurate, evidence-based information and context.
6. **Trust in institutions:** Public trust in government, public health agencies, and the scientific community can have a significant impact on the acceptance of public health messaging. Building and maintaining trust is crucial for effective communication, but it can be challenging, especially in the face of controversial or politically charged health issues.
7. **Information overload:** In the digital age, people are bombarded with information from numerous sources, making it difficult for public health messages to stand out and be heard. Public health communicators must find innovative ways to capture attention and engage audiences in an increasingly saturated information landscape.
8. **Rapidly changing information:** During public health crises, new information can emerge quickly, leading to changes in recommendations and guidelines. Communicating these changes effectively and maintaining public trust can be challenging, as people may perceive these shifts as inconsistent or confusing.

To overcome these challenges, public health professionals must employ a range of strategies, including utilizing clear and concise language, leveraging trusted messengers, engaging with communities, and using various communication channels to reach diverse audiences. By doing so, they can enhance the effectiveness of public health communication efforts and better protect the well-being of the population.

In this experiment, I sought to evaluate ChatGPT's ability to produce creative works that could support public health preparedness efforts, translate complex issues, and capture the public's attention amidst information overload.

I provided scenario of possible conditions in the United States in 2050 due to climate change previously developed for another project.

Climate Change Scenario

The year is 2050. Despite worldwide efforts to curb emissions, the United States is experiencing catastrophic effects of climate change. The U.S. coastline is 12 inches above its height in 2022, leaving a hundred billion dollars in coastal property below sea level. After years of repeated storm damage and rebuilding, property insurers no longer cover many coastal areas. Consequently, property developers, investors, and lenders struggled to operate in these areas. To avoid abandoning the coasts and associated massive economic impacts, federal, state, and local governments redirected massive amounts of funds towards levees, pumps, and storm surge protection. This left public health, healthcare, education, and other essential social programs neglected and underfunded for decades. Weather events, particularly hurricanes, have become more extreme and frequent.

Annual damage losses have increased by over \$7 billion, bringing the annual price tag for hurricanes and other coastal storms to \$35 billion. Faced with near constant extreme weather in some states, the nation is facing an internal climate refugee crisis, with some states refusing to accommodate the displaced, while others collapsing under the strain of dramatically increased populations. Water scarcity has become a new normal in the west, resulting in power and water shortages. Lake Mead, in Nevada and Arizona, and Lake Powell, in Utah and Arizona are in 'Dead pool' status, with water levels in the dams so low it can no longer flow downstream and power the hydroelectric power stations. Concurrently, rises in temperature have increased demand for power, necessitating the construction of new power generation that costs ratepayers over ten billion dollars per year. Rolling blackouts and power rationing are normal.

The flow of the Colorado River – which services 60 million people in 2050- shrank by nearly 20% from its size in 2022. Western, midwestern and southern states, experiencing unprecedented rises in temperature and decreased water supply, are plagued with drought. With the agricultural sector consuming more than 70% of available water supply, megadroughts have jeopardized the fabric and livelihood of the Western states. California, which alone supplies more than one-third of all vegetables in the US, and two-thirds of all fruits and nuts, for example, has a 20% reduction in crop production. Food shortages, and resulting malnutrition, are frequent and widespread, particularly in more disadvantaged regions of the country. Western water rights frameworks, established nearly 130 years prior, overestimated future water supply and were inflexible in the face of new droughts. State on state conflicts over water access are normal, with some instances involving near open fighting between Governor activated national guard troops, requiring swift and repeated intervention by the federal government. For years wars were fought over oil. Now wars are fought over water.

Dryer conditions, and over a century of poor land management practices, have resulted in devastating wildfires. In addition to property destruction and population displacement, the smoke from more frequent wildfires and drought-borne dust storms afflict entire regions, even those without wildfires, dramatically impacting air quality and resulting in respiratory ailments such as asthma. Evacuations are common and options for longer term sheltering needs are strained. Increased rainfall, flooding and humidity, higher overall temperatures, as well as demographic shifts in western, southern and northeast regions, created more viable areas for vector breeding and allowed breeding to occur more quickly, as eggs hatch faster in hotter climates. As a result, communicable and vector-borne diseases, such as Lyme disease, Zika, dengue, and West Nile have increased throughout these regions. are also on the rise. Cases of West Nile in California, for example, have increased by over 68%. Malaria, once eradicated in the US, has reemerged. Yellow Fever, which had its last major outbreak in New Orleans almost 150 years ago, has also resurfaced.

Climate change has forced some animal species into new habitats as their natural habitats disappeared, and it has expanded the habitats of other animals. This movement of animals into new areas increased opportunities for contact between humans and animals and the spread of zoonotic diseases. Rising temperatures have allowed certain disease-causing fungi to spread into new areas that previously were too cold for them to survive. For example, Valley fever – caused by a fungus that lives in the soil in hot and dry areas – is currently plaguing the Pacific Northwest.

Climate change has had devastating effects on freshwater and marine environments, with more frequent and more severe instances of harmful algal blooms in lakes, rivers, oceans, and bays. Warming temperatures in Lake Erie, for example, have contributed to extensive toxic blooms that last into the early winter months, endangering human health through consumption of contaminated shellfish and harming pets, livestock, wildlife, and the environment. Public health epidemiology and surveillance programs throughout the nation are overwhelmed. The increased instances of vector borne and communicable disease, water scarcity, famine, and poor air quality throughout the US has resulted in surges on hospital systems and burden underfunded public health programs. Public Health and Healthcare preparedness professionals are expected to do much more with much less.

Fortunately, these professionals have made do and done well in emergencies and disasters for decades leading up to 2050. Anticipating this dire future, beginning with a small cohort meeting in 2022, preparedness professionals collaborated, innovated, and leveraged their capabilities, programs, and expertise to create robust solutions to better protect their communities for climate change challenges.

I instructed ChatGPT to provide a creative work to help general audiences understand and empathize with the work and dedication of public health professionals. I ask for complicated scientific concepts and issues to be translated for the layman and to use a writing style inspired by author Michael Crichton.

AI Use Example: Creative Writing to Convey Complex Public Health Issues to the General Public

The Climate Crusaders

By: ChatGPT, and some guidance by Justin Snair

Chapter 1: A Heavy Burden

Dr. Jane McKenna stared at the report on her desk with growing dread. As the head of the Emerald Harbor Public Health Department in Washington State, she was all too familiar with the consequences of climate change. But the magnitude of the disaster described in the report surpassed anything she had ever encountered. This wasn't just a crisis; it was a ticking time bomb.

The report detailed the devastating impact of the ongoing wildfires in the West, the unyielding storms battering the East, and the catastrophic droughts gripping the heartland. Climate refugees flooded into cities, overwhelming already strained healthcare systems, and sparking outbreaks of infectious diseases. The nation's infrastructure was crumbling, and the most vulnerable populations bore the brunt of the suffering.

Jane felt the weight of responsibility settle heavily on her shoulders. She had dedicated her life to public health, and the idea of standing by while people suffered was unbearable. Yet, she also knew that she couldn't tackle this gargantuan challenge alone. To make any meaningful difference, she would need to assemble a team of the best and brightest minds in public health, professionals who could bring diverse skills and perspectives to the table.

As the days turned into weeks, Jane worked tirelessly to establish contact with potential allies. She reached out to former classmates, colleagues, and mentors, gradually building a network of like-minded individuals who shared her passion for public health and her commitment to addressing the climate crisis. It was a painstaking process, fraught with setbacks and disappointments, but Jane refused to be deterred.

Meanwhile, the world outside her office continued to spiral into chaos. The evening news was a constant barrage of grim headlines: wildfires raging out of control, entire coastal communities swallowed by the sea, and record-breaking heatwaves claiming thousands of lives. The clock was ticking, and Jane knew that she couldn't afford to waste a single moment.

Finally, after months of tireless effort, she had assembled a team that she believed could make a real difference. They were a diverse group, hailing from all corners of the nation and representing a wide range of disciplines within public health. They had come together with a common goal: to confront the climate crisis and protect the health and well-being of the millions of people caught in its deadly grip.

With her team in place, Jane prepared to embark on the greatest challenge of her career. But as she stared down the long and treacherous road that lay ahead, she couldn't help but wonder if their efforts would be enough to turn the tide, or if they were already too late.

Chapter 2: Against All Odds

With her team of dedicated professionals assembled, Jane faced the daunting task of prioritizing

their efforts. The scale of the climate crisis was staggering, and the consequences were felt in every corner of the country. From the wildfire-ravaged West Coast to the flood-stricken East Coast, millions of people were suffering, and it seemed as if the world was falling apart at the seams.

The government, preoccupied with large-scale infrastructure projects and the immediate needs of disaster relief, had left public health, healthcare, and education to fend for themselves. Budgets had been stretched to the breaking point, forcing Jane and her team to make difficult choices about which issues to tackle first and which to leave for later.

Undaunted, the group dubbed themselves the Climate Heroes and began to strategize. They knew that they couldn't solve every problem at once, but they were determined to make a meaningful impact wherever they could. They divided themselves into smaller teams, each focusing on a specific aspect of the crisis: disease prevention, mental health, disaster relief, and public education.

As they delved deeper into their respective areas of focus, the true scale of the challenges they faced became clear. The wildfires and floods had driven countless people from their homes, straining healthcare resources and triggering outbreaks of infectious diseases. In the heartland, droughts had devastated agriculture, leading to food shortages and a growing public health crisis.

The Climate Heroes worked around the clock to develop innovative solutions to these problems. They created mobile clinics to provide medical care in disaster-stricken areas, implemented mental health programs to help people cope with the emotional toll of displacement and loss, and organized food and water drives to assist those most in need.

But their successes were often short-lived, as new challenges emerged with alarming frequency. A deadly heatwave struck the Southwest, claiming thousands of lives and putting an even greater strain on healthcare resources. A catastrophic hurricane battered the Gulf Coast, leaving a trail of devastation in its wake and prompting a desperate scramble to provide aid and assistance to the affected communities.

As the Climate Heroes raced to respond to these mounting crises, they found their resources stretched thinner than ever before. They were forced to make heart-wrenching choices about where to allocate their limited resources, knowing that every decision they made could mean the difference between life and death for countless people.

Through it all, Jane remained a pillar of strength and determination, inspiring her team to push through their exhaustion and fear in pursuit of their shared mission. The road ahead was fraught with danger and uncertainty, but the Climate Heroes refused to give up. They had come together to make a difference, and they would not be deterred by the overwhelming odds against them.

Chapter 3: Rising from the Ashes

The loss of Dr. Samuel Baker weighed heavily on the Climate Heroes. As they grappled with the reality of their colleague's violent death, they felt the very fabric of their resolve beginning to fray. They mourned Samuel, and the sense of helplessness in the face of such a cruel world threatened to overwhelm them.

Jane knew that she needed to channel their grief into action. The Climate Heroes had to stay focused on their mission, not only for the sake of the millions of people relying on them but also to honor Samuel's memory. He had given his life in the pursuit of a better world, and they could not let his sacrifice be in vain.

Together, they established the Samuel Baker Memorial Fund, a research grant dedicated to finding innovative solutions to public health challenges related to the climate crisis. They hoped that, in time, the fund would inspire and support the next generation of climate and public health advocates.

As they continued their work, the Climate Heroes took on increasingly complex projects. They developed early warning systems for extreme weather events, organized mental health support groups for those affected by climate-related traumas, and launched public awareness campaigns to help communities better understand the links between climate change and their health.

Their efforts did not go unnoticed. Other public health professionals, inspired by the Climate Heroes' determination and resilience in the face of adversity, joined their ranks. The team grew, and with each new member came fresh ideas, diverse perspectives, and a renewed sense of purpose.

The Climate Heroes knew they couldn't tackle the climate crisis alone, so they reached out to other organizations and individuals working to combat climate change. They formed alliances with environmental advocacy groups, non-governmental organizations, and even sympathetic politicians. These connections became invaluable, providing them with resources and support to help them navigate the increasingly complex landscape of climate and public health issues.

As the Climate Heroes continued to rise from the ashes of tragedy, they found new strength in unity. Their collective determination to make a difference in the face of overwhelming odds was a testament to the human spirit and a fitting tribute to the memory of Dr. Samuel Baker.

Chapter 4: Uniting the Globe

The Climate Heroes knew that to address the ever-growing challenges posed by the climate crisis, they needed to build a global network of experts and advocates. Emboldened by their recent successes and the growth of their team, they set their sights on expanding their reach and impact beyond national borders.

Jane began reaching out to public health professionals, scientists, and climate activists from around the world. She organized a series of international conferences, where experts could share their knowledge, discuss innovative solutions, and forge lasting connections. These gatherings were a testament to the power of collaboration and the resilience of the human spirit.

As the Climate Heroes' network grew, they found themselves working alongside passionate individuals from all walks of life. They partnered with indigenous communities fighting to protect their land and resources, collaborated with researchers developing cutting-edge climate adaptation strategies, and joined forces with grassroots organizations pushing for policy changes.

Together, they tackled some of the most pressing issues faced by communities across the globe. In the face of severe drought, they helped establish sustainable water management practices in vulnerable regions. They worked with coastal communities to develop early warning systems and evacuation plans for storm surges and rising sea levels. And in areas ravaged by deforestation,

they supported reforestation efforts and promoted sustainable land-use practices.

But as the Climate Heroes' global network expanded, so too did the challenges they faced. The political landscape was fraught with tension and conflict, with some governments and corporations actively working to undermine their efforts. The Climate Heroes found themselves navigating a delicate balance of diplomacy and activism, as they sought to build alliances while also holding powerful entities accountable for their actions.

In the face of these obstacles, the Climate Heroes remained undeterred. They knew that their work was vital, and they refused to let adversity stand in their way. United by a shared vision of a better future, they continued to forge connections, break down barriers, and rally support for their cause.

As their influence grew, the Climate Heroes emerged as a powerful force for change on the global stage. Their tireless efforts served as a beacon of hope in a world threatened by the devastating effects of climate change, and their unwavering determination to overcome adversity became a rallying cry for those who sought to build a better, more sustainable future.

Chapter 5: An Unseen Enemy

Despite their growing influence and the positive impact they were making around the world, the Climate Heroes soon found themselves facing a new and insidious challenge. Reports began to emerge of a mysterious illness spreading rapidly in areas hardest hit by the climate crisis. This invisible foe threatened to undo all their hard-won progress and plunge the world back into chaos.

Jane and her team knew they needed to act quickly. They set out to investigate the source of the outbreak, racing against time as the disease continued to spread. Working alongside epidemiologists, virologists, and other experts, the Climate Heroes began to piece together a terrifying puzzle: the emergence of a new, climate-related pathogen that thrived in the increasingly hostile conditions created by a warming planet.

As the death toll mounted, the Climate Heroes faced a desperate battle on multiple fronts. Not only did they need to find a way to halt the spread of the deadly disease, but they also had to combat the fear and misinformation that accompanied it. Rumors and conspiracy theories swirled, sowing panic and mistrust, and making it even more challenging for the Climate Heroes to carry out their work.

Determined to save lives and prevent further suffering, Jane led her team in the development of an ambitious plan. They would use their global network to coordinate a massive public health campaign, aimed at raising awareness, promoting preventive measures, and providing support to communities affected by the outbreak.

But as they worked tirelessly to implement their plan, the Climate Heroes encountered fierce opposition. Powerful interests sought to downplay the severity of the crisis, while others exploited the chaos for their own gain. Political tensions flared, and the Climate Heroes found themselves navigating a treacherous landscape where every decision could have far-reaching consequences.

Faced with this unprecedented challenge, the Climate Heroes dug deep, drawing on their collective strength and the lessons they had learned in their fight against climate change. They

refused to be deterred by the obstacles in their path, rallying together to confront the unseen enemy and protect the vulnerable populations most at risk.

As they battled the disease and the forces that sought to undermine their efforts, the Climate Heroes demonstrated the power of unity and perseverance in the face of adversity. Through their unwavering commitment to the cause, they inspired others to join them in the fight for a healthier, more sustainable future, even in the darkest of times.

Chapter 6: A Fractured World

As the Climate Heroes waged their war against the deadly pathogen, they began to realize that the world around them was becoming increasingly fragmented. The climate crisis had laid bare the deep divisions and inequalities that plagued society, and the pandemic only served to exacerbate these issues.

Communities were pitted against each other, as resources grew scarce and competition for essential supplies intensified. The rich and powerful sought to protect their interests, often at the expense of the most vulnerable, while public trust in governments and institutions waned. Fear and desperation fueled the rise of extremism, and acts of politically motivated violence became increasingly common.

Amid this turmoil, the Climate Heroes recognized that their mission had evolved. It was no longer enough to merely combat the direct consequences of climate change and the pandemic; they needed to address the underlying social and political issues that had been brought to the fore by these crises.

Jane and her team developed a multi-faceted strategy to tackle these complex problems. They worked with grassroots organizations to foster community resilience and promote social cohesion, while also advocating for policy changes to address the systemic issues driving inequality and unrest.

The Climate Heroes found themselves mediating conflicts and negotiating with hostile factions, in a bid to secure a future where cooperation and collaboration would triumph over division and strife. They established education and outreach programs to counteract the spread of misinformation and extremism, and offered support to those affected by the upheaval.

As they navigated this fractured world, the Climate Heroes faced setbacks and heartbreak. They lost allies to acts of violence and struggled to maintain hope in the face of seemingly insurmountable challenges. But through it all, they held onto the belief that their efforts could make a difference, that they could help to mend the rifts that threatened to tear the world apart.

Through their courage and determination, the Climate Heroes demonstrated the power of unity in the face of adversity. They showed that even in the darkest of times, the indomitable human spirit could rise above division and conflict to create a brighter, more sustainable future.