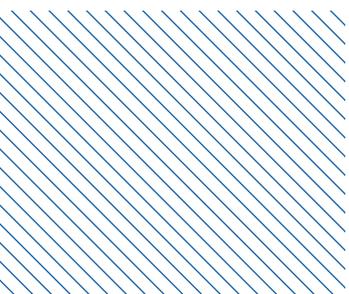


Communicating With Older Adults



Recognizing Hidden Traps in Health Care Decision Making



Developed by



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The Gerontological Society of America (GSA) is the nation's oldest and largest interdisciplinary organization devoted to research, education, and practice in the field of aging. The principal mission of the Society—and its more than 5,400 members—is to advance the study of aging and disseminate information among scientists, decision makers, and the general public. GSA's structure also includes a policy institute, the National Academy on an Aging Society, and an educational branch, the Association for Gerontology in Higher Education.

Learning Objectives

After completing this monograph, readers will be able to:

1. Describe common heuristics and biases that help to explain why patients sometimes make seemingly “irrational” or counterproductive health care decisions.
2. Recognize how decision-making heuristics and biases might influence health care decisions made by older adults.
3. Identify specific communication approaches that can mitigate the negative effects of common decision-making heuristics and biases, thereby leading to potentially better health care decisions and outcomes.

Introduction

Decision making is a fundamental aspect of health care.¹ Physicians and other health care providers make decisions about which disease or condition best explains a patient's signs and symptoms and what treatment plan to recommend.^{1,2} Patients decide whether to seek medical care (e.g., "Am I ill?" "Should I go to the doctor?") and whether to go along with the recommended treatment.¹⁻³ Patients also make decisions related to self-care and self-treatment.

Increasingly, the gold standard for health care for older adults is the approach known as *person-centered care*, which puts individual values and preferences at the heart of care decisions in a way that supports realistic and evolving health and life goals.⁴ In the traditional health care model, physicians or other providers are the principal decision makers.^{4,5} The person-centered care approach emphasizes shared decision making and embraces older adults as partners in their own care.^{4,5}

There is an unspoken assumption inherent in all health care decision making: people will make the choices that maximize their well-being (or, in the case of health care providers and caregivers, the choices that best promote the well-being of the patient).⁶⁻⁹ According to normative decision theory, the ideal decision maker is a perfectly rational agent who uses a deliberate process to assess both the likelihood of each possible option and the benefits associated with each possible option.^{6,9-13} The perfectly rational decision maker selects the option that offers the optimal combination of probability and benefit in a given situation.^{6,9,11,12}

Taken as a whole, though, the available evidence makes it clear that people are *not* perfectly rational decision makers.^{6,9,14} We simply do not have the unlimited time, energy, and mental capacity that would be required to investigate every one of the thousands of decisions we make each day and conduct comprehensive, systematic analyses of probabilities and expected benefits.¹⁴ Instead, when faced with decisions in which many conditions are uncertain or unknown, we often rely on mental shortcuts known as *heuristics*.^{2,12,14-17} Heuristics reduce both the time and effort associated with decision processes, and they often yield satisfactory outcomes.^{14,18} Unfortunately, they also may cause predictable systematic errors in reasoning known as *cognitive biases*.^{2,14-16} As a result, everyone—the patient, the caregiver, the health care provider—is prone to making "irrational" health care decisions, despite the availability of options that would fully maximize desired outcomes.⁷

The good news is that simply being aware of the various heuristics and biases that affect our thinking can improve our decision making.^{6,17,19} Awareness can lead to better choices—or, at least, choices more in line with important personal values and preferences.¹⁴

It also is possible to exploit heuristics and biases in ways that promote better choices.¹⁴ For example, the decision-making environment can be altered in small ways that "nudge" people toward more optimal choices.^{14,20} In their book *Nudge: Improving Decisions About Health, Wealth, and Happiness*, Thaler and Sunstein²⁰ define a nudge as a change that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives. Arranging snack options on shelves with fruit at eye level is a nudge; banning junk food is not.²⁰

This monograph provides an introduction to common heuristics and biases that could affect health care decisions made by older adults, health care providers, and caregivers. The objective is to encourage more productive decision-making conversations with older adult patients.

Heuristics are mental shortcuts—simplifying "rules of thumb"—that help us make challenging decisions quickly.

Heuristics can lead to predictable systematic errors in reasoning known as cognitive biases.

Dual Process Thinking

According to dual process theories, information in decision making is processed using two different modes of thinking (Table 1).^{15,20-22} *System 1* processing happens automatically and rapidly, with little or no effort and no sense of conscious control.^{15,21,22} *System 1* is impulsive and intuitive, generating immediate responses that often are based on affect (i.e., emotions or feelings).^{15,22} *System 2* processing is conscious, deliberative, sequential, and relatively slow.^{15,21,22} *System 2* is more analytical and logical; in contrast to *System 1*, it is able to compare objects based on multiple attributes and make reason-based choices.^{15,21,22} *System 2* requires cognitive effort and is limited by working memory capacity.^{15,21,23}

Both modes of thinking are important to decision making.²² As Daniel Kahneman¹⁵ explains in the book *Thinking, Fast and Slow*, *System 1* and *System 2* work in concert to minimize the effort associated with thinking and enhance decision-making efficiency. *System 1* continuously monitors what is going on inside and outside the mind and employs heuristics to generate default intuitive judgments.^{15,21} In many cases, these judgments are accurate and adequate.^{15,23} However, in certain circumstances, the default judgments are predictably inaccurate.¹⁵ Notice your immediate response to the following problem^{15,20}:

A bat and ball cost \$1.10.
The bat costs \$1 more than the ball.
How much does the ball cost?

The default intuitive response—10 cents—is both appealing and wrong.^{15,20} If the ball costs 10 cents, then the total cost for the bat and ball would be \$1.20 (\$1.10 for the bat and 10 cents for the ball). The correct answer is 5 cents.

One of the main functions of *System 2* is to monitor and control the default heuristic responses of *System 1*, endorsing some and replacing others with responses based on reflective reasoning.^{15,21} If you arrived at the correct answer to the bat and ball problem, it is because *System 2* intervened.¹⁵ Unfortunately, as Kahneman tells us, *System 2* often follows the path of least resistance and endorses a heuristic response without sufficient scrutiny.¹⁵

Much heuristic processing may involve *attribute substitution*: replacing a difficult question or problem with a different (and easier) question or problem.^{15,21} Consider the question, “How should financial advisers who prey on older adults be punished?” As Kahneman¹⁵ observes, a response based on reflective reasoning would involve an extensive information

Table 1. Characteristics of System 1 and System 2 Thinking

System 1	System 2
Unconscious	Conscious
Fast	Slow
Intuitive	Analytical
Automatic	Controlled
Low effort	High effort
Associative	Deductive (rule-based)
Pragmatic	Sequential
Independent of working memory	Limited by working memory capacity

Sources: References 20 and 21.

search (“What are the standard sentences for other financial crimes?”) that would be impractical, if not impossible, for most people. Instead, many people substitute the alternative heuristic question, “How much anger do I feel when I think of financial predators?” An intuitive response comes to mind readily, and the intensity of that feeling can be translated to an intensity of punishment that answers the original question (a process known as *intensity matching*).¹⁵ Inevitably, judgments based on substitution will be biased in predictable ways.¹⁵

Decision Making in Older Adults

Both *System 1* and *System 2* processing can be affected by aging.²² Deficits are seen primarily in *System 2* thinking. Older adults process information less quickly and efficiently than younger adults do (i.e., processing speed is slower).^{16,22} Age-related decreases in working memory capacity result in a reduced ability to evaluate multiple pieces of information simultaneously.¹⁶ There is some evidence that older adults have greater difficulty screening out irrelevant or false information and estimating numerical frequencies.²²

Aging appears to have only a minimal effect on *System 1* thinking.^{16,22} Thus, older adults may be able to compensate for declining *System 2* functions by relying more heavily on heuristic processing and prior experience.^{3,16} Older adults also appear to be influenced to a greater extent by the emotional aspects of decision making and affective assessments.^{3,16,22,24}

A Look at Some Common Heuristics and Biases

An understanding of System 1 processing enables us to dissect the workings of common heuristics and biases. The following sections explore some prevalent heuristics and biases, with information about how they may apply to health care decisions and older adults. Some of these heuristics and biases are illustrated in hypothetical cases involving the use of nonprescription analgesics and the need for recommended immunizations; each case includes communication tips for overcoming the heuristic or bias.

Additional examples of well-known heuristics and biases are summarized in Table 2.^{2,9,17,19,25–29}

Representativeness Heuristic

The representativeness heuristic can be thought of as a similarity heuristic.²⁰ When people are asked to judge how likely it is that “A” belongs to category “B,” they consider how similar “A” is to their stereotype or image of category “B” (i.e., how representative “A” is of typical members of category “B”).²⁰ Kahneman¹⁵ offers the following example:

You see a person on the New York City subway reading *The New York Times*. Which of the following is more likely to be true?

1. She has a PhD degree.
2. She does not have a college degree.

The representativeness heuristic causes us to select option 1, because it is most similar to the stereotype of the typical reader of *The New York Times*.¹⁵ But this judgment ignores base rate frequency: there are far fewer people with PhD degrees riding the subway than people who ended their education after high school. According to the laws of probability, the person reading *The New York Times* is much more likely to belong to the larger group than the smaller one.¹⁵

Health care providers should be aware that the representativeness heuristic can lead to inappropriate or even demeaning interactions with older adults, especially new patients. When we encounter individuals for the first time, we often rely on automatically generated stereotypes to reduce our uncertainty regarding how to respond to them effectively and appropriately. If health care providers recognize that their stereotypic beliefs about older adults include “diminished abilities,” they should take pains to adapt their communication style to the actual abilities of the individual patient.

Older adults may be particularly likely to use the representativeness heuristic, because it allows them to take advantage of a vast store of accumulated knowledge and experience.³ In some cases, relying on accumulated knowledge and experience compensates well for age-related declines.²²

In other cases, increased use of this heuristic might be accompanied by a greater neglect of base rates, especially if affective assessment contributes to representativeness.^{3,22} For example, an older adult might judge a hospital on the quality of the food in the cafeteria and the friendliness of the nursing staff—stereotypical subjective indicators of a “good” hospital—rather than on the percentage of successful treatment outcomes or other objective data.³

Framing Effect

The framing effect occurs when different descriptions of the same problem—differences in how the information is “framed”—lead to different responses.^{14,15,30} Consider the following two choices¹⁵:

- Would you accept a gamble that offers a 10% chance of winning \$95 and a 90% chance of losing \$5?
- Would you pay \$5 for a lottery ticket that offers a 10% chance of winning \$100 and a 90% chance of winning nothing?

As Kahneman¹⁵ points out, the questions are identical and should evoke identical responses. Yet the typical person will answer “no” to the first version and “yes” to the second version.

Table 2. Examples of Common Decision Heuristics and Biases

Heuristic or Bias	Explanation
Bandwagon effect	Being influenced primarily by what others are doing or saying; choosing what others choose Accepting something based solely on an increase in acceptance by others
Confirmation bias	The tendency to seek out, notice, and remember information that supports our pre-existing instinct or point of view, while avoiding or ignoring information that contradicts it
Hindsight bias	The tendency to believe, after the fact, that an event or outcome could have been predicted; (the “I knew it all along” effect)
Illusory correlation	Perceiving two events as causally related, even though the connection between them is coincidental or even nonexistent
Order effects (primacy/recency)	The tendency to remember and be influenced more by options or facts that are presented first or last
Overconfidence	Overestimating both how much we know and how reliably we know it

Sources: References 2, 9, 17, 19, and 25–29.

Tversky and Kahneman³¹ demonstrated the framing effect in a classic study involving the “Asian disease problem”:

Imagine that the United States is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease (Program A and Program B) have been proposed.

In the first part of the study (the positive frame condition), participants selected from the following “lives saved” options:

- If Program A is adopted, 200 people will be saved.
- If Program B is adopted, there is a one-third probability that all 600 people will be saved and a two-thirds probability that no people will be saved.

In the second part of the study (the negative frame condition), participants selected from the following “lives lost” options:

- If Program A is adopted, 400 people will die.
- If Program B is adopted, there is a one-third probability that no one will die and a two-thirds probability that all 600 people will die.

The outcomes are identical in the positive frame and negative frame conditions. Yet in the “lives saved” scenario, most participants chose Program A: they preferred the sure thing over the gamble.^{15,31} In the “lives lost” scenario, most participants chose Program B: they accepted the gamble.^{15,31} The results are consistent with prospect theory, which predicts that decision makers are risk averse (i.e., prefer the sure thing over the gamble) when possible outcomes are positive and risk seeking (i.e., accept the gamble) when possible outcomes are negative.^{15,22,30}

The framing effect has implications for informed patient choice. In a systematic review of published studies that assigned participants to framing conditions, study participants selected more invasive or toxic treatments when information was expressed as a positive frame (survival) versus a negative frame (mortality).³² For immunization, positively framed information increased the expectation of benefits and decreased the expectation of adverse effects. The authors concluded that treatment effects need to be expressed in more than one way and described in terms of relative risk reduction, absolute risk reduction, and number needed to treat (not just relative risk reduction).³²

Mounting evidence indicates that older adults prefer positive material over negative material in cognitive processing—a phenomenon known as the age-related positivity effect.^{24,33} Notthoff and Carstensen³⁴ demonstrated this phenomenon in two studies involving interventions aimed at promoting regular walking among older adults. In the first study, 65 younger adults (18 to 32 years of age) and 61 older adults (60 to 89 years of age) were provided with information about walking, along with pedometers

to monitor walking during the following week. Participants were randomized to a positive framing condition (e.g., “Walking can have important cardiovascular health benefits”), a negative framing condition (e.g., “Not walking enough can lead to an increased risk for cardiovascular disease”), or a neutral condition (e.g., “Walking is an aerobic activity”). The younger participants in all groups walked a similar number of steps during the study week; in contrast, older adults who were informed about the possible positive outcomes from walking walked significantly more than those who were informed about the negative consequences of failing to walk. The second study included 59 older adults (61 to 95 years of age) who recorded the number of steps taken on a daily basis over a period of 4 weeks. Participants randomized to the positive framing condition walked significantly more steps per day, on average, across the intervention period; participants randomized to the negative framing condition did not increase walking. The authors concluded that instructing older adults about the potential benefits of health behaviors may be especially effective in promoting healthier lifestyles.³⁴

Default Effect

The default effect is the tendency for decision makers to go with whatever option is designated as the default—i.e., the option that takes effect if no explicit choice is made.^{14,25} Consider the example of organ donation. An average of 22 people die each day in the United States because they are waiting for a suitable donor organ.³⁵ In the 2012 National Survey of Organ Donation Attitudes and Behavior, 95% of participants expressed support for organ donation, but only 62% had taken the step of granting permission for organ donation.³⁶ The default option in the United States (as well as several countries in Europe) is explicit consent: people are not considered to be organ donors unless they take action to identify themselves as such.³⁷ This contrasts with a number of European countries that have a presumed consent default: people are organ donors unless they register *not* to be. In most presumed consent countries, the effective consent rates for organ donation are close to 100%.³⁷ Individuals in both types of countries have the same choice, to be an organ donor or not; only the default option is different.¹⁴

The simplest (although not always easiest) way to overcome the default effect is to nudge the environment by changing the default option. Chapman et al.³⁸ took this approach to increasing uptake of annual influenza vaccination among 480 university employees. One group of employees (the “opt-in” group) received an e-mail message informing them that free flu shots were available at the campus health center; the message included a link for making an appointment. The other group (the “opt-out” group) received a message informing them they had been scheduled for a flu shot at a specified time; the message included a link for cancelling or changing the appointment. A significantly larger percentage of employees in the opt-out group (45%) received a flu shot, compared with employees in the opt-in group (33%).

Heuristics and Biases in Action: Availability Heuristic

Anita Miranda, a 73-year-old woman, visits a new primary care provider for a routine appointment. The physician informs Mrs. Miranda that it is time for her annual influenza vaccine and offers to have a staff member administer it before she leaves. "Oh, I'm not too worried about getting the flu," Mrs. Miranda replies. "But do you have a shot that works for Zika virus? That's all I hear about lately, and I'm really getting scared!"

Availability Heuristic Explained

When we use the availability heuristic, we estimate the frequency or likelihood of an event based on how easily the event comes to mind. This can be a useful mental shortcut; in general, high frequency events will be recalled more easily than less frequent events. However, we tend to recall events that are particularly memorable—usually because they are recent, rare, or vivid (e.g., catastrophic or emotionally compelling). This can skew our impressions of frequency and likelihood, leading to irrational decisions. For example, many people are afraid to fly, despite the fact that air travel is statistically safer than automobile travel. Although fatal automobile accidents occur every day, they generally do not receive the widespread and often graphic media coverage that accompanies a plane crash. As a result, we recall memories of plane crashes more readily, and we tend to overestimate the risk associated with air travel.



In the specific case of health care decisions, use of the availability heuristic might cause older adults to overestimate or underestimate their risk of becoming ill or experiencing adverse effects.

Overcoming the Availability Heuristic

The key to overcoming the availability heuristic is to focus on information that is accurate and relevant, not just easily available. Health care providers also can take advantage of this heuristic by sharing and emphasizing stories of harm caused when people did *not* receive vaccines.



In the case of Mrs. Miranda, you might begin by acknowledging her concerns: “It is easy to be concerned about Zika virus. It is in the news all the time, and we’re still learning about it. There’s a lot we don’t know, and we don’t have a vaccine yet. But the main concern is for women who are pregnant or trying to become pregnant, because Zika virus infection can cause birth defects.”

Then, shift the focus to the most relevant information: “What we *do* know for certain is that the flu is a very serious illness for older adults. People your age are at much greater risk of having serious complications that require hospitalization. And almost all deaths from flu happen in older adults. We have started using a new high-dose flu vaccine designed specifically for people who are at least 65 years old. It may provide greater protection than the standard flu shot—what do you think?”

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Recommended Immunization Schedule for Older Adults

The Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) recommends various vaccines for adults based on their age, underlying medical conditions, lifestyle, prior vaccinations, and other considerations. These recommendations are updated annually to incorporate new and emerging evidence. Current recommendations for most older adults (65 years of age or older) are:

- Annual influenza vaccine.
- A single dose of pneumococcal 13-valent conjugate vaccine (PCV13) and a single dose of pneumococcal 23-valent polysaccharide vaccine (PPSV23), ideally administered at least 1 year apart.
- A single dose of zoster (shingles) vaccine.
- At least one dose of tetanus, diphtheria, and pertussis (Tdap) vaccine if not administered previously, plus booster doses of tetanus and diphtheria (Td) vaccine every 10 years.

In addition, older adults without evidence of immunity to varicella should receive two doses of varicella vaccine. (Most adults born in the United States before 1980 are considered to have evidence of immunity.)

Considering that older adults are at greater risk for severe disease and death from vaccine-preventable diseases, immunization rates are disappointingly low. Estimates based on interviews conducted beginning September or October 2013 through June 2014 indicate that 65% of older adults had received the influenza vaccine, 60% had received the pneumococcal vaccine, and 24% had received the zoster vaccine.

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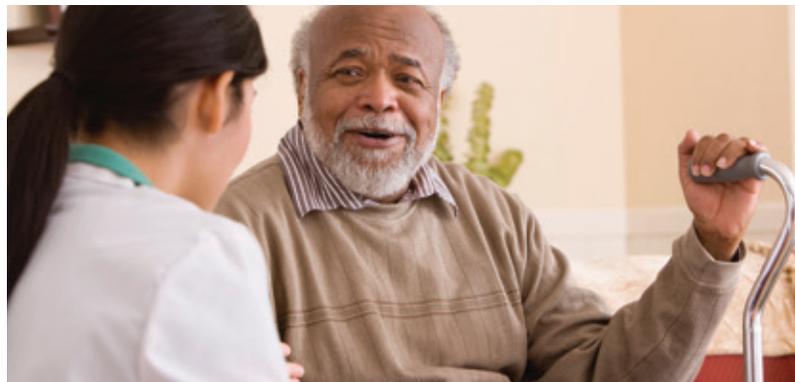
Heuristics and Biases in Action: Anchoring and Adjustment

Frank Johnson is a 78-year-old retired Army officer who lives alone in a retirement community. He was admitted to the hospital last week with suspected gastrointestinal bleeding. A medication history revealed that he had been self-treating chronic low back pain with nonprescription ibuprofen; he typically consumed dosages of 600 mg to 800 mg three or four times per day. He recalled having ibuprofen prescribed for him several times when he was in the military and remembered the usual dose as 800 mg.

Anchoring Effect Explained

The anchoring effect refers to the tendency of a supplied numerical value (the anchor) to skew the estimation of another value. In a classic example of the anchoring effect, Tversky and Kahneman asked subjects to estimate various quantities as percentages (e.g., the percentage of African countries in the United Nations). Before each group could answer, the researchers spun a “wheel of fortune” that included numbers between 0 and 100. The subjects were asked whether they thought the number on the wheel (the anchor—e.g., 30) was higher or lower than the percentage in question (“Is the percentage of African countries in the United Nations higher than 30% or lower than 30%?”). Finally, the subjects were asked to revise their estimate up or down from the anchor to the percentage they thought to be more accurate (a process known as *adjustment*). The arbitrary numbers on the wheel had a marked effect on all groups’ estimates. In a group that received 10 as the anchor, the median estimate of the percentage of African countries in the United Nations was 25%; in a group that received 65 as the anchor, the median estimate was 45%. A promise of payment for accuracy did not reduce the effect of the anchor.

More generally, anchoring can be thought of as the ability of an initial piece of information (the anchor) to influence subsequent judgments. In Mr. Johnson’s case, the dose of ibuprofen he recalled taking when he was younger—800 mg—served as an anchor for his present-day medication-taking behavior. Although he sometimes consumed a lower dose (600 mg), it was an adjustment from the



anchor, not the amount directed on the Drug Facts label (200 mg to 400 mg every 4 to 6 hours, not to exceed 1,200 mg in a 24-hour period). Mr. Johnson routinely exceeded 2,400 mg per day, without medical supervision.

Overcoming the Anchoring Effect

Awareness is critical to overcoming the anchoring effect, because it is important to separate the anchor from the actual decision at hand. In Mr. Johnson’s case, you could begin a conversation with “deanchoring”: “Mr. Johnson, I know you usually take more ibuprofen than the amount recommended on the label.” Next, emphasize the differences between the anchor scenario and the current scenario: “When you took those larger doses in the past, they were prescribed for a specific condition, by a physician who was familiar with all of your health conditions. Now that you’re older, large amounts of ibuprofen can cause serious problems.”

Given his age and the fact that he just experienced gastrointestinal bleeding, Mr. Johnson should be advised to use acetaminophen (not ibuprofen) as a nonprescription analgesic, at a dosage that does not involve any anchor: “All pain is different. When you need to take acetaminophen, always follow the directions for use on the label, and never take more than the recommended dose. This is very important, because taking too much acetaminophen also can cause some serious problems. If your pain gets worse or lasts more than 10 days, talk with a health care professional.”

Nudge the Environment

Risks associated with the use of nonprescription analgesics could be mitigated by ensuring that older adults have the most appropriate default option available at home for as-needed use. For many people, this will be acetaminophen; ibuprofen may be needed (e.g., for anti-inflammatory effects) or preferred by other patients.

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Nonprescription Analgesics and Older Adults

Older adults (65 years of age or older) consume more prescription medications, nonprescription medications, and dietary supplements than any other age group. Although older adults comprise just 13% of the U.S. population, they account for 34% of all prescription medication use and 30% of nonprescription medication use. In the 2010–2011 National Social Life, Health, and Aging Project (NSHAP)—a longitudinal, population-based survey of community-dwelling U.S. adults 62 to 85 years of age—88% of respondents reported using at least one prescription medication regularly, 38% used at least one nonprescription medication, and 64% used at least one dietary supplement. More than two-thirds (67.1%) reported concurrent use of five or more medications or supplements. Approximately 2 in 5 older adults (39.9%) were taking a nonprescription medication concurrently with a prescription medication.

Pain is the most common symptom treated with nonprescription medications. Accordingly, the nonprescription analgesics acetaminophen (Tylenol), ibuprofen (Advil, Motrin IB), and naproxen (Aleve) are among the most commonly consumed drugs in the world. Approximately 60% to 75% of adults 65 years of age or older report at least some persistent pain, associated most frequently with musculoskeletal disorders (e.g., osteoarthritis, degenerative spine conditions). On any given day, analgesics are used by 20% to 30% of older adults in developed countries.

Although aspirin is a nonprescription analgesic, it frequently is used for the prevention of cardiovascular disease (CVD). Among older adults 65 to 74 years of age, the prevalence of aspirin use for primary CVD prevention is approaching 50%. The frequency of aspirin use is even greater among older adults with a history of CVD, with nearly 75% of men and 69% of women taking aspirin for secondary prevention.

Possible Adverse Effects

Nonprescription analgesics have a well-established record of efficacy and safety when they are taken for brief periods of time and at recommended dosages, in accordance with information on the Drug Facts label. However, serious adverse effects are possible, especially when nonprescription analgesics are used for longer periods of time or at higher doses.

Severe liver damage may occur if you take more than 4000 mg of acetaminophen in a 24 hour period. Some individuals—for example, people who consume three or more alcoholic drinks

every day while using this product—may be susceptible to liver injury at lower doses.

Nonsteroidal anti-inflammatory drugs (NSAIDs) such as aspirin, ibuprofen, and naproxen can cause severe stomach bleeding. Per the Drug Facts label, the risk of stomach bleeding is increased in patients who:

- Are 60 years of age or older.
- Have had peptic ulcer disease or bleeding problems.
- Take anticoagulants or corticosteroids concurrently.
- Take other NSAIDs (including aspirin) concurrently.
- Consume three or more alcoholic drinks every day while using an NSAID.

Ibuprofen and naproxen also can increase the risk of heart attack or stroke in patients with or without heart disease or risk factors for heart disease.

Age-related changes can make older adults more vulnerable to serious adverse effects from nonprescription analgesics in general, and NSAIDs in particular. These changes include:

- Reduced liver and kidney function.
- Decreased lean body mass and increased body fat.
- Altered pharmacokinetics and pharmacodynamics.

The greater likelihood of coexisting medical conditions and the use of multiple medications and supplements increase the risk of drug–disease and drug–drug interactions in older adults. In the 2010–2011 NSHAP survey, nearly 1 in 6 participants (15.1%) reported concurrent use of products that posed a risk of a major potential interaction.

Selecting an Appropriate Nonprescription Analgesic

As noted in the recently released Centers for Disease Control and Prevention (CDC) Guideline for Prescribing Opioids for Chronic Pain, acetaminophen and NSAIDs such as ibuprofen and naproxen are recommended in multiple guidelines as first-line treatment for osteoarthritis or low back pain. The 2009 American Geriatrics Society guideline titled “Pharmacological Management of Persistent Pain in Older Persons” specifically recommends acetaminophen as first-line therapy, owing to its greater safety than traditional NSAIDs. The “2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in

Older Adults” lists nonselective oral NSAIDs (including ibuprofen, naproxen, and aspirin in doses greater than 325 mg) among the medications to be used with caution in older adults because of the increased risk of gastrointestinal bleeding or peptic ulcer disease in high-risk groups (e.g., patients who are older than 75 years of age or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents). Use of a proton pump inhibitor or misoprostol reduces but does not eliminate the risk of upper gastrointestinal ulcers, gross bleeding, or perforation.

Preventing Excessive Dosing

Because acetaminophen and NSAIDs are active ingredients in many types of prescription and nonprescription products (e.g., pain medications, sleep aids, cough and cold products), older adults can easily and inadvertently consume unsafe amounts of analgesics. For example, acetaminophen is found in more than 600 prescription and nonprescription medication products. Patients must be cautioned not to exceed the recommended maximum daily dose of acetaminophen from all sources.

Unfortunately, health care providers often are unaware of patients’ nonprescription medication use, either because they do not ask or because patients do not tell them. Many patients assume that their health care provider knows about all of the medications they use, including products obtained without a prescription. In one series of structured interviews with more than 500 patients at four outpatient primary care clinics, the majority of patients (86%) believed that their physician was aware of all nonprescription medications they were currently taking. However, less than half of participants reported having told their doctor about their use of nonprescription medications (46.0%) or dietary supplements (34.1%).

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Heuristics and Biases in Action: Omission Bias



Joan Chen is a 66-year-old woman who recently visited her primary care physician for a “Welcome to Medicare” visit. As part of the assessment, the physician asked if she had ever received the shingles vaccine. Mrs. Chen shook her head. “No, I haven’t. I saw a sign at the pharmacy and thought about it, but my arm always hurts so much after I get any kind of shot.”

Omission Bias Explained

Omission bias describes the tendency to prefer inaction (omission) over action or intervention (commission). In a classic study by Ritov and Baron, participants were reluctant to vaccinate a (hypothetical) child if the vaccine could cause death, even if that outcome were half as likely (5 in 10,000 risk of death from the vaccine) as death from the vaccine-preventable disease (10 in 10,000 risk). The participants viewed death from the vaccine (i.e., harm from action) as worse than death from the disease (i.e., harm from inaction).

In real-life medical decisions, omission bias may lead patients to seek to avoid harm through inaction, even though inaction could cause a similar or greater harm than the action. For example, a patient with atrial fibrillation might refuse warfarin therapy because she is concerned about the possibility of hemorrhagic stroke, despite the greater risk of ischemic stroke if she does not take warfarin.

Overcoming Omission Bias

Although inaction on Mrs. Chen’s part—not getting the shingles vaccine—may avoid immediate harm (i.e., possible pain

associated with vaccination), it sets her up for potentially greater future harm. Herpes zoster (shingles) presents as a painful, itchy, vesicular rash that can take more than 1 month to resolve. Approximately 1 in 3 people in the United States will develop herpes zoster during their lifetime; the risk increases sharply after 50 years of age, and women may be at greater risk than men. The risk of complications of herpes zoster infection, including postherpetic neuralgia and hospitalization, also increases with age. The shingles vaccine is associated with a 51% reduction in the risk of herpes zoster and a 67% reduction in the risk of postherpetic neuralgia.

Approximately 1 in 3 people who received the shingles vaccine experience mild redness, soreness, swelling, or itching at the site of the injection. To help overcome Mrs. Chen’s omission bias, you might point out that while the risk of adverse outcomes is similar (i.e., 1 in 3) whether she gets the vaccine or not, the intensity of the outcomes is very different. An adverse reaction to the vaccine would involve mild, transient injection site discomfort; a herpes zoster infection would involve a long-lasting, painful rash with potentially serious sequelae. Showing her photos of active shingles infections also might help to tip the balance toward vaccination by making the adverse outcomes of declining the vaccine more salient.

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Heuristics and Biases in Action: Sunk-Cost Bias

Florence Turner is an 82-year-old woman with osteoarthritis, who suffers from mild but persistent daily knee pain. A friend suggested that Mrs. Turner try taking a product advertised on television, containing a combination of “natural” herbal ingredients. Mrs. Turner ordered a value-sized bottle of “Super Joint Formula” and started taking the supplement daily. Initially, she felt that her pain was getting better, so she purchased several additional bottles during a special promotion. But after a few weeks, her knee pain started to get worse.

Mrs. Turner mentions Super Joint Formula to the pharmacist when she picks up refills of her current prescription medications. The pharmacist is concerned by both the lack of pain relief and the possibility that some of the components of Super Joint Formula could interact with Mrs. Turner’s medications; she suggests that Mrs. Turner try using acetaminophen for her knee pain. Mrs. Turner is reluctant to make the change. “I still have a lot of Super Joint Formula at home, and I don’t want it to go to waste. Maybe it will start to work! I’ll just keep taking it until it’s gone—then maybe I can think about taking something different.”

Sunk-Cost Bias Explained

A sunk cost is an irretrievable expenditure of money, time, or effort. Sunk-cost bias is the tendency to pursue a course of action, even after it has proved to be suboptimal, because irrecoverable resources have been invested in that course of action. It occurs at least in part because people over apply a “do not waste” heuristic:

A man joins a tennis club and pays a \$300 yearly membership fee. After 2 weeks of playing, he develops a tennis elbow. He continues to play (in pain) saying, “I don’t want to waste the \$300!”

In rational decision making, past expenditures should be irrelevant to decisions that affect the future. No matter how much money has been spent, if the eventual outcome will not be beneficial, the investment should be abandoned.



Overcoming Sunk-Cost Bias

Ultimately, overcoming the sunk-cost fallacy requires us to make a conscious effort to accept a loss. In the case of Mrs. Turner, you might start by acknowledging emotions that may be tied to the loss: “You paid good money for Super Joint Formula, and it is difficult to see any money get wasted.” Next, you could draw attention to the irrationality in Mrs. Turner’s decision making: “Super Joint Formula has not been working for you. Based on what we know about the ingredients, it is unlikely to relieve your pain if you keep taking it. I’m also concerned about possible interactions with the other medications you take. It is difficult to lose money—but won’t it be more difficult to lose opportunities to play with your grandchildren because you’re in too much pain?” Finally, investigate whether a “win-win” scenario might be possible: “Does the company offer a money-back guarantee? Or, you mentioned that your friend uses Super Joint Formula. Perhaps she would welcome some additional bottles for herself.”

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At present, older adults account for 34 percent of all prescription drug use and 30 percent of over-the-counter drug use. The U.S. Administration on Aging forecasts that nearly one in five Americans will be 65 years of age or older by 2030. And according to the U.S. Centers for Disease Control and Prevention, two-thirds of older adults currently are unable to understand the information given to them about their prescription medications.

GSA is now offering its members free access to several online training modules designed to help pharmacy professionals meet the needs of their aging patients. And while these tools are geared toward pharmacists and other support staff, they can be useful to all gerontologists seeking to have optimal interaction with the aging population. Collectively known as the Silver Market Community Pharmacy series, each installment runs less than 25 minutes and offers expert information and time-tested techniques to help pharmacists and technicians work efficiently and respectfully across the counter.

GSA developed the modules with support from several partners, including McNeil Consumer Healthcare, Novartis Consumer Health, Pfizer Consumer Healthcare, and Purdue Pharma. GSA's technology partner in hosting the series is LearnSomething Inc. The series is based on GSA's 2012 publication "Communicating With Older Adults: An Evidence-Based Review of What Really Works," which is also available free to members.



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