Evidence vs. Emotions

How to Navigate Health Data to Empower Patients in Health Decision-Making

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Public Health

Public health is "the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals."

Public Health Promotion

Public Health History started with learning about acute disease and its prevention via:

- **Disease science**
  - Such as Pasteur discovering harmful bacteria in milk causing spoilage

- **Sanitation**
  - John Snow’s work regarding cholera and sanitation

- **Vaccines**
  - Pasteur developed first vaccines for rabies and smallpox from weakened viruses

- **Vector management**
  - Health officials spraying/emptying swimming pools at foreclosed homes to combat for mosquitos carrying West Nile

- **Medicines**

- **Quarantine**
  - Still done routinely for travelling animals and produce

- **Public Education**
  - you’ve all seen the ads, brochures and posters
Public Health Promotion

Chronic disease costs have shifted emphasis more to prevention, and this is where the public’s work comes in:
Each person to manage their own health, by reducing prevalence of behavior-related disease:

- Cardiovascular diseases
- Type II diabetes
- Many types of cancer—heart, lung, bladder, etc.
Public Health Promotion

Disease Promoting Behaviors:

- Smoking
- Overeating/Poor nutrition
- Chronic Inactivity
- Drug/Alcohol abuse
- Unsafe Sex
Primary problem is getting “buy-in” or perception of relevant importance.

Historically has been getting people’s attention with fear.
Lee H, Turkel JE, Cotter SP, Milliken JM, Cougle J, Goetz AR, Lesnick AM.

“Results showed that behavioral and somatic aspects of health anxiety were significantly associated with attentional biases toward personally relevant threat words, even after controlling for negative affect, anxiety sensitivity, and experience of actual medical conditions.

Additional analyses revealed that these biases reflected difficulty disengaging attention from threat rather than a facilitated detection of threat. In contrast, illness-related cognitions were found to be unrelated to attentional biases.“
The role of coping appraisal in reactions to fear appeals: do we need threat information?
Ruiter RA, Verplanken B, Kok G, Werrij

Fear appeal theory postulates a multiplicative relationship between threat information and coping appraisal on fear control (e.g., avoid thinking about breast cancer to reduce feelings of fear) and danger control (e.g. motivation to perform monthly breast self-examination to detect breast cancer).

That is, the effects of threat information on measures of both coping modes are moderated by beliefs about one's ability to cope with the presented threat. However, in the present study no support for an interaction between threat information and coping appraisal was found on both coping modes. Instead threat information seems to contribute positively to fear control and not to danger control, whereas coping appraisal contributed positively to danger control and negatively to fear control. The results thus suggest that we might do without threatening information in persuading people to adopt health-promoting behaviours.
Low adherence to influenza vaccination campaigns: is the H1N1 virus pandemic to be blamed?


“...The communication strategy adopted by the mass media was an important element during the pandemic:

- The absence of clarity contributed to the spread of a pandemic phobia that appeared to result more from the sensationalism of the campaign than from infection with the [bird flu]....

- One relevant effect of the media coverage was the extremely low adherence rate to the vaccination campaign for the 2009-2010 and 2010-2011, especially among the high-risk population and health care workers.

- One positive consequence was, however, the spread of preventive hygiene measures, such as hand washing. “
The necessity to communicate briefly and succinctly can lead to misleading simplifications and, in case of cancer screening, to the trivialization of a behaviour's consequences and adverse effects. Also, many campaigns do not intend to educate and inform, but try to persuade target persons of a certain behaviour, using emotions such as fear. This has led to social marketing being criticized as manipulation. Sometimes, social marketing campaigns cause stigma and discrimination of certain population subgroups, e.g. obese or HIV-positive people....
Public Perception of Threat: too much fear sabotages

Do you remember when it was called the C-word?

“Before Ford spoke out, "People got cancer, they closed their doors and that's the last anyone heard of them. There was no public discussion," says Barbara Brenner, former executive director at Breast Cancer Action in San Francisco.

"She showed people that you can live with cancer, that it's not a death sentence."

-----“Former First Lady Betty Ford dead at 93”

By Andrea Stone, USA TODAY  7/9/2011
Now people can announce to a roomful of strangers that they are a cancer survivor, and the room will break into applause.
Nancy G. Brinker promised her dying sister, Susan G. Komen, she would do everything in her power to end breast cancer forever. In 1982, that promise became Susan G. Komen for the Cure® and launched the global breast cancer movement.

Komen is the world's largest grassroots network of breast cancer survivors and activists fighting to save lives, empower people, ensure quality care for all and energize science to find the cures. Thanks to events like the Komen Race for the Cure® and the 3–Day®, the organization has invested more than $1.9 billion to fulfill its promise, becoming the largest source of nonprofit funds dedicated to the fight against breast cancer in the world.

http://ww5.komen.org/aboutus/aboutus.html
Mammograms May Lead To Breast Cancer 'Over-Diagnosis,' Study Finds

by RICHARD KNOX National Public Radio 12:48 pm April 3, 2012

“Norwegian scientists say as many as 1 in every 4 cases of breast cancer doesn't need to be found because it would never have caused the woman any problem. It's a startling idea for laypeople (and many doctors) thoroughly indoctrinated with the notion that any breast cancer is medically urgent — and should be found at the earliest possible moment.

But in fact, the study published in the Annals of Internal Medicine is not the first to suggest that breast cancer is often "over-diagnosed" through mammography screening. This is when a tumor is found that would never have gone on to cause symptoms or death....

"...our findings suggest that enhanced awareness is probably the reason for the reduction of late-stage cancer, not screening." By "enhanced awareness," they mean that women and doctors were more alert to suspicious lumps.

This may be a tough sell for women with anxiety as a result of the 'watch-and-wait' approach, as well as for radiologists who do not want to miss any sign of disease and fear of malpractice lawsuits.---cont’d....
Mammograms May Lead To Breast Cancer 'Over-Diagnosis,' Study Finds
by RICHARD KNOX 12:48 pm April 3, 2012
“...The problem of breast cancer overdiagnosis is similar to the dilemma faced by men diagnosed with prostate cancer because of a PSA test. Many of those men have a cancer that is so slow-growing that it would never have been found otherwise, which is why the U.S. Preventive Services Task Force has proposed that routine PSA screening be abandoned.”
PSA Prostate Cancer Awareness Campaigns Could Cause Confusion

Evidence Lacking to Assess Balance of Benefits, Harms of Screening, Says American Academy of Family Physicians

By David Mitchell

Posted: 9/25/2009, 5:50 p.m.

“...The AAFP has concluded that current evidence is insufficient to assess the balance of benefits and harms of prostate cancer screening in men younger than age 75, and the Academy actually recommends against screening men 75 and older.

"The public tends to get battered back and forth by the latest press articles about one disease or another, and they tend to rely on their personal physician to help sort it out," said LeFevre, who is a professor and assistant chair in the department of family and community medicine at the University of Missouri, Columbia.
Humans assess risks using partially integrated, multilevel, neurological and chemical processes in a combination of instinct and learning:

- Frontal Lobes
- Limbic System
- Autonomic Nervous System
- Endocrine System
Frontal lobes

- Executive functioning:
  - Focus
  - Suppression of irrelevant stimuli
  - Anticipating future consequences
  - Logistic skills
    - Sequencing,
    - Planning
    - Discernment
  - Retention of longer term memories which are not task-based by linking them with emotions
  - Modifies emotions to generally fit socially acceptable norms.
Neurobiology of fear and risk assessment

Limbic system

- “Seat of emotion”
- Operates by influencing the endocrine system and the autonomic nervous system.
Neurobiology of fear and risk assessment

Autonomic nervous system

- Sympathetic---Alarm system
- Parasympathetic----Calm system
  Two halves of the same coin---can’t both be fully active at once

Endocrine system

Chemical managers of all bodily processes
Sympathetic Nervous System

- Classic “Fight or Flight” Response
  - Designed to respond instantly to prepare body to:
    - Fight off a charging bull with your bare hands
    - Scale a 20-foot fence to get out of harm’s way
  - Mobilizes enormous amounts of energy to cope with lethal threat
    - Primarily through endocrine responses
      - Adrenaline—powerfully moves blood supply to major muscles, heart and lungs, and away from frontal lobes, gut, and other non-emergent organs
      - Cortisol—mitigates pain, manages inflammation and immune responses
Sympathetic Nervous System

Woman lifts car, saves her father
Wed August 1, 2012

(CNN) -- A Virginia woman is being hailed as a hero after she reportedly lifted a car off her father and performed CPR, saving his life. Alec Kornacki was in the family garage Saturday working on a car when a jack holding it up slipped, according to Kristen Kornacki, another one of his daughters.

Lauren Kornacki, the daughter who rescued him, found her father pinned to the ground and unresponsive. "She proceeded to lift up the car, pull him out and then give him CPR," said Kristen Kornacki.
Sympathetic Nervous System

Enactment of sympathetic nervous system causes blood flow to recede from frontal lobes

“A deeper hold on the rains.”
Sympathetic Nervous System

The Limbic System

- Cingulate gyrus
- Pineal gland
- Fornix
- Mammillary body
- Thalamus
- Pituitary gland
- Hypothalamus
- Amygdala
- Hippocampus
Sympathetic Nervous System

Rodney King beating

Image from video taken by George Holliday and aired exclusively by KTLA (KTLA–TV / March 3, 1991)
“Calm” system

“Rest–and–Digest" activities that occur when the body is at rest, including:

- Sexual arousal
- Salivation,
- Lacrimation (tears)
- Urination
- Digestion
- Defecation

- Helps regulate growth and extensive maintenance of tissues
Parasympathetic Nervous System

“We are all hard wired to be able to sleep ‘like a baby,’ ..... and we spend our lives learning how NOT to.
How Do We Get Past the Fear???
Fear, coping, and information: a pilot study on motivating a healthy response.


“By observing the initial creation of maladaptive responses, the results indicate that without adaptive coping response information, high threat information and fear cause avoidance and other maladaptive responses. These influences, in turn, reduce intentions to adopt the recommended adaptive protection behavior.

When adaptive coping response information is provided after a threatening fear appeal, maladaptive responses' negative effects are reduced, and adaptive protection behavior intentions are increased.

The results of this study have important implications for health and social marketing campaigns (e.g., prevention of AIDS, drug abuse), where maladaptive responses may be responsible for a significant number of program failures.”
“Social marketing is the use of marketing principles to design and implement programs that promote socially beneficial behaviour change. Contrary to the marketing of consumption goods, social marketing does not deal with material products, but with behaviour, e. g. not smoking. This 'product' has a basic benefit (i. e. reduction of health risks in the long run), which is, however, difficult to convey. Therefore, the intended change in behaviour has to be related to a further reward which consists of symbolic goods, e. g. social appreciation or a better body feeling...Social marketing campaigns ...can render preventive efforts more effective.
Help patients engage their parasympathetic “calm” systems

- Stay cool yourself
  - Low vocal tones from the belly
  - Relaxed posture
  - Interpersonal Distance
  - Diaphragmatic Breathing——Model it, Teach it!
Health Motivation Beyond Fear

Help patients engage their parasympathetic “calm” systems

- Accent the Positive
  - Presence of Treatment options and Positive Outcomes

- De-emphasize the Negative
  - “It’s always good to have one less problem.”
  - “Let’s not go there if we don’t have to.”

- Focus on Diligence and Collaboration

Once the patient feels he/she has fear-managing resources, then discuss possibilities and probabilities.