

Can Metaphors and Analogies Improve Communication with Seriously Ill Patients?

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Abstract

Objective: It is not known how often physicians use metaphors and analogies, or whether they improve patients' perceptions of their physicians' ability to communicate effectively. Therefore, the objective of this study was to determine whether the use of metaphors and analogies in difficult conversations is associated with better patient ratings of their physicians' communication skills.

Design: Cross-sectional observational study of audio-recorded conversations between patients and physicians.

Setting: Three outpatient oncology practices.

Patients: Ninety-four patients with advanced cancer and 52 physicians.

Intervention: None.

Main outcome measures: Conversations were reviewed and coded for the presence of metaphors and analogies. Patients also completed a 6-item rating of their physician's ability to communicate.

Results: In a sample of 101 conversations, coders identified 193 metaphors and 75 analogies. Metaphors appeared in approximately twice as many conversations as analogies did (65/101, 64% versus 31/101, 31%; sign test $p < 0.001$). Conversations also contained more metaphors than analogies (mean 1.6, range 0–11 versus mean 0.6, range 0–5; sign rank test $p < 0.001$). Physicians who used more metaphors elicited better patient ratings of communication ($\rho = 0.27$; $p = 0.006$), as did physicians who used more analogies (Spearman $\rho = 0.34$; $p < 0.001$).

Conclusions: The use of metaphors and analogies may enhance physicians' ability to communicate.

Introduction

PHYSICIANS WHO PROVIDE CARE to patients with serious illness face daunting challenges of communication. For instance, physicians often need to deliver painful news about a new diagnosis, relapse, or worsening prognosis. Patients also look to their physicians for help with complicated health care choices about treatment options. In these conversations, physicians should provide information empathically and openly, while supporting patients' and families choices under difficult and emotionally trying circumstances.^{1,2}

Previous studies have documented numerous problems with communication in this setting. For instance, physicians are often unaware of patients' preferences for life-sustaining

treatment,³ and patients and families may feel they do not receive enough information about the patient's illness and treatment options.^{4–6} Together, these problems are often reflected in families' unfavorable recollections of their communication with health care providers.^{4,6–8}

In other health-related conversations, physicians and patients may use metaphors and analogies to enhance their ability to communicate effectively.^{9–17} However, it is not known how often physicians use metaphors and analogies to enhance communication with patients who are seriously ill. Nor is it known whether metaphors and analogies improve patients' perceptions of a physician's communication. Therefore, the goals of this study were to describe how metaphors and analogies are used in conversations between physicians and patients with advanced cancer and to determine whether they are

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Accepted September 23, 2009.

associated with more favorable patient perceptions of physicians' communication.

Methods

This report presents data from the Studying Communication in Oncologist-Patient Encounters (SCOPE) project, a three-site study from Duke University, the Durham Veterans Affairs Medical Center, and the University of Pittsburgh. Details of the study have been previously reported.¹⁸ This protocol was approved by each institution's Institutional Review Board.

We approached all ($n = 110$) medical, radiation, and gynecological oncologists who saw patients in the radiation oncology, surgical and medical oncology, obstetrics and gynecology (OB-GYN), brain tumor, and bone marrow transplant clinics to participate in the study. A faculty investigator met with each oncologist to introduce the study. If oncologists agreed to participate, they signed a consent form and completed a baseline survey. Participating oncologists were offered \$25 gift certificates on completion of the audio recordings of their visits.

We asked oncologists or their midlevel provider staff to identify patients with metastatic cancer whose death within 1 year would not be a surprise. These patients were sent an introductory letter and brochure that included a toll-free number that they could call to refuse participation. Patients who did not call within 10 days were contacted by phone by interviewers who described the study and requested patients' permission to approach them at their next scheduled oncology visit. Patients were eligible if they spoke English, received primary oncology care at one of the three study sites and had access to a telephone. Patients were excluded if they were unable to provide informed consent as assessed by the interviewer, if they were seen primarily by nonphysician providers or medical residents, or if they were hearing impaired or had a speech disorder. We asked all health care providers and family members present to sign a consent form that allowed their voices to be audio-recorded.

Within 1 week of the visit, patients completed a telephone interview in which they evaluated their oncologist's communication using a six-item subscale adapted from the Interpersonal Processes of Care (IPC) instrument. This scale consists of four items that assessed the physician's ability to communicate clearly, and two items that assessed the physician's ability to listen. Each item has is scored from 1 to 5 and the scale has demonstrated adequate homogeneity (Cronbach $\alpha = 0.76$).¹⁹

We selected a random sample of approximately 25% of conversations for coding. First, two coders reviewed recordings of each conversation. The goal of this stage of coding was to identify all examples of physicians' use of figurative language, which we defined as an instance of communication in which the physician intentionally illuminates the patient's experience by creating a picture, scenario or example different than the patient's actual experience.²⁰ An instance of the physician's speech was coded as figurative language if it was identified by at least one of the two coders. In pilot testing ($n = 30$), we found that this approach identified over 95% of figurative language compared to review by three coders and the lead author (D.C.).

Next, two investigators who were not involved in the first phase of coding (D.C. and J.F.) reviewed transcripts of these

examples and eliminated those that involved figures of speech or idioms. For instance, descriptions of a treatment option as a "silver bullet" or a "home run" were not coded. Similarly, technical descriptions of radiographs or nuclear medicine scans as "active" or "hot" were not coded. These phrases were ubiquitous among these conversations, which made accurate coding exceedingly difficult. Moreover, we reasoned that their routine use in everyday conversation would make them less likely to enhance communication.

Finally, the same two investigators classified each of the remaining examples as either a metaphor or an analogy. We distinguished between these two types of figurative language, because we reasoned that analogies tend to be more direct, whereas metaphors rely more on concepts and images. Therefore, each might have a different effect on patients' perceptions of communication.

We defined a metaphor as figurative language in which one concept is described as being equivalent to another, often imbuing the first with qualities that are difficult to describe in other ways ("Think of A as if A were B").²¹ For instance, infectious disease and the body's immune response might be described in terms of a war with attackers and defenders.²² We defined an analogy as figurative language in which the similarity between two things is described in terms of a property they have in common ("A and B are similar with respect to C")²¹ For instance, one might describe a lung mass as being the size of a quarter, or a bile duct as having the shape of a hollow straw. Disagreements were resolved by consensus between these two investigators (D.C. and J.F.).

To evaluate the association between metaphor or analogy use and patient ratings of communication, we assumed that each physician's communication style would determine his or her use of metaphors and analogies. Therefore, we used the physician rather than the patient as the unit of analysis. Each physician's use of metaphors or analogies was averaged across his/her conversations, as were the patients' ratings of the physicians' communication.

In estimating sample size, we used a conservative estimate of power for a Pearson correlation coefficient ($1 - \beta > 0.90$), anticipating that the nonparametric alternative (Spearman correlation coefficient) would be required. We estimated that a sample of at least 52 physicians would ensure adequate power to detect a strong association (correlation coefficient > 0.50) between the number of metaphors or analogies each physician used and the patient's perception of his/her communication ($p = 0.025$ adjusted for multiple comparisons).²³ Stata (version 8.0, StataCorp, College Station, TX) was used for all quantitative analysis.

Results

Of 110 oncologists, 21 (19%) were ineligible because they did not see enough patients. An additional 15 (14%) refused, and 74 (67%) consented, contributing between one and four conversations (mean: 2.1). There were no differences in demographic or practice characteristics between those who consented and those who did not.

A total of 101 conversations were selected at random from the entire set of 398 conversations. These conversations involved 94 patients and 52 oncologists (Table 1). There were no significant differences in demographic characteristics between those patients who were selected and those who were not.

TABLE 1. PATIENT AND ONCOLOGIST CHARACTERISTICS

Patient characteristics (<i>n</i> = 94)	
Age: mean (range)	58 (23–86)
Gender/male: <i>n</i> (%)	51 (54%)
Race: <i>n</i> (%)	
White	76 (81%)
Black/African American	15 (16%)
American Indian or Alaskan native	1 (1%)
Asian/Pacific Islander	1 (1%)
Other	1 (1%)
Education: <i>n</i> (%)	
Eighth grade or less	2 (2%)
Some high school	4 (4%)
Completed high school or GED	22 (23%)
Some college	29 (31%)
Completed college	24 (26%)
Graduate school	13 (14%)
Marital status: <i>n</i> (%)	
Married	77 (82%)
Divorced or Separated	8 (8%)
Widowed	4 (4%)
Never married	5 (5%)
Length of relationship with oncologist: <i>n</i> (%)	
Less than 6 months	32 (34%)
6 to 12 months	24 (26%)
1 to 3 years	26 (28%)
More than 3 years	12 (13%)
Previous visits to this oncologist: <i>n</i> (%)	
0–2	23 (24%)
3–5	15 (16%)
6 or more	55 (58%)
Don't know	1 (1%)
Oncologist characteristics (<i>n</i> = 52)	
Specialty: <i>n</i> (%)	
Medical oncology—solid tumor	20 (38%)
Hematology oncology—liquid tumor	11 (21%)
Medical oncology—general, solid, and liquid tumor	15 (29%)
Gynecological oncology	2 (4%)
Radiation	4 (8%)
Age: mean (range)	48 (33–64)
Gender/male: <i>n</i> (%)	39 (75%)
Race: <i>n</i> (%)	
White	43 (83%)
Black/African American	1 (2%)
American Indian or Alaskan native	0 (0%)
Asian/Pacific Islander	5 (10%)
Other	3 (6%)
Patient hours/week: mean (range)	31 (4–130)
Years of practice in oncology: mean (range)	19 (5–35)

A total of 361 examples of figurative language were identified in the first stage of coding. In the second stage, 93 (26%) were excluded as figures of speech or idioms (e.g., a “home run,” a “hot” nuclear medicine scan). Of the remaining 268 examples, 193 (72%) were coded as a metaphor and 75 (28%) were coded as an analogy. Interrater agreement between the two investigators (D.C. and J.F.) was high for both metaphors ($\kappa = 0.88$) and analogies ($\kappa = 0.84$).

Metaphors appeared in approximately twice as many conversations as analogies (65/101, 64% versus 31/101, 31% sign test $p < 0.001$). Conversations also contained more metaphors than analogies (mean 1.6, range 0–11 versus mean 0.6,

range 0–5; sign rank test $p < 0.001$). However, both the incidence (χ^2 $p < 0.001$) and the number (Spearman $\rho = 0.50$; $p < 0.001$) of metaphors and analogies were highly associated. No associations were found between the use of metaphors or analogies and patient or oncologist characteristics.

Analogies

Analogies ($n = 75$) generally incorporated everyday concepts with which patients were likely to be familiar (Table 2). Most (48/75; 64%) used nonmedical examples. For instance, one oncologist explained that the rash produced by a chemotherapy drug typically looked like a sunburn. Another described a nodule as having the size and shape of a pea. Close to one third of these nonmedical analogies were examples that may have been outside the patient's experience (15/48; 31%). For instance, one oncologist warned that after a bone marrow biopsy the patient would feel like he had been “kicked by a horse.” Another explained that a patient's participation in an early phase trial was “like being a pioneer.” But analogies also made use of medical concepts with which the patient was familiar (27/75; 36%; e.g., radiation therapy was like a diagnostic radiograph, or the experience of receiving one biologic agent was like that of receiving another).

Most analogies were brief and were described in a few seconds. But some were more extended. For instance, one oncologist used the example of pain to convince a patient that depression should be treated even when it is an understandable response to a serious diagnosis. Another compared the long-term treatment strategy for ovarian cancer to that of other chronic diseases in which a cure was also impossible, such as diabetes or hypertension. These extended analogies typically took more than a minute to communicate.

Metaphors

Most of the metaphors that were identified (157/193; 83%) fell into one of four categories. Many, for instance, followed agricultural themes (e.g., a description of stem cells as “seeds”; 61/32%). Others were overtly militaristic (e.g., a description of the host's immune system as a defending army; 42/22%). Mechanical metaphors, too, were common (36/19%). For instance, one physician described a cell receptor as the “on” switch, and another described two possible treatment regimens as being in “high” versus “low” gear. Sports metaphors were also common (18/9%). For instance, one physician described a patient's treatment regimen as a marathon, rather than a sprint. The remaining metaphors ($n = 36$) were either unique, or fell into multiple categories.

Although metaphors were usually brief, taking up only a few seconds of the conversation, some required more time to communicate. For instance, in reassuring a patient about the implications of a positive bone scan, one oncologist used the metaphor of a building's structural supports, explaining that a positive result only indicated that there was some tumor involvement in that bone but that most of the bone was unaffected (“... the end has the breast cancer but the middle is fine”; Table 2).

In another extended example, the oncologist described dysplastic cells as weeds that have overgrown a garden. This metaphor was used, first, to explain the patient's pancytopenia (“[The dysplastic cell line] chokes everything else out”). Next, the oncologist extended the metaphor to explain the

TABLE 2. EXAMPLES OF METAPHORS AND ANALOGIES

<i>Analogies</i>	<i>Metaphors</i>
The daily treatments are only about 15–20 minutes. You know, it's pretty much just like getting an x-ray. The rash will look just like a sunburn.	A spindle is a kind of highway that moves the chromosomes apart. Your bone marrow is an elephant. It has a long memory. It remembers everything it has ever seen before.
You won't feel anything. The energy goes right through you—like getting an x-ray. It's like saying you have a little bit of cancer or a lot of cancer, you know, it's not very helpful. It's helpful sometimes for us to decide who to treat or who not to treat, but it's kind of like being a little bit pregnant, having a little bit of cancer.	What we're doing, in essence, is to give you an entirely new immune system. The stem cells we have are like tomato seeds, and think of the tomato fruit as the cells that circulate in the blood. So the stem cells are like seeds we take out of you so we can give very high doses of chemotherapy that can damage what's left in you and then we give you back those seeds so it can regrow.
Interleukin is like the IL-2 you've already taken. [Having a bone marrow biopsy] feels like you've been kicked by a horse. You'll feel as though you have the flu.	[A cell signaling pathway] is the "on" switch for growth. [Your treatment regimen] isn't a sprint. It's more like a long run. A marathon. You have to pace yourself. [The treatment] is the bullet, or missile, that we'll aim at that target.
But like . . . pain, [your depression] still hurts, even though there's a reason for it. It still interferes with your functioning. So we can treat your depression. We can help you.	[A dysplastic cell-line's] like weeds in your garden that take over a garden, it chokes everything else out. And so the way to treat it is to use a weed killer, so you get rid of all that bad stuff. And slowly, the good stuff comes back.
It's like a little pea.	The dendritic cells are the script writers of your immune system.
You know you can live with [ovarian cancer] for a long time. I mean, you can live with diabetes for 50 years. There's a lot of diseases that we don't cure, we just manage. Hypertension, right? We don't cure it, we just give you a pill to take every day that keeps it under control.	A wall in your house has many studs. So one stud in the middle of it has cancer, but the ends are fine. Or in another bone, the end has the breast cancer, but the middle is fine. It's not that it just goes (whistle) through the entire stud.
Participating in an experimental trial is like being a pioneer, of sorts. [A nutritional supplement] is just like a milkshake.	[Regarding your disease-free survival] you're in the top 20% of your class. If it's anything bacterial (the antibiotic) will kill it with a . . . mallet. Not a mallet, what am I thinking of, that word, like, a sledgehammer.

treatment plan of intensive chemotherapy ("And so the way to treat it is to use a weed killer . . ."; Table 2)

Metaphors, analogies, and patients' ratings of communication

Physicians who used more analogies elicited higher (better) patient ratings of communication on the IPC ($N=52$; Spearman $\rho=0.34$; $p<0.001$). Similarly, physicians who used more metaphors also received higher ratings of their communication ($\rho=0.27$; $p=0.006$). The size of the sample was not large enough to construct a multivariable model that would eliminate potential confounders that might explain this relationship. However, we found no such associations between ratings of communication and the patient's age, ethnicity, education, or length of relationship with the oncologist. Nor was there any association between ratings of communication and the oncologist's age, ethnicity, type of practice, time since entering fellowship, gender, site, or clinical hours per week. Finally, there was no association between ratings of communication and the length (in minutes) of the recorded conversation.

We also examined items individually and found that patients reported less trouble understanding physicians who

used more metaphors (Spearman $\rho=0.22$; $p=0.028$) and analogies ($\rho=0.29$; $p=0.003$). Patients were also more likely to report that their physician made sure they understood their health problems when the physician used more metaphors ($\rho=0.24$; $p=0.017$) and analogies ($\rho=0.25$; $p=0.010$).

Associations with other items were heterogeneous. For instance, when physicians used more analogies, patients reported less trouble understanding the words the physician used ($\rho=0.35$; $p<0.001$). But there was no association between responses to this question and metaphor use ($\rho=0.12$; $p=0.223$). Conversely, when physicians used more metaphors, patients were more likely to report that they received enough information ($\rho=0.32$; $p=0.001$). However, there was no relationship between responses to this question and the number of analogies that physicians used ($\rho=0.12$; $p=0.209$).

As expected, there were no associations between either metaphor or analogy use and the two items that were unrelated to the provision of information. For instance, there was no association with patients' perceptions of how well the oncologist listened to them (metaphor $\rho=0.11$, $p=0.272$; analogy $\rho=0.04$, $p=0.683$). Nor was there any association with whether the oncologist gave them enough time to say what they thought was important (metaphor $\rho=0.15$, $p=0.133$; analogy $\rho=0.11$, $p=0.267$).

Discussion

This study found that oncologists frequently use both metaphors and analogies. These examples of figurative language appeared in a wide range of conversations and covered a wide range of concepts. Moreover, they were used by a diverse group of oncologists, in three distinct clinical settings. Together, these results suggest that metaphors and analogies may be a common communication technique.

In addition, these results suggest that metaphors and analogies may be associated with better patient perceptions of communication. In this study, both metaphors and analogies were associated with patients' perceptions of their oncologist's communication overall, and particularly with their perceptions of their oncologist's ability to present information in an understandable way. This finding is important because it suggests that metaphors and analogies may offer a simple and relatively easy way to improve communication. This would be an extension of previous work in the area of cancer communication in which the communication styles of "experts" have been used to build a toolkit of effective communication practices,²⁴ which have been incorporated into training programs and curricula.²⁵

Figurative language cannot take the place of good communication skills that are acquired through experience, role-modeling, and formal training. Indeed, these methods should be essential in helping physicians and other health care providers communicate more effectively.²⁵⁻²⁷ Nevertheless, these results suggest that metaphors and analogies may offer a valuable supplemental strategy that physicians could use to enhance communication.

However, these results also suggest ways in which figurative language could impair honest communication and reduce understanding. For instance, an analogy (Table 2) between ovarian cancer and diabetes might lead a patient to conclude that her prognosis is better than it is. Indeed, it seems likely that figurative language could be used not only to improve understanding, but also to reassure or encourage or convince patients. Thus figurative speech might produce substantial harms if it is used to minimize or obscure important information about a patient's illness trajectory or prognosis.

This study has several limitations. First, because these oncologists agreed to participate in this study, their communication styles may be somewhat atypical of oncologists in general. However, the results reported here constitute a secondary analysis of existing data. Therefore, none of the oncologists in this sample knew that their conversations would be examined to assess the use of metaphors or analogies and there is no reason to believe that these conversations have an atypical incidence of figurative language.

Second, we cannot determine whether the use of figurative language has an independent effect on patients' perceptions of the oncologist's communication skills. Instead, it is possible that oncologists who are more skilled at communicating also tend to use figurative language. However, we did not find an association between the use of metaphors or analogies and the two scale items that assessed the oncologists' ability to listen. If oncologists who used figurative language also had better overall communication skills, one would expect those items to be associated with the use of metaphors and analogies. Nevertheless, given the modest associations described here

(correlation coefficients less than 0.40), it is likely that figurative language is only one factor that contributes to effective communication. Further research is needed, with larger sample sizes that permit multivariable modeling, to define the independent effect of figurative language on patients' perceptions of communication.

Third, we did not use a *p* value adjusted for multiple comparisons in evaluating associations between the use of figurative language and individual items. Although we did use an adjusted *p* value (0.025) for the main outcome of interest, doing so for all comparisons would not have been feasible for such a small sample. Therefore, the associations with the items reported here are exploratory and should be interpreted with caution.

Fourth, this study did not include objective measures of the outcomes of communication. For instance, we could not determine whether metaphors and analogies improve understanding or reduce decisional conflict. This is particularly important in light of the possibility that figurative language may be used to reassure or convince, rather than to improve understanding.¹⁷ However, randomized controlled trials of communication interventions in advanced cancer often rely on patients' perceptions as a primary or secondary end point.^{25,28-30} Nevertheless, further research should focus on these and other objective outcomes.

Although conversations near the end of life can pose daunting challenges to physicians, these results suggest that oncologists frequently use figurative language in conversations that they perceive to be difficult. Moreover, the creative use of figurative language may offer an innovative way to improve communication in this setting. Therefore, in addition to formal efforts of physician education, metaphors and analogies might offer additional opportunities to enhance physicians' communication skills, if they are used honestly and accurately, with the intention of improving understanding.

Acknowledgments

This work was funded by grants from the Greenwall Foundation (Casarett) and from the National Cancer Institute (R01-CA100387-01) (Tulsky).

Author Disclosure Statement

No competing financial interests exist.

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