

# Communicating Health Information Through The Entertainment Media

*A study of the television drama ER lends support to the notion that Americans pick up information while being entertained.*

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THE AMERICAN PUBLIC receives health information from a wide variety of sources. Health care providers and the media, particularly television, generally top people's lists.<sup>1</sup> While Americans cite television news as their primary source of health information, entertainment television is increasingly mentioned as well. Health care providers also report that patients are raising treatment issues that they have seen addressed on popular television shows.<sup>2</sup>

Little is known about what information presented on television is acquired, how long it is retained, and whether and how it affects behavior.<sup>3</sup> None of the existing research on entertainment media has specifically investigated whether these programs can alter viewers' knowledge about health topics, whether health-related story lines can maintain viewers' interest, or whether ongoing entertainment programs can have any impact on audiences' actions.<sup>4</sup>

Some research suggests that entertainment media do play a role in shaping viewers' conceptions of reality. Cultivation theory, from the communication literature, argues that

when people are exposed to a consistent set of messages, they incorporate information from their television viewing into their understanding of the world around them.<sup>5</sup> For example, television portrayals tend to underrepresent older persons, which has led frequent viewers to underestimate the size of the elderly population.<sup>6</sup> Other research shows similar findings about viewers' perceptions of racial and gender composition and roles.<sup>7</sup> While viewers may not consciously watch fictional programs to learn about health information, cultivation theory suggests that health information presented in entertainment media could affect their ideas about health-related issues. This raises the question of whether these programs are an appropriate venue for health information. The potential to teach the public also implies the potential to spread misinformation or create misimpressions.

This paper presents results from a unique opportunity to conduct real-world experiments on the impact of entertainment media as a health and health policy information source. Researchers at the Henry J. Kaiser Family Foundation worked jointly with a

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writer and producer of *ER*, a popular weekly television drama about the lives of medical professionals working in an urban hospital emergency department.

*ER* viewers were surveyed to evaluate the effect of health information communicated through an ongoing television drama. We conducted two natural experiments, with preshow, postshow, and follow-up surveys. These surveys provide insight into the actual experiences, interest, and actions of *ER* viewers, watching *ER* as they would normally, without any knowledge that they would later be surveyed.

## Study Methods

The data for this study come from ten separate national random-sample telephone surveys of regular *ER* viewers. Telephone numbers were randomly generated, and adult respondents were screened based on whether they reported watching at least three out of four new episodes during the regular television season, September through May of that year.<sup>8</sup> The telephone surveys were conducted between March 1997 and April 2000 with more than 3,500 regular *ER* viewers (300 to 500 per survey).<sup>9</sup> A series of cross-sectional surveys was conducted as opposed to a panel design, to avoid sensitization effects that occur when the same person is interviewed about a given topic from one point in time to another.<sup>10</sup>

An *ER* writer and producer who is one of the authors of this paper provided information about general directions of story lines and, in some cases, specific health information to be presented. Using this information, we designed the surveys to assess (1) knowledge gain and retention of health information, and (2) viewers' interest in health-related story lines and any actions taken based on these story lines. The surveys were pretested among a small random sample of viewers.

To achieve these goals, the project included two parts. The first part consisted of two experiments. The first, conducted during March–June 1997, contained a vignette on emergency contraception (preshow, postshow, and follow-up surveys). The second ex-

periment, based on a vignette discussing the human papilloma virus (HPV), was conducted during February–April 2000, again using three surveys to assess viewers' knowledge gain and retention.

The second part of the project involved four surveys conducted throughout the 1997–1998 television season to investigate interest in health-related story lines and personal actions taken based on these story lines. This included a baseline survey in September 1997, before the season began (wave 1), two surveys in late November/early December 1997 and in March 1998, each about one-third of the way through the season (waves 2 and 3), and a final survey conducted in late May 1998, the end of the season (wave 4).

Comparisons between groups of regular viewers were made with statistical tests of differences in the survey-derived estimates of population proportions. Each survey was weighted to be representative of all adults who watched at least three out of four new episodes of the show. Given the successful national random-digit dialing sample selection, the weights to be applied were small, resulting in small design effects for each survey. These design effects were taken into account by adjusting the standard errors for each estimate in the statistical testing for differences between two results. In interpreting these survey results, it should be recognized that all surveys are subject to sampling error ( $\pm 5$ – $\pm 6$  percentage points for these ten surveys). In addition, surveys are subject to other forms of error from nonresponse, question wording, and context effects, although every effort was undertaken to minimize these.

In using these surveys to shed light on how entertainment media can affect audiences, it is important to understand the demographics of regular *ER* viewers (Exhibit 1). These viewers are similar to the general adult population on many characteristics such as race, ethnicity, marital status, and geographic distribution. But they do differ in a few important ways. Regular viewers are predominantly female, younger than the general public, and slightly more educated.

**EXHIBIT 1****Demographics Of All U.S. Adults And Regular ER Viewers, 1996 And 1997**

	<b>CPS (1996)</b>	<b>ER viewers (1997)</b>
Male	48%	36%
Female	52	64 <sup>a</sup>
Ages 18-29	22	28
Ages 30-49	43	49
Age 50 and older	35	23 <sup>a</sup>
Less than high school	18	12
High school graduate	37	36
Some college or more	45	51 <sup>b</sup>
White (includes white Hispanics)	85	86
Black	11	11
Other	4	3
Married	59	57
Income		
Less than \$20,000	27	22
\$20,000-\$29,999	15	17
\$30,000-\$39,999	14	18
\$40,000-\$59,999	20	22
\$60,000-\$99,999	17	16
\$100,000 or more	8	6
Region		
Northeast	20	22
Midwest	24	27
South	35	33
West	21	16

**SOURCES:** U.S. Bureau of the Census, Current Population Survey (CPS), 1996; and Kaiser Family Foundation, *ER Preshow Survey* (conducted March-April 1997).

<sup>a</sup>  $p < .001$  for comparisons between all U.S. adults and regular ER viewers.

<sup>b</sup>  $p < .05$  for comparisons between all U.S. adults and regular ER viewers.

Comparable health-interest measures are not available for these two populations; however, a few knowledge and opinion questions on health issues from the ER surveys were replicated on surveys of the general adult population. Results indicate that regular ER viewers do not differ a great deal from the general population in attitudes, knowledge, or awareness of the health issues investigated.<sup>11</sup>

## Study Results

■ **Knowledge gain and retention.** We conducted specific tests of changes in viewers' knowledge and awareness of the issues of emergency contraception and HPV (Exhibit 2). We were interested in determining whether a short vignette delivering factual information about these issues could increase knowledge about them, and whether any in-

creases in knowledge would be retained beyond the weeks immediately following the episode.

*Emergency contraception.* One ER episode, aired 10 April 1997, briefly addressed emergency contraception through a short vignette about a patient who has been the victim of a date rape and who requests information about what she can do to prevent pregnancy. The entire vignette lasts almost three minutes, and the discussions about using birth control pills for emergency (postcoital) contraception last around twenty seconds. To test the effect of this brief, but very specific, piece of health care information, two samples of regular ER viewers were interviewed, one before and one after this episode.

Viewers' awareness of emergency contraception increased seventeen percentage

**EXHIBIT 2****Awareness Of Two Health Issues Before, Directly After, And More Than A Month After Relevant Episodes Of ER**

	Emergency contraception (aired 10 April 1997)		
	Preshow (31 March–9 April 1997)	Postshow (11–16 April 1997)	Follow-up (25–30 June 1997)
<b>Among regular viewers</b>			
Knew there are options for preventing pregnancy after unprotected sex	50%	67% <sup>a</sup>	50% <sup>a</sup>
Mentioned taking birth control pills (described in the 10 April show) as something a woman could do to prevent pregnancy shortly after unprotected sex	10	33 <sup>a</sup>	10 <sup>a</sup>
Human papilloma virus (HPV) (aired 24 February 2000)			
	Preshow (8–16 February 2000)	Postshow (25–29 February 2000)	Follow-up (3–16 April 2000)
<b>Among regular viewers</b>			
Have heard of HPV	24% <sup>b</sup>	47% <sup>a</sup>	38% <sup>c</sup>
Could give correct description of HPV	9 <sup>d</sup>	28 <sup>a</sup>	16 <sup>a</sup>

**SOURCES:** Kaiser Family Foundation, *ER* Preshow Survey (conducted 31 March–9 April 1997); *ER* Postshow Survey (conducted 11–17 April 1997); *ER* Follow-up Survey (conducted 25–30 June 1997); *ER* Preshow Survey (conducted 8–16 February 2000); *ER* Postshow Survey (conducted 25–29 February 2000); and *ER* Follow-up Survey (conducted 3–16 April 2000).

<sup>a</sup> Differs from preceding columns at  $p < .001$ .

<sup>b</sup> Differs from final column at  $p < .001$ .

<sup>c</sup> Differs from preceding column at  $p < .05$ .

<sup>d</sup> Differs from final column at  $p < .01$ .

points in the week after the episode aired. Among those who knew that a woman has options for preventing pregnancy even after unprotected sex, the number who specifically mentioned that she could take birth control pills (the method mentioned in the show) increased by twenty-three percentage points.

To measure whether effects persisted over time, a separate sample of regular *ER* viewers were again asked about emergency contraception two months later. General awareness of emergency contraception and the proportion mentioning birth control pills as an option had decreased to pre-episode levels.

*Human papilloma virus.* A second experiment was conducted in conjunction with an episode mentioning HPV (aired 24 February 2000) to test shifts in knowledge and retention of any knowledge gain. In a short vignette, directly focused on HPV for less than a minute, nurse Carol Hathaway sees a teenage patient who is diagnosed with cervical cancer and explains that it can be related to the sexually transmitted disease HPV.

Three samples of regular *ER* viewers were surveyed one week before, one week after, and just over a month after the episode. As before, viewers' knowledge rose, but the level was

not sustained over time (Exhibit 2). We cannot say whether the early knowledge gains would continue to decrease to pre-episode levels, as we saw in the emergency contraception experiment.

There is evidence that many viewers surveyed increased their knowledge because of these *ER* episodes. Among regular viewers who had watched the emergency contraception episode and said they had heard of emergency contraception, 20 percent volunteered that they had learned about the issue from *ER*. Similarly, 32 percent who had watched the HPV episode and had heard of HPV volunteered that they had learned about it from *ER*.

It should be acknowledged that viewers may have been exposed to other sources of information about emergency contraception and HPV during the study period. Ideally, a comparison group of non-*ER* viewers would have been surveyed at the same time to ensure that increases and decreases in knowledge were related to *ER* rather than to some other event occurring around the same time. However, concerns that nonviewers differ from viewers in other significant ways that would make such a test inconclusive and concerns about budget constraints prevented this from

occurring. The finding in both experiments that knowledge increased but then decreased without repetition of the messages, the consistency of this finding with other studies about the need to repeat messages for retention of any knowledge gain, and the relatively short study period during which outside exposure to other information sources could have occurred make it appear likely that much of the observed shift in knowledge is attributable to the *ER* vignettes.<sup>12</sup>

■ **Health-related story lines.** Another major research question investigated whether entertainment media can convey health and health policy information while maintaining viewers' interest and commercial success. To answer this question, we asked respondents about their interest in health-related story lines and compared this with their interest in other types of story lines, such as those about characters' relationships. We also looked at whether any actions were taken because of *ER*'s health-related story lines.

Certainly the personal lives of the characters interest *ER* viewers, but viewers also reported substantial interest in health-related story lines (Exhibit 3). In fact, of nine separate story lines followed during the 1997–1998 season (in waves 2–4), the story about physician assistant Jeanie Boulet and her human immunodeficiency virus (HIV) status vies for first

place, in terms of the percentage of viewers who reported being “very interested” in it, with the story line about Doug Ross and Carol Hathaway’s ongoing romance, the primary romance on the show. Furthermore, more viewers said that they were “very interested” in the story line about Hathaway’s free clinic for low-income and uninsured populations than about the romance between Peter Benton and Elizabeth Corday.

Even though many regular viewers expressed a high level of interest in the health-related story lines, not all of these story lines were successful at attracting and maintaining audience interest. For example, a story line about Kerry Weaver’s efforts to reduce costs in the emergency department ranked at the bottom in terms of viewer interest. Even though, as previously mentioned, the health policy-related free-clinic story ranked higher than one of the relationship stories, it ranked near the bottom.

Overall, 54 percent of regular viewers said that they were happy with the amount of health-related story lines on the show, and 40 percent said that they would like to see even more health issues addressed, compared with only 4 percent who wished there were fewer health-related story lines (from the 1997 follow-up survey on contraception). Young, nonwhite, and less educated viewers were

### EXHIBIT 3 Viewers' Interest In *ER* Story Lines, 1997–1998

Story line	Percent of regular <i>ER</i> viewers who said they were “very interested” in the story line (waves 2–4)
Jeanie Boulet and her human immunodeficiency virus (HIV) status <sup>a</sup>	48%
Doug Ross and Carol Hathaway's relationship	43
Peter Benton, his girlfriend Carla, and their newborn son	41
Jeanie and Al Boulet living with HIV <sup>a</sup>	36
Jeanie Boulet and her job status <sup>a</sup>	35
John Carter and Anna Del Amico's relationship	33
Carol Hathaway and the free health clinic <sup>a</sup>	31
Kerry Weaver, Synergix, and cost containment in the emergency room <sup>a</sup>	26
Peter Benton and Elizabeth Corday's relationship	22

**SOURCES:** Kaiser Family Foundation, *ER* Wave 2 Survey (conducted November–December 1997); *ER* Wave 3 Survey (conducted March 1998); and *ER* Wave 4 Survey (conducted May 1998).

<sup>a</sup> Health-related.

particularly likely to say that they would like to see even more health issues covered on the show. Viewers under age thirty were more likely than older viewers were to want to see more health issues addressed (43 percent versus 20 percent;  $p < .01$ ), as were nonwhite viewers (56 percent versus 39 percent;  $p < .05$ ) and those with no college education (48 percent versus 35 percent;  $p < .05$ ).

Slightly more than half (52 percent in the April 1997 preshow contraception survey and 55 percent in the June 1997 follow-up survey) of regular viewers said that in addition to being entertained by *ER*, they also learned about important health issues from watching the show. Older viewers were more likely than younger viewers (63 percent versus 50 percent) and less educated viewers more likely than those with a college education (62 percent versus 44 percent) to say that they gained important health information. Nonwhite viewers were also more likely to say that they learned from the show (74 percent of nonwhites, compared with 50 percent of whites).

We also explored whether *ER* episodes led viewers to take any action with respect to health issues (Exhibit 4). We found that 51 percent of regular viewers said that they talked with family and friends about the health issues that were addressed on the show. A third said that they got information from *ER* that helped them to make health care choices. Viewers with no college education were more likely than those with at least some

college to say that they got such information from the show (44 percent versus 25 percent;  $p < .01$ ).

Furthermore, around one in five viewers (23 percent, wave 1) said that they have gone to other sources to find additional information about a health issue because of something they saw on *ER*. More viewers with at least some college education (24 percent) than with a high school diploma or less (16 percent;  $p < .05$ ) reported seeking information because of *ER*.

About one in seven viewers said that they have contacted a doctor or other health care provider about a health problem because of something they saw on *ER* (Exhibit 4). Approximately 8 percent of viewers said that they have sought additional information from sources other than a provider, such as friends, family members, books, or magazines.

## Discussion

This study documents that viewers are interested in health-related story lines, and some learn about health topics and have been motivated to seek additional health information, even engaging in discussions about health issues with their friends and families, and sometimes their doctors. Importantly, this first-of-its-kind natural experiment highlights that repetition of messages is the key to increased comprehension and longer-term retention among audiences.<sup>13</sup> When specific health information is presented only through

### EXHIBIT 4 Viewers' Reported Actions As A Result Of Watching *ER*

Action	Often/ sometimes	Hardly ever/ never	
Got information from <i>ER</i> that helped them to make choices about their own or their family's health care (April 1997, Postshow)	32%	68%	
	Health issues	Characters' lives	Both
Talked with friends and family about issues addressed on <i>ER</i> (April 1997, Postshow)	27%	35%	24%
	Postshow	Wave 1	Wave 4
Spoke with a doctor or other health care professional about a health problem because of something they saw on <i>ER</i>	12%	14%	15%

**SOURCES:** Kaiser Family Foundation, *ER* Postshow Survey (conducted April 1997); *ER* Wave 1 Survey (conducted September 1997); and *ER* Wave 4 Survey (conducted May 1998).

a brief, one-time mention, viewers' long-term retention of the information is questionable.

This study has implications for those involved in the delivery of health information to the public. Dramatically depicting health-related issues through entertainment television may be a mechanism to inform the public about key health topics. Entertainment television provides access to a wide audience, tuning in week after week. Few other dissemination channels guarantee such ongoing access to the public.

On the other hand, fictional depictions could lead to viewers' obtaining inaccurate information or taking away critical misperceptions about health topics. Some might reasonably worry that much public health or health policy information may be considered value-laden—for example, information on controversial issues such as abortion. Therefore, even the communication of “factual” information in entertainment media, as in other health education forums, produces both the potential for real disagreements or outright abuse by parties with a particular interest or point of view.

This raises two important questions. First, is entertainment television an appropriate mechanism for communicating information to the public? Second, is there any role for policymakers or public officials to play?

■ **An appropriate medium?** Some might argue that fictional television is an inappropriate mode of information dissemination, especially given the potential pitfalls discussed above. Further, many in the entertainment industry itself may resist the suggestion that their goals should go beyond entertaining in an artistically rewarding and commercially successful way by also seeking to educate viewers. Nevertheless, health information is going to be depicted in the entertainment media anyway, and it seems desirable that it be communicated as accurately as possible and that health and health policy experts play a role in this process.

In addressing questions about potential abuses, we would argue that viewers are unlikely to blindly accept all information pre-

sented to them, particularly information that goes against their real-world experiences or their own values and belief systems. While early research on the effects of mass media typically characterized audiences as passive recipients of information, as the field has evolved, researchers have shifted to view audiences as more active and critical consumers of media messages.<sup>14</sup> Information that viewers find offensive or misleading might cause them to stop watching a particular show, search out more information about the topic, or simply ignore the reference altogether. Advertisers also might choose to stop supporting a show that presents misleading information or takes a viewpoint on a topic that they feel is out of step with the public or is too sensitive or controversial.

■ **A role for government?** This issue raises difficult questions about the role of government and the First Amendment freedom of the creative community. Few would argue that it would be bad for the government to encourage the entertainment industry to play a positive role in information dissemination. But whether the government should be involved in monitoring content, providing financial incentives, or directly dictating or encouraging specific content is a broader and highly controversial question that lies beyond the scope of this analysis.

ENTERTAINMENT TELEVISION reaches a wide audience, and in the end, whether one feels that entertainment television does more good or more harm, it will continue to convey health information to its audience whether by design or by default. This study shows that the content has an impact on that audience. It seems, therefore, worth the effort to try to make the content as accurate and science-based as possible, and to take advantage of opportunities to convey public health messages that can improve health and sometimes save lives.

#### NOTES

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  6. Ibid.
  7. N. Signorelli, *A Content Analysis: Reflections of Girls in the Media* (Oakland and Menlo Park, Calif.: Children Now and Kaiser Family Foundation, April 1997).
  8. Interviewing dates and sample sizes of each of ten Kaiser Family Foundation surveys to assess the impact of watching ER on regular ER viewers are as follows: For the three surveys conducted around the episode with the emergency contraception vignette: Preshow, n = 400, 31 March to 9 April 1997; Postshow, n = 305, 11-16 April 1997; Follow-up, n = 301, 25-30 June 1997. For the four surveys conducted over the course of the 1997-1998 season: Baseline, wave 1, n = 505, 11-23 September 1997; wave 2, n = 502, 21 November to 3 December 1997; wave 3, n = 500, 7-16 March 1998; and wave 4, n = 501, 20-31 May 1998. For the three surveys conducted around the episode with the HPV vignette: Preshow, n = 400, 8-16 February 2000; Postshow, n = 301, 25-29 February 2000; and Follow-up, n = 299, 3-16 April 2000.
  9. Response rates for each of ten Kaiser Family Foundation surveys to assess the impact of watching ER on regular ER viewers are as follows: For the three surveys conducted around the episode with the emergency contraception vignette: Preshow, 41 percent; Postshow, 27 percent (36 percent recruit × 76 percent Postshow); and Follow-up, 54 percent. For the four surveys conducted over the course of the 1997-1998 season: Baseline, wave 1, 58 percent; wave 2, 56 percent; wave 3, 57 percent; and wave 4, 57 percent. For the three surveys conducted around the episode with the HPV vignette: Preshow, 28 percent; Postshow, 24 percent (34 percent recruit × 72 percent Postshow); and Follow-up, 27 percent. Response rates were calculated by using the American Association for Public Opinion Research standard definition RR3 as described in *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for RDD Telephone and In-Person Household Surveys* (Ann Arbor, Mich.: AAPOR, 1998). The experimental survey component presented challenges for response rates given the incidence of regular ER viewers (only one in four households had a regular ER viewer) and the short period available (one week between episodes) for testing the immediate impact of the specific vignettes. This latter fact prompted us to use a presurvey recruitment phase for the postshow portion of the surveys (reflected in the breakdown of the response rates for the postshow surveys above). With regard to the response rates, several things are worth noting. First, we do use a standard and fairly conservative measure for calculating response rates as proposed by AAPOR. Second, response rates alone should not be taken as a guide to the reliability of survey data. Also, any systematic bias that might have resulted from nonresponse on the natural experiments would likely persist across all three surveys, which mitigates concern about nonresponse having an effect on retention rates among the groups surveyed.
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