

ORIGINAL RESEARCH

Communicating Emerging Infectious Disease Outbreaks to the Public Through Local Television News: Public Health Officials as Potential Spokespeople

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ABSTRACT

Objective: To assess how West Nile virus (WNV) was reported to the American public on local television news and identify the main factors that influenced coverage.

Methods: A representative sample of WNV stories that were reported on 122 local television news stations across the United States during October 2002, covering 67% of the nation's population, were coded for self-efficacy, comparative risk scenarios, symptoms and recommendations, high-risk individuals, and frame. In addition, public service professionals (PSPs) interviewed in the segments were identified. Comparisons were made between stories in which a PSP was interviewed and stories without an interview with respect to discussion of the 5 variables coded.

Results: Of the 1371 health-related stories captured during the study period, 160 WNV stories aired, the second most common health topic reported. Forty-nine of the 160 WNV stories contained at least 1 of the 5 reporting variables. Forty-two PSPs were interviewed within 33 unique WNV stories. Public health officials composed 81% of all PSP interviews. Stories containing a public health official interview had 15.2 times (odds ratio 15.2, confidence interval 5.1-45.9) higher odds of reporting quality information, controlling for station affiliate or geographic location.

Conclusions: Emerging infectious disease stories are prominently reported by local television news. Stories containing interviews with public health officials were also much more likely to report quality information. Optimizing the interactions between and availability of public health officials and the local news media may enhance disaster communication of emerging infections.

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Key Words: emerging infectious outbreaks, mass media, crisis communication

Emerging infectious disease outbreaks such as H1N1 influenza, *Escherichia coli* infection, or West Nile virus (WNV) demand that useful information be communicated to the public without causing undue alarm.¹ The news media can shape community response during infectious disease outbreaks.² The Centers for Disease Control and Prevention (CDC) and the US Department of Health and Human Services have identified mass media communication as a critical component of disaster preparedness,³⁻⁵ recommending that preparedness experts and the media work through the challenges of communicating timely, accurate information to the public.⁶

Multiple studies have shown that the American public is most likely to turn to local television news during public health emergencies.⁷⁻⁹ Not only does the public rely on local television news to get emergency information but federal government officials have also identified local television news as their first choice for reaching the public.¹⁰ Moreover, state public health organizations and the CDC emergency preparedness Web site explicitly encourage the public to listen to local television and

radio broadcasts to obtain more information during and after an emergency.^{11,12}

Journalists and public health experts alike have asserted that the public did not receive clear messages and accurate instructions during previous public health emergencies.¹³ Little is known regarding the factors that may improve the communication of public health emergencies on America's most used media channel, local television news.

Reported cases of WNV jumped from 66 in 2001 to 4156 in 2002. This nearly 70-fold increase was also accompanied by a rise in the number of deaths caused by WNV. In 2001, there were 10 reported deaths from WNV and in 2002, the number of deaths increased to 284.¹⁴ This epidemic of WNV cases during 2002 prompted media attention and provides a useful case study of how an emerging infectious disease was reported to the American public on local television news. The objectives of this study were to determine the prominence of WNV stories reported on local television news across the United States in comparison to other health informa-

tion, to identify prominent public service professionals (PSPs) who were interviewed, and to assess whether these interviews were associated with the quality of WNV reporting on local television news across America.

METHODS

This study was a content analysis of local television news reporting of WNV during autumn 2002. The University of Wisconsin (UW) NewsLab captured local news broadcasts in the top 50 media markets within the United States as part of a study to assess political reporting in advance of the 2002 midterm elections.¹⁵ This representative sample of 122 stations was drawn from a sampling frame of 200 stations, which covers 67% of the nation's population and comprised the 4 major affiliates in each market (ABC, CBS, Fox, and NBC).

From the 122 stations in the study, the highest-rated half-hour of late-evening news (between 9:00 PM and 11:30 PM) that aired during the entire month of October 2002 was captured and coded for identification of WNV stories. Station information including network, media market, and geographic region were appended to the record for each story.

The data were captured by 50 field "stringers" who were responsible for the daily recording of local news programming in each market. Stringers were asked to record between 1 and 4 stations in their market based on the random sampling, and they received 1 recordable digital video recorder per station. In addition, stringers received 1 DVD+R disc per station for every 2 days of recording, a list of recording times, and prepaid mailers to return the discs every other day to the UW NewsLab. The stringers sent the completed DVDs to the UW NewsLab via the US Postal Service in media mailers.

To identify WNV stories and to provide comparisons with local television reporting of health-related stories, all of the health-related stories were first identified. Trained graduate-level media assistants used reference sheets to identify the highest-rated half-hour broadcast for a particular market, network, and day of week. Standard DVD players were interfaced with computer workstations. The media assistants watched the news broadcast for health-related stories based on the definition of a health story described previously,¹⁶ fast-forwarding through commercials, sports, and weather. When an entire DVD had been searched and all of the health-related stories were clipped, the video file was electronically saved. Each health-related story was then tagged with a written descriptive summary, along with the date aired and network affiliate. Two independent media assistants viewed 5% of the broadcasts and demonstrated 95% agreement in identifying health-related stories.

During this initial clipping, it was also noted whether the news broadcast was preempted by late-running awards or sports shows. Of the 3205 late local television news broadcasts that aired during their allotted time slot in October 2002, UW NewsLab captured 2795 (87%) broadcasts. The missing 13% were not col-

lected because of malfunctions in DVD recorder timers, human error, and technical issues. There was no pattern in terms of markets, times, or dates in the missing broadcasts and no reason to believe that it introduced any sort of systematic bias into the data set of health-related stories.

Identifying Health-Related Topics and WNV Stories

Health-related story topics were codified by health care professional coders into 16 main disease categories based on the *International Classification of Disease-9 (ICD-9)* classification of disease and 1 nondisease category as described previously.¹⁶ In addition to coding health topics into *ICD-9* major topics, each health-related story was specifically coded for whether the health topic was WNV.

Two of the present authors (J.P., S.K.) independently examined all of the descriptive summaries—each health-related story coded under the *ICD-9* category of infectious disease as well as all health-related stories specifically identified as a WNV story—to extract the WNV stories to be analyzed. Health professional coder agreement for extracting WNV stories from all of the health-related stories was 100%.

Codebook Development

A codebook was developed to address issues specific to WNV reporting. From past work, PSPs such as firefighters and police officers served as prominent prevention spokespeople following fires and motor vehicle crashes¹⁷ reported on local television news. For this study, PSPs were divided between the following categories: police, firefighters, physicians, public health officials (PHOs), government officials, teachers, and other. PHO were then further divided into 3 groups: city/county, state, and federal.

To assess the reporting quality of the WNV stories, quality-reporting variables were operationalized based on previous literature.¹⁸⁻²⁰ Specifically, each story was coded for the following variables: self-efficacy,¹⁸ comparative risk scenarios,^{18,21} recommendations, high risk, and thematic frame.¹⁹

Self-efficacy is specific information concerning the measures an individual can take to avoid the risk. These measures included wearing protective clothing, using mosquito repellent, or avoiding outside activities at dawn or dusk. *Comparative risk scenarios* are discussions of more common risks so that the public can place their risk in context. An example of a comparative risk scenario is comparing the risk of getting WNV with that of contracting influenza. *Recommendations* are advice statements that informed the public about WNV (eg, when someone should seek treatment). *High risk* is information that discusses individuals at particularly high risk of becoming ill from the virus, such as those at the extremes of age and/or those whose immune systems are compromised. *Thematically framed* stories address the issue in a much broader context and discuss community as compared to individual solutions. More than half of a news story had to be thematically framed to be coded as a thematic story. A composite dichotomous dependent variable "qual-

ity” was created. The WNV story was coded as a “quality” story if the story was coded positive for any of the 5 quality-reporting variables described above. The hook of the story, which was defined as the opening issue discussed by the reporter to draw audience attention to the story, was coded for in each story.

APPENDIX

Codebook Questions and Percentage Agreement Between Coders

Codebook Questions	Agreement, %
Was the story episodic or thematic?	100.00
Was a public health professional interviewed?	96.80
Was it a new human case/animal case/both?	100.00
Was the location of the case mentioned?	100.00
Was it a story about blood donation?	100.00
Was it about spread of WNV through sexual intercourse?	100.00
Was it about spread of WNV through breast milk?	100.00
Did the give WNV disease symptoms?	100.00
Did they give any prevention message?	100.00
Was there a recommendation to avoid dusk 'til dawn?	100.00
Was there a recommendation to wear long sleeves shirts/pants?	100.00
Was there a recommendation to use repellants with DEET?	100.00
Was there a recommendation to avoid standing water?	100.00
Was there a recommendation to keep windows/doors properly screened?	100.00
Did they mention what to do if bitten by mosquito?	100.00
Did they mention risk of serious illness?	100.00
Did they give source for further information?	100.00
Did they mention who is at risk?	100.00
Did they mention immunity?	100.00
Did they mention treatment?	96.80
Was the story a survey?	100.00
Was any other PSP interviewed?	96.66
Code for first PSP interviewed?	96.66
Code for second PSP interviewed?	96.66
Description of PSP interviewed	96.66
Was the PHO from a county?	93.33
Was the PHO from a city?	96.66
Was the PHO from a state?	93.33
Was it a national-level PHO?	100.00
What was the frame of the story?	96.66
What was the hook of the story?	98.10

PHO=public health official; PSP=public service professional; WNV=West Nile virus.

TABLE 1

Top 5 Health-Related Stories Reported on Local Television News During Study Period

Health Topics	No. Stories (% of All Health-Related Stories Reported)
Breast cancer	172 (12.5)
West Nile virus	160 (11.7)
Heart disease	58 (4.2)
Influenza vaccine	53 (3.9)
Obesity	51 (3.7)

Coding

Each variable within the WNV codebook was coded by 2 of the present authors independently (J.P., S.K.). The full codebook along with percentage agreement is available in the Appendix. All of variables were coded with >93% agreement. Any disagreements in coding were finalized by discussion among the authors.

Data Analysis

Descriptive analysis was completed to identify the characteristics of WNV reporting in relation to other health information reported on local television news. In addition, common prevention messages were identified and reported. A descriptive analysis was done to assess prominent PSPs interviewed and other characteristics of WNV reporting.

A bivariate analysis was done to determine associations with the composite dependent variable “quality” and independent variables. Each of these significant variables was included in a logistic regression model to determine their independent effects on quality reporting of WNV stories.

RESULTS

From the 2795 local news broadcasts analyzed, 1371 health-related stories were identified and coded into 1 of the ICD-9 categories. Of these, WNV stories were the second most commonly reported health-related story, accounting for nearly 12% of these health-related news stories (n = 160) (Table 1). The average length of WNV stories was 45 seconds, with the shortest being 14 seconds and the longest 196 seconds. Nearly all of the WNV stories reported a new human case or unique mode of transmission. Transmission of the virus through breast milk (8% of stories), sexual intercourse (8% of stories), and blood transfusions (22% of stories) were also prominent topics. Prevention was discussed in 16% of the all-WNV stories, with recommendations to wear insect repellent discussed in 12% and remove standing water in 8% of the all-WNV stories. The most prominent hook for WNV stories was a “new case/epidemiologic trends,” which was present in nearly 77% of the WNV stories. Table 2 lists the number of quality stories that contained each quality-reporting variable. Of the quality WNV stories, 70% discussed self-efficacy and 27% discussed recommendations. No stories featured WNV in the context of other risk scenarios, and only 8% of all of the quality WNV stories were thematically framed.

A total of 42 PSP were interviewed within 33 unique WNV stories. The Figure shows the breakdown of the various PSP interviewed during reporting on WNV. PHO comprised the majority of PSPs interviewed, accounting for 81% of all of the PSPs interviewed. Further breakdown of PHOs interviewed demonstrates that local (city/county) and state PHOs were the most prominent PHOs interviewed, making up 94% of all PHOs interviewed in WNV stories.

Of the 160 WNV stories, 49 contained at least 1 of the 5 quality-reporting variables and thus were coded “positive” for the de-

pendent variable “quality.” A bivariate analysis was completed and demonstrated a statistically significant association ($P < .05$) between interviewing any PSP (including police, firefighters, physicians, PHOs, government officials, teachers, and other) and television stations in the eastern region of the United States and a nearly significant association between network affiliate and reporting a “quality” WNV story.

PSP interviews were divided into 2 groups: public health interviews and nonpublic health PSP interviews. Each group was entered into the regression model. The model demonstrated an independent association between PHO interviews and reporting a quality WNV story, controlling for the station’s network affiliate, nonpublic health PSP interviews, and regional indicators. The final logistic regression model demonstrated that the odds of reporting a quality WNV story were 15.2 (confidence interval 5.1–45.9) times higher when a PHO was interviewed (Table 3). The results are robust to clustering at the market level to account for PHOs in a handful of sites.

COMMENT

WNV reporting on local television news was prominent during the study period. WNV was the second most common health topic reported on local television news, behind only breast cancer (October is Breast Cancer Awareness Month). Although only a minority of WNV stories reported quality information to the public, when a PHO was interviewed, these stories were significantly more likely to provide recommendations or include information about prevention or risk.

According to the most recent surveys from the Pew Research Center, 79% of Americans receive their information (all types) from television and 54% report watching local news regularly,²² a substantially higher percentage than from any other news source. Similarly, local television news is the number-one source of information for the public during public health

emergencies.^{7,9} During the 2001 anthrax attacks, the public preferentially tuned into local television news for information.⁷

Not only is local television news where people turn during times of crisis but it is also where the government sends the public to obtain information during emergencies. Former Homeland Security Secretary Tom Ridge stated, “Television and radio is our first choice”¹⁰ as a system for dissemination of crisis information to the public. Moreover, local television broadcasters recognize that 1 of their most important functions is to provide critical real-time information to viewers in times of emergencies, both human-made and natural.²³ Unlike cable television services, local broadcasters are able to reach nearly 100% of a local community. Television broadcasters are thus an essential part of emergency preparedness.²³

Understanding the information that the majority of the people receive during an emerging health threat is critical to identifying and correcting misinformation that could have negative health and safety consequences. For example, during autumn 2001, many journalists and public health experts argued that the public did not receive the messages that they clearly needed early in the anthrax outbreak.¹³ This misinformation may have

TABLE 2

Number and Percentage of Quality Reporting Variables Discussed for All Quality Stories Reported*	
Quality Reporting Variables	No. Stories (Quality WNV Stories, %)
Self-efficacy	34 (70)
Recommendations	13 (27)
High risk	11 (22)
Thematic frame	4 (8)
Comparative risk scenarios	0 (0)

*Total: 49 quality West Nile virus stories.

FIGURE 1

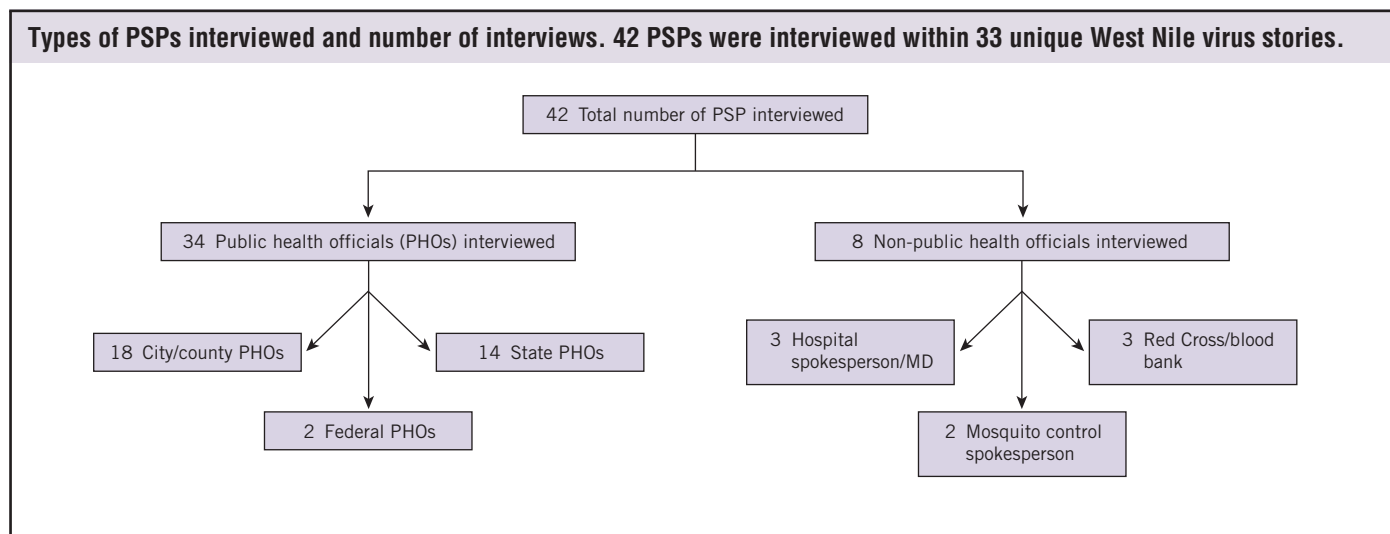


TABLE 3

Odds of Reporting a Quality WNV Story Controlling for Nonpublic Health PSP Interview, Station Affiliate, and Regional Indicators

Variables	Odds Ratio	Standard Error	z	P>z	95% Confidence Interval
PHO interviewed	15.2	8.6	4.85	.000	5.1-45.9
Nonpublic health PSP interviewed	3.4	3.0	1.38	.168	0.6-19.3
Station affiliate	0.9	0.15	-.74	.460	0.6-1.2
East region	5.3	4.8	1.89	.059	0.9-30.6
Midwest region	2.1	1.8	.87	.387	0.4-11.4
South region	3.7	2.7	1.77	.077	0.9-15.8

$\chi^2=39.88, P<.001, n=160$. PHO=public health official; PSP=public service professional; WNV=West Nile virus.

heightened the public’s angst and increased the demand for antibiotics that may have been unnecessary and potentially detrimental.¹³ The CDC has described the importance of monitoring the media during public health emergencies.²⁴ Because local television news is a major means of emergency information for the public, developing real-time monitoring of this medium may limit misinformation and improve health outcomes.

A portion of this misinformation may stem from the lack of available information sources for local news media outlets during an emergency. Reporters surveyed after the anthrax attacks stated that PHOs frequently ignored or did not return telephone calls from the press.²³ The results from this study demonstrated that only 34 PHOs were interviewed from 160 WNV stories. The reasons behind this finding are not evident, but they could be from lack of availability. The local news media often turn to alternative sources of information to report to the public, which include Web sites, other media articles, or other sources such as elected officials, when the best sources are unavailable.²⁵ These alternative sources may provide conflicting information during a time of crisis and may affect public behaviors adversely.

Evidence exists that local news media preferentially turn to local fire and police officials during times of injury events and disasters.^{17,26} The present study adds support that the news media seek out local and state PHOs most often after emerging infectious outbreaks. Many local public health departments provide critical information to the surrounding medical communities; however, little is known about the systems in place to disseminate public health emergency information to the public in real time through the local news media. The media play a vital role during a public health emergency and this necessitates a close working relationship between the media and PHOs.²⁷⁻²⁹ The findings in the present study demonstrate the importance of local and state PHOs in public health emergency communication during emerging infectious outbreaks. Fine and Layton described the importance of media training for PHOs during outbreaks of infectious disease.³⁰ They recommend training health professionals in advance of a public health emergency, identifying experts in potential emergency situations, and developing unified multilingual messages to facilitate a quick and effective response to the public.³⁰ Yet, from this study, even

when PHOs were interviewed, little information about comparative risk scenarios was reported and virtually no stories were thematically framed. These shortcomings may limit the usefulness of emergency information reporting to the public. Training PHOs to use these methods of communication may help contextualize their media interviews and allow them to disseminate a more appropriate message to the public. Focusing future attention on improving the interaction of PHOs with the local news media along with their availability may be an opportunity to enhance the dissemination of emerging infectious disease information.

The present study provides a useful framework of understanding how the majority of Americans may obtain emerging infectious disease information. Still, future work is needed to assess PHOs’ knowledge, perceptions, and systems for interacting with the local news media during public health emergencies. Work is also needed to assess how local television news media obtain public health information. Finally, work needs to be done to identify useful media training tools for both PHOs and local news media that improve the public health emergency communication process.

This study examined a sample of late-night news programs that were broadcast during October 2002 in the top 50 media markets. Although these broadcasts are typically the highest-rated newscast in each of the 50 largest media markets, it is possible that interview characteristics in the observed programs were different from those news programs that were broadcast at other times or in smaller markets. In addition, other spokespeople could have delivered prevention messages that a news editor considered to be less vital to the story and may have been deleted before broadcasting.

Finally, although associations between PHO interviews and quality reporting were identified, it is not possible to determine the causality of this association during the present study. In other words, it could theoretically be the case that local television news editors make a determination about whether they want to do a quality story and this initial decision then leads them to choose whether to interview a PHO. Although possible, our first-hand knowledge of newsroom norms and previous research on how story decisions are made suggest that this causal

chain is less likely. Local television news producers and reporters tend to lead with obvious hooks (as our analysis of hooks demonstrates) and interview available experts who are known to give good, concise on-air quotes.

CONCLUSIONS

WNV stories were covered frequently by local television news during the 2002 epidemic. Local and state PHOs were the most common PSPs interviewed within these WNV stories. WNV stories in which a PHO was interviewed were more likely to provide higher-quality information about WNV. Optimizing the interactions and availability between PHOs and the local news media may offer an opportunity to provide the American public with accurate, timely, and useful public health emergency information through the most used news source, local television news.

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