
Graphic medicine: use of comics in medical education and patient care

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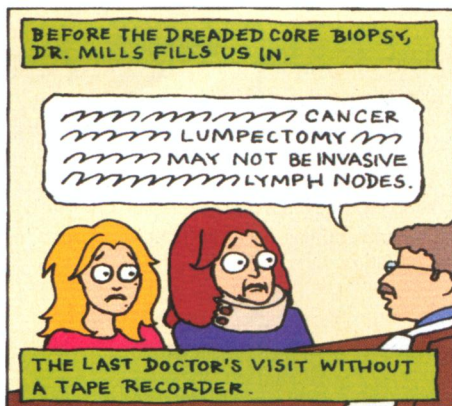


Fig 1 | *Cancer Vixen*: a personal story of breast cancer

Graphic medicine: use of comics in medical education and patient care

Graphic stories, or adult themed comics, are a popular new cultural trend. **Michael J Green** and **Kimberly R Myers** argue that they are also a valuable tool for medicine

Some healthcare professionals—especially those working in public health, with young people, or with non-native speakers—have begun to use graphic stories for patient care and education.¹⁻³ One reason this practice is not more widespread is probably because most doctors have not considered its merits. We believe that graphic stories have an important role in patient care, medical education, and the social critique of the medical profession. What follows is an introduction to graphic stories, with some examples of what they are, how and why they work, and how they can enhance teaching and patient care.

Evolution of a medium

Comics have evolved over the past 100 years⁴ and are now viewed as a legitimate form of literature. Graphic stories are prominent in bookstores, film, and television, having expanded their audience beyond young people to include serious minded adults keen to learn more about myriad weighty issues ranging from philosophy⁵ to political revolutions.⁶

Recently, a distinctive sub-genre of graphic stories that we call graphic pathographies—illness narratives in graphic form—has emerged to fill a niche for patients and doctors. These graphic pathographies can be helpful to patients wanting to learn more about their illness and find a community of similarly affected people. Graphic pathographies also provide doctors with new insights into the personal experience of illness (especially regarding concerns patients might not mention in a clinical setting) and misconceptions about disease and treatment that could affect compliance and prognosis.

Graphic pathographies depicting cancer

Among the most compelling examples of graphic pathography in the past few years are *Cancer Vixen*⁷ and *Mom's Cancer*.⁸ Though both chronicle real people's experiences, they have different intended audiences and publication history.

Cancer Vixen is the story of the cartoonist Marisa Acocella Marchetto's personal experience with breast cancer. Editors at *Glamour* commissioned *Cancer Vixen* and promoted it as

a bestseller with "attitude," targeting a specific readership of fashion conscious, affluent, female urbanites in early to mid-adulthood. *Mom's Cancer*, by Brian Fies, had a more modest beginning. Written from the caregiver's point of view and serialised on the internet, it documents his mother's metastatic lung cancer. The story was so popular that it won an Eisner award for best digital comic in 2005 and was published as a book in 2006.

Juxtaposing text and image

Although graphic pathographies are often thematically similar to standard textual accounts of illness, their powerful visual messages convey immediate visceral understanding in ways that conventional texts cannot. An excellent example of this advantage is evident when Marchetto and her mother visit her doctor just before he does a biopsy on the mass in her breast (fig 1). Throughout the book Marchetto provides context in lime green narrative boxes that supplement the characters' text bubble dialogue. Here, the lower text box explains an important milestone

WE LEARN BY DOING

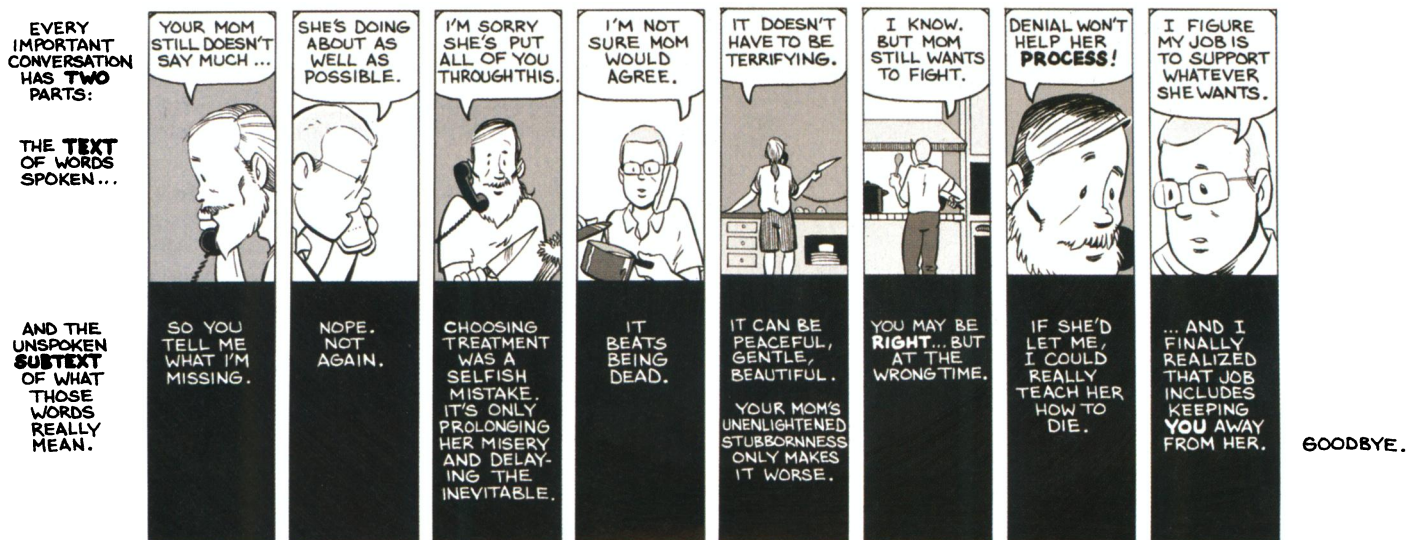


Fig 2 | In *Mom's Cancer* the reader simultaneously has access to words and thoughts of the characters, illustrating that what we say is not always what we mean

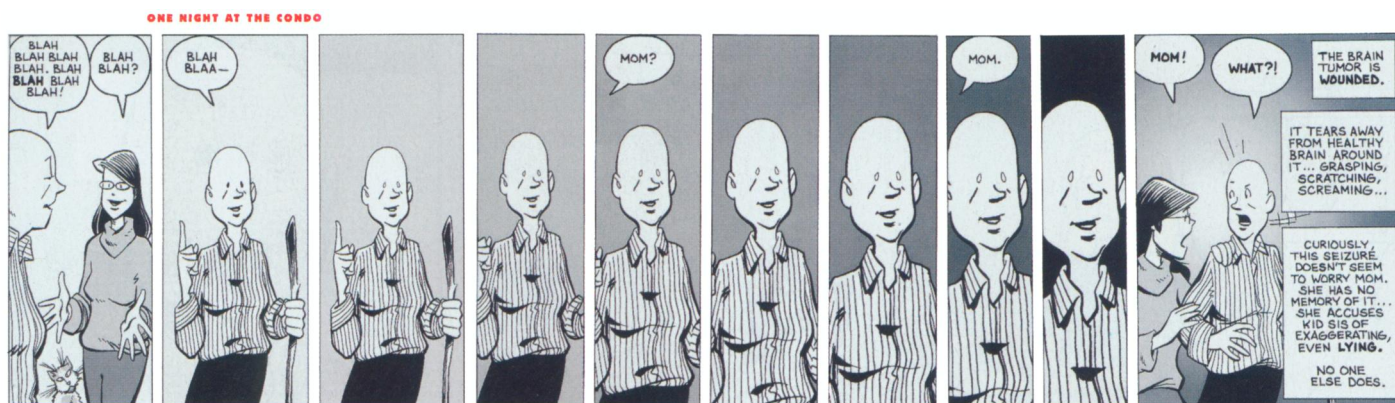


Fig 3 | Ten panels in which Fies illustrates his mother having what seems to be an absence seizure

in her process for office visits: Marchetto had used a tape recorder sporadically before, but she now realises it should become a constant fixture in such meetings. While Marchetto's narrative clues are helpful, it is the visual centre of the panel that imparts pithy truth. Marchetto and her mother are depicted bug eyed and rigid with fear as they listen to the doctor's explanation of the upcoming procedure. Anxiety ridden, neither hears much of what the doctor says. Marchetto conveys this with scribbles punctuated by isolated words and phrases that do register consciously: "cancer," "lumpectomy," "may not be invasive," and "lymph nodes."

This single panel is an important reminder to doctors that patients rarely absorb much of what doctors try to explain, and it conveys to patients the all too familiar feeling of being overwhelmed by a diagnosis and the technical details of treatment. The panel also shows how complex information can be efficiently and effectively communicated using the comic form: just consider the amount of space and time required to communicate this information with written words (that is, the two paragraphs you just read) versus the single 50 mm×50 mm frame.

Mom's Cancer similarly accomplishes something that is almost impossible to do with pure text: the representation of a conversation along with the hidden, unspoken meaning behind the words. Depicting a telephone call between himself and his stepfather, Fies reveals in each of eight panels both the spoken conversation and the unspoken subtext of what those words really mean (told in separate boxes below each illustration). In this ingenious way, the reader simultaneously has access to both words and thoughts of the characters, illustrating that what we say is not always what we mean (fig 2).

Manipulating the image

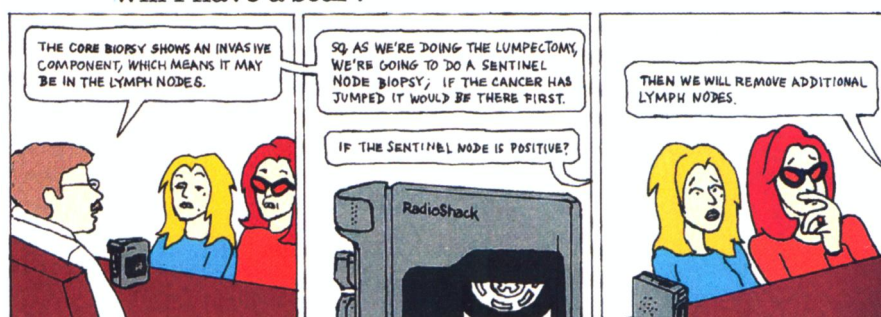
The impact of graphic stories comes not just from juxtaposing text and images but from manipulating images themselves. Fies uses this

technique in 10 panels in which he illustrates his mother having what seems to be an absence seizure (fig 3). In the first panel, his mother and sister are having a conversation. In subsequent panels, the mother assumes an unchanged pose while her eyes fade from black to white, depicting the vacant stare of someone experiencing a lapse in consciousness. In each panel, the "lens" zooms from a three quarter body

shot to a tight head and shoulder shot, while the background changes from grey to black. This ominous darkening simulates the daughter's growing anxiety as everything except her mother's vacancy recedes into the background. These powerful images illustrate the patient's and family member's experience in a way that standard clinical reportage could never achieve with such economy.

4:00. DR. MILLS'S OFFICE. I HAD MY Qs READY.

- How long will I be in the hospital?
- What kind of anesthesia am I getting?
- How will my normal routine be restricted?
- How much discomfort will I have?
- What kind of bandages will I have after surgery?
- How should I care for the bandages after surgery?
- When do I get the bandages off?
- Will I have a scar?



- How many lymph nodes are you taking out?
- What are my chances of developing lymphedema?
- Are there any side effects from surgery?
- When should I come back for a follow-up visit?
- What kind of care will I need after surgery?
- How soon can I go back to my regular schedule?
- Does Saint Vincents take Amex?
- Or can I write a check?

Fig 4 | Use of font style and size and position to indicate questions' importance



Fig 5 | The reader, not the artist, must fill in the blanks and complete the narrative

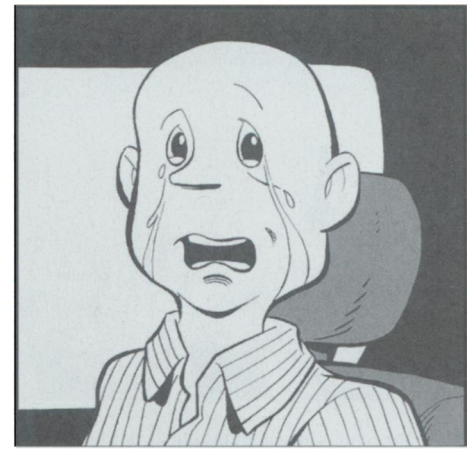


Fig 6 | The face of Fies's mother

Visually altering the text

Extending the manipulation of visual images, Marchetto manipulates the appearance of text in ways that are unusual for conventional books. At various points in her treatment, Marchetto records the questions she needs to ask her doctor, and they dominate the page. In a traditional book, the questions would appear as a list; and to convey the relative urgency of each, the author would have to stipulate that hierarchy overtly. In contrast, Marchetto conveys what are, to her, the most crucial questions by the style and size of the font, as well as where she positions the questions on the page (fig 4). Early on, during a visit when she needs to ask basic questions like “How long will I be in the hospital?” Marchetto is nevertheless most concerned about how she will pay, a central preoccupation throughout the story. Most of the questions are presented in roughly 16 or 20 point font, but Marchetto uses 30 point bold font to ask, “Does Saint Vincents take Amex?” Marchetto reminds doctors that patients often don't—or can't—convey the depth of their anxiety about issues the doctor might not find as relevant to the clinical encounter. Such depictions implicitly offer important social critiques of the medical profession.

Using graphic stories in teaching and patient care

Medical education

Although graphic texts are not yet widely integrated into medical education, educators in other fields have successfully used them to teach topics as diverse as professional ethics,⁹ creative writing and composition,¹⁰⁻¹² literature,¹³ and physics.¹⁴ Graphic stories—like film, fiction, poetry, and visual art, which have already been integrated into medical curriculums—are engaging ways to enhance medical education. For example, to foster empathy, you might assign and discuss graphic pathographies that give insights into different aspects of the ill-

ness experience. During preclinical years, such stories remind students that the vast body of scientific knowledge they are trying to master will one day help real people. During clinical and residency years, graphic pathographies can reinforce that healing a patient entails more than treating a body. When assigning book length works is not viable, students can consider smaller segments (like those above) in greater detail to understand discrete elements of a medical encounter. The use of images with text universalises the illness experience, facilitating a greater connection with characters.¹⁵

Graphic stories can also be used to teach observational skills. To read a comic effectively, you must understand not only what is overtly seen and said but also what is implied. This is because much of the action takes place outside the boundaries of comic panels in the blank space known as the gutter. Thus, readers of comics, like doctors in the exam room, must determine meaning by inferring what happens out of sight and without words. For example, in figure 5 Marchetto writes only: “Don't be scared.” Yet these panels communicate much information: that the patient has something to be scared about, that she is isolated and guarded, that her interaction with the healthcare provider is mediated via technology, and so on. Notably, it is the reader, not the artist, who must fill in the blanks and complete the narrative.

Such skills parallel those used for diagnostic reasoning, where a doctor typically has access to incomplete information but must deduce a diagnosis from available data.¹⁶ In keeping with research in medical education showing that visual art improves students' diagnostic skills,¹⁷⁻¹⁸ reading graphic stories may likewise enhance students' observational and interpretive abilities. Reading a range of such stories could cultivate awareness of the broader social and political issues germane to medicine and thus further students' cultural competence. One

of us (MJG) explored these potentials in a course on comics and medicine for fourth year medical students.¹⁹

Patient care

Graphic stories have been used to promote public awareness and enhance patient care for various problems including substance abuse, HIV, diabetes, and mental illness.²⁰⁻²³ The medium is particularly appropriate for educating patients, since an increasingly diverse population poses challenges to effective verbal communication. Visual understanding is intuitive in ways that verbal understanding may not be. Consider how our increasingly globalised world relies on iconographic meaning in, for example, aeroplane safety instructions, street signs, iPhones, advertising campaigns, and pain rating scales. Fies needs nothing more than the image of his mother's face to convey the universal experience of anguish (fig 6).

Research has shown how combining pictures and text enhances understanding, as the activities of reading and viewing activate different information processing systems within the brain.²⁴ This combination also fosters connections between new information and existing knowledge, thereby increasing recall of health information, especially among those with low literacy.²⁵ This process is even more effective when pictures overlap with text, are explanatory, and are engaging.²⁶

Graphic pathographies can also help patients and their families better understand what to expect of a certain disease. For example, a doctor might suggest that a woman with newly diagnosed breast cancer read *Cancer Vixen*. This approach accomplishes several things. On the most basic level, the doctor could use portions of the book to describe the diagnosis and prognosis and to elicit the patient's treatment preferences. Reading a graphic pathography also gives the patient something concrete on which



Could graphic medicine work in medical education? To follow the discussion on doc2doc, the *BMJ*'s global clinical online community, visit <http://tinyurl.com/ylddu5g>
 doc2doc.bmj.com

FURTHER READING

Some graphic stories with themes relevant to medicine

- Harvey Pekar, Joyce Brabner. *Our Cancer Year*. Four Walls Eight Windows, 1994
- David Small. *Stitches*. WW Norton, 2009
- David B. *Epileptic*. Pantheon Press, 2006
- Brian K Vaughan, Pia Guerra. *Y: The Last Man*. DC Comics, 2008
- Apostolos Doxiadis, Christos Papadimitriou. *Logicomix: An Epic Search for Truth*. Bloomsbury, 2009
- Mark Schultz, Zander Cannon, Kevin Cannon. *The Stuff of Life: A Graphic Guide to Genetics and DNA*. Hill and Wang, 2009

Resources for understanding and using comics

- Scott McCloud. *Understanding Comics the Invisible Art*. HarperPerennial, 1994
- Will Eisner. *Comics and Sequential Art*. WW Norton, 2008
- Jessica Abel, Matt Madden. *Drawing Words and Writing Pictures*. First Second, 2008

to focus, thereby diverting her attention and potentially lessening anxiety. The book might also evoke questions that the patient could discuss with her doctor—questions she might never have considered otherwise. Armed in this way with specific questions, a patient might feel more focused and in control as she plans follow-up visits with her doctor. She might also feel less isolated and more hopeful, realising that another person has had similar experiences—and lived to tell them. Although these ideas have not yet been systematically evaluated, they raise several interesting hypotheses that could be empirically tested.

Next steps

Integration of graphic stories into medical education and practice is not without challenges. The first is to contest doctors' and patients' biases against graphic stories—including the misperception that they are juvenile, simplistic, or frivolous. Another task is to identify appropriate graphic stories and get into the hands of those patients who are most able to benefit from them. In doing so, doctors should ensure that patients do not feel "brushed off" when given a book about a disease or condition; a graphic pathography is obviously no substitute for a substantive conversation and caring relationship.

Research can help to dispel doctors' scepticism about the use of graphic stories. Recent publications have featured graphic stories as a topic of historical analysis²⁷ and disability studies,²⁸ and as a method for combating illiteracy,²⁹ but few empirical studies exist on their effect in medicine. Future research from a wide range of disciplines might focus on ways to show the effectiveness of this tool in medicine. Some questions to consider include:

- Does the use of graphic stories in medical education improve students' observational and diagnostic skills, and does it affect empathy?

- How might graphic stories enable the emergence of multiple voices and thereby cultivate broader awareness of relevant issues?
- Do patients like reading graphic pathographies and find them helpful?
- Can graphic pathographies enable patients to ask more informed questions or improve their understanding of diagnosis and prognosis?
- Does the use of graphic pathographies affect the doctor-patient relationship?

Conclusions

Graphic stories are a novel and creative way to learn and teach about illness, and we believe the themes and structure of this medium will resonate with an increasingly large number of medical professionals. We have offered some examples of how this medium works and ways it might be integrated into medical education and practice, but this is only the beginning. We look forward to the ideas and experiences of others, and to a robust research agenda that rigorously evaluates the impact of graphic stories on educational and clinical outcomes.

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Contributors and sources: Both authors teach ethics and humanities to medical students. MJG has a life long interest in comics and visual art and in using these media for improving communication and learning. KRM became interested in the potential for graphic pathographies while researching various forms of health self help books. Both authors contributed equally to the manuscript and will act as guarantors.

Competing interests: None declared

Provenance and peer review: Not commissioned; externally peer reviewed.

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