How to Select or Create Materials Your Patients Will Actually Understand

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Pre- Conference Workshop
AADE16
August 11, 2016

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“As clinicians, what we say does not matter unless our patients are able to understand the information we give them well enough to use it to make good health-care decisions.
Otherwise, we didn’t reach them,
and that is the same
as if we didn’t treat them.”

Surgeon General Regina Benjamin (2010)

Two decades of research indicate
that much health information is presented
in ways that are not understandable by most Americans.
If health professionals want to reach people with information,
they must make sure information, products, and services
are accessible
and understandable to their intended audiences.

CDC (2014)

But how is a CDE to judge the *quality* of these materials?

- Which ones are actually cognitively accessible—comprehensible to most patients,
- especially individuals with low or declining cognitive ability?
- And, how can the CDE determine that?

Learning Objectives

- Participants will be able to define *cognitive accessibility* and explain why it is important in diabetes education.
- Participants will be able to identify materials that are needlessly complex for all patients.
- Participants will be able to identify which learning tasks in *readable* materials are inherently complex, and why.
- Participants will be better able to select or create DSME/S materials that are cognitively accessible to patients or populations that are cognitively compromised.

The Diabetes Educator and the Diabetes Self-management Education Engagement

The 2015 National Practice Survey

Dawn Sherr, MS, RD, CDE, LDN

Ruth D. Lipman, PhD

Table 1

Disciplines and CDE/BC-ADM Credentials of 2015 National Practice Survey Participants (in Percentages).

Discipline	Respondents	Has CDE Credential	Has BC-ADM Credential
Nurse	50.3	87	4
Dietitian	35.1	91	2
Pharmacist	6.1	73	11
Other	6.2	76	10
All		86	5

Abbreviations: BC-ADM, Board Certified–Advanced Diabetes Management; CDE, Certified Diabetes Educator.

Educational status of DSME Participants:

- some college (17%)
- high school or GED degree (61%)
- some high school (13%)

(nearly identical to the proportions reported in 2012

(16%, 61%, 13%, respectively).

The Diabetes Educator and the Diabetes Self-management Education Engagement

The 2015 National Practice Survey

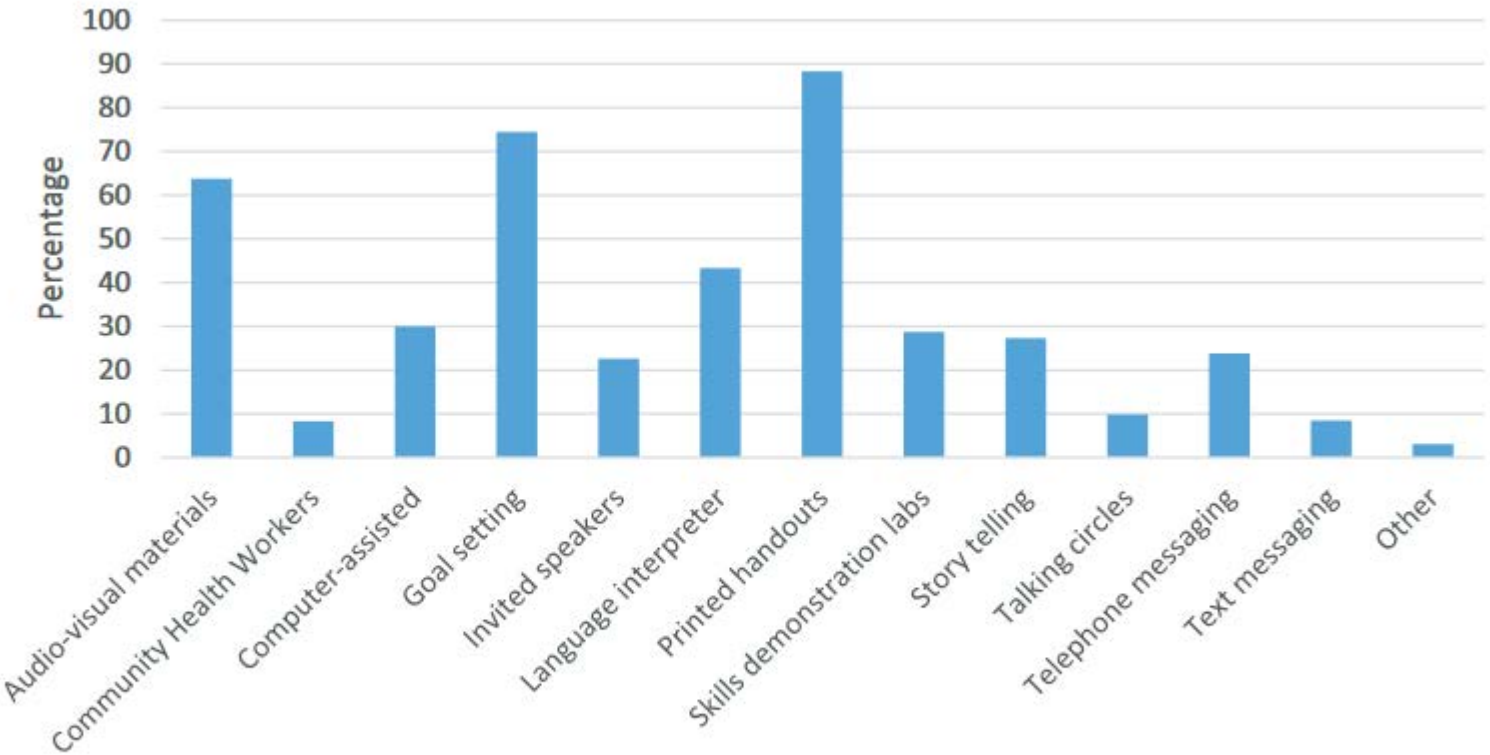

Figure 4. Resources used in diabetes self-management programs.

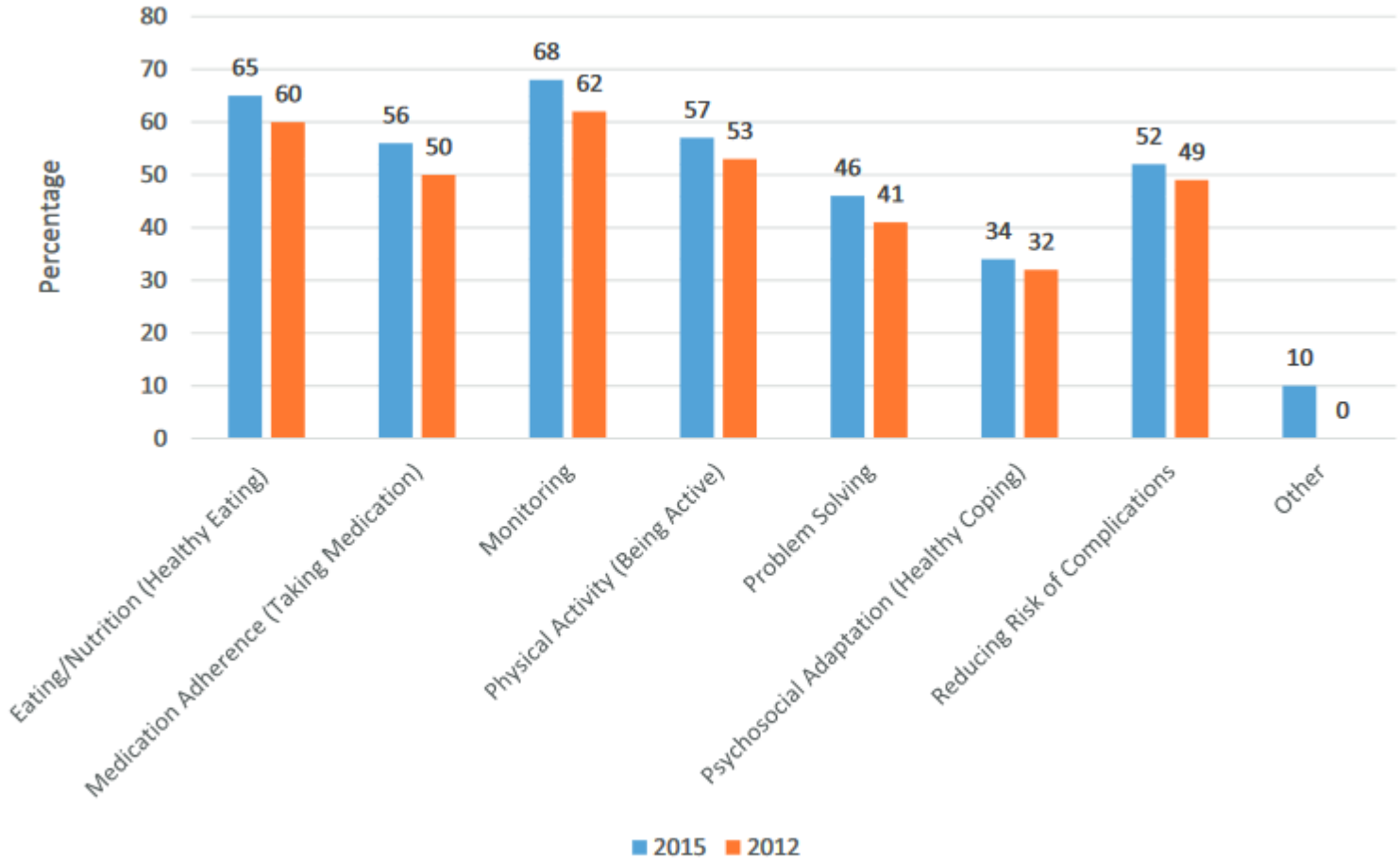

Figure 5. Comparison of reported behavioral strategy engagement in 2012 and 2015.

Assessment Tools for Health Education Materials

- Patient Education Materials Assessment Tool (AHRQ)
- PMOSE/KIRSCH
- The SMOG
- The SAM
- CDC: Healthy People 2020, Cut It Out
- Plain Language (NIH)
- Toolkit for Making Written Material Clear and Effective (CMMS)
- Health Literacy and Communication (ODPHP)
- Improving Health Literacy to Protect Patient Safety (Joint Commission)
- Clear Communication Index (CCI)

All these are assessment tools

for the **readability** of health education and

DSME/S materials

SAM

Suitability Assessment of Materials

for evaluation of health-related information for adults

Content

Purpose

SAM, the Suitability Assessment of Materials instrument offers a systematic method to objectively assess the suitability of health information materials for a particular audience in a short time.

How it works

Use SAM to:

- Measure how well materials "fit" your clients
- Compare different materials and select those most suitable for your clients
- Tailor existing materials for a particular population
- Guide development and testing of culturally and linguistically appropriate materials
- Set standards

How it works

SAM guides you to rate materials on factors that affect readability (the relative difficulty of decoding the words) and comprehension (the relative difficulty of understanding the meaning).

SAM rates materials in these six areas

- Content
- Literacy Demand
- Graphics
- Layout and Type
- Learning Stimulation & Motivation
- Cultural Appropriateness

Easy Scoring

For each factor, rate the materials *Superior, Adequate* or *Not Suitable* based on objective criteria included in the instrument. You can calculate a score for each area and overall. For a panel of reviewers, you might average the ratings. Score the materials by assigning points as follows.

Superior ~ 2 points
Adequate ~ 1
Not Suitable ~ 0

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

Health Literacy

About This Site

This site provides information and tools to improve health literacy and public health. These resources are for all organizations that interact and communicate with people about health.

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Learn About Health Literacy

- What Is Health Literacy?
- Understanding Health Literacy
- Understanding Literacy and Numeracy

More >

Plan And Act

- What is the National Action Plan to Improve Health Literacy?
- What is the vision of the Plan?
- Organizational Attributes
- How can I use the plan?

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Develop Materials

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- Writing for the Public
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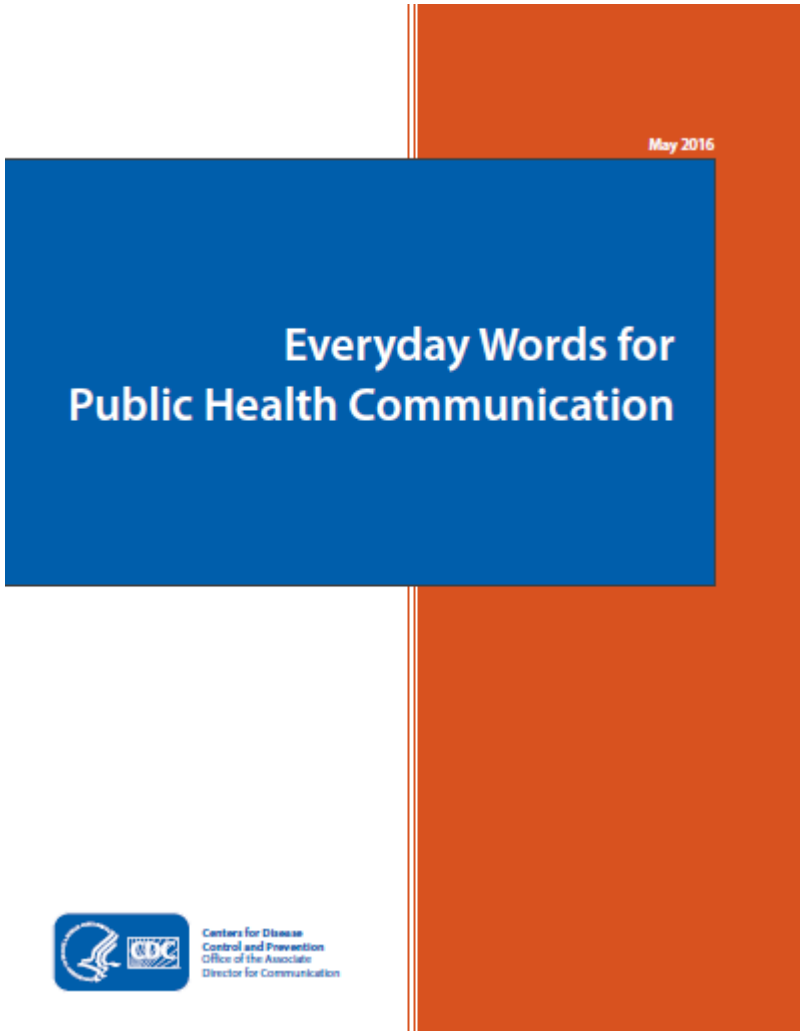


http://www.cdc.gov/other/pdf/everydaywordsforpublichealthcommunication.pdf

Everyday Words for Public Health Communication

What is this document?

This document lists frequently used terms in public health materials and their common, everyday alternatives in plain language sentences. Original sentence examples come from materials on CDC.gov. Some words and phrases may have multiple meanings, so check the context of use before you substitute.

Remember, it might not be enough to delete jargon and substitute an everyday word in materials for the nonexpert public. You may have to rewrite the entire sentence or sentences and use multiple techniques. As a rule, you help readers when you:

- Write short sentences.
- Use active voice.
- Use everyday words and pronouns (when appropriate).

Who should use this document?

Federal employees and contractors writing for the nonexpert public: The Plain Writing Act says that federal agencies must use plain language in public communication.

Anyone writing for an audience that will benefit from jargon-free language: Consider the intended audience, and use the language that will make the most sense to them. When you do need to reach a broad, public audience without specialized knowledge about a topic, everyday words are the most appropriate language to help the most people understand the information.

Does this document include all medical and public health jargon?

No, this document includes many but not all common public health terms used in materials on CDC.gov. For example, the document doesn't include specialized disease, health condition, anatomy, or physiology terms. We will periodically add relevant, widely-used terms and examples.

http://www.cdc.gov/other/pdf/everydaywordsforpublichealthcommunication.pdf

Disproportionate: uneven, affecting one or more groups more or less than others

CDC Original Sentence

MSM continue to bear the greatest burden of HIV infection, and among races/ethnicities, African Americans continue to be **disproportionately** affected.

Plain Language Sentence

Some groups are affected by HIV **more than** others. Men who have sex with men are **most** affected. African Americans are **strongly** affected, too.

Distribution: where something is located; how something is provided or handed out; how often something, such as a characteristic or event, appears in a group or the pattern of the characteristic or event

CDC Original Sentence

The **distribution**, range and abundance of the lone star tick have increased over the past 20–30 years, and lone star ticks have been recorded in large numbers as far north as Maine and as far west as central Texas and Oklahoma.

Plain Language Sentence

In the past 20 to 30 years, lone star ticks have increased and **spread into new areas** in the country. Lone star ticks are found in large numbers as far north as Maine and as far west as central Texas and Oklahoma.

Dose: amount, number of times

CDC Original Sentence

Some children 6 months through 8 years of age require two **doses** of influenza vaccine. Children in this age group who are getting vaccinated for the first time, as well as some who have been vaccinated previously, will need two doses.

Plain Language Sentence

Some children 6 months through 8 years of age need the flu shot or nasal spray **two times** if they:

- Are getting vaccinated for the first time
- Have been vaccinated before

http://www.cdc.gov/other/pdf/everydaywordsforpublichealthcommunication.pdf

To address the gaps, CDC has developed *Dating Matters®*, a comprehensive teen dating violence prevention **initiative** based on the current evidence about what works in prevention.

Plain Language Sentence

CDC developed *Dating Matters®*, a complete **program** to stop teen dating violence before it happens. The program uses what's proven to work and new information about teen dating.

Intake: take in, eat, put in your body

CDC Original Sentence

In addition to excess sodium **intake**, other factors also influence blood pressure and the risk for heart disease and stroke.

Plain Language Sentence

Your blood pressure and the chances you will have heart disease or a stroke depend on how much sodium is **in the foods you eat** and other reasons. Salt is a type of sodium. (Note: Program should state what the "other factors" included in the original are.)

Integrate: combine with, make part of, bring together, join

CDC Original Sentence

A growing body of science supports the effectiveness of combining these efforts through workplace interventions that **integrate** health protection and health promotion programs.

Plain Language Sentence

Scientific studies show that workplace programs that **bring together** activities that protect workers' health and encourage healthy attitudes and actions have better results.

Intervention: action, treatment, program

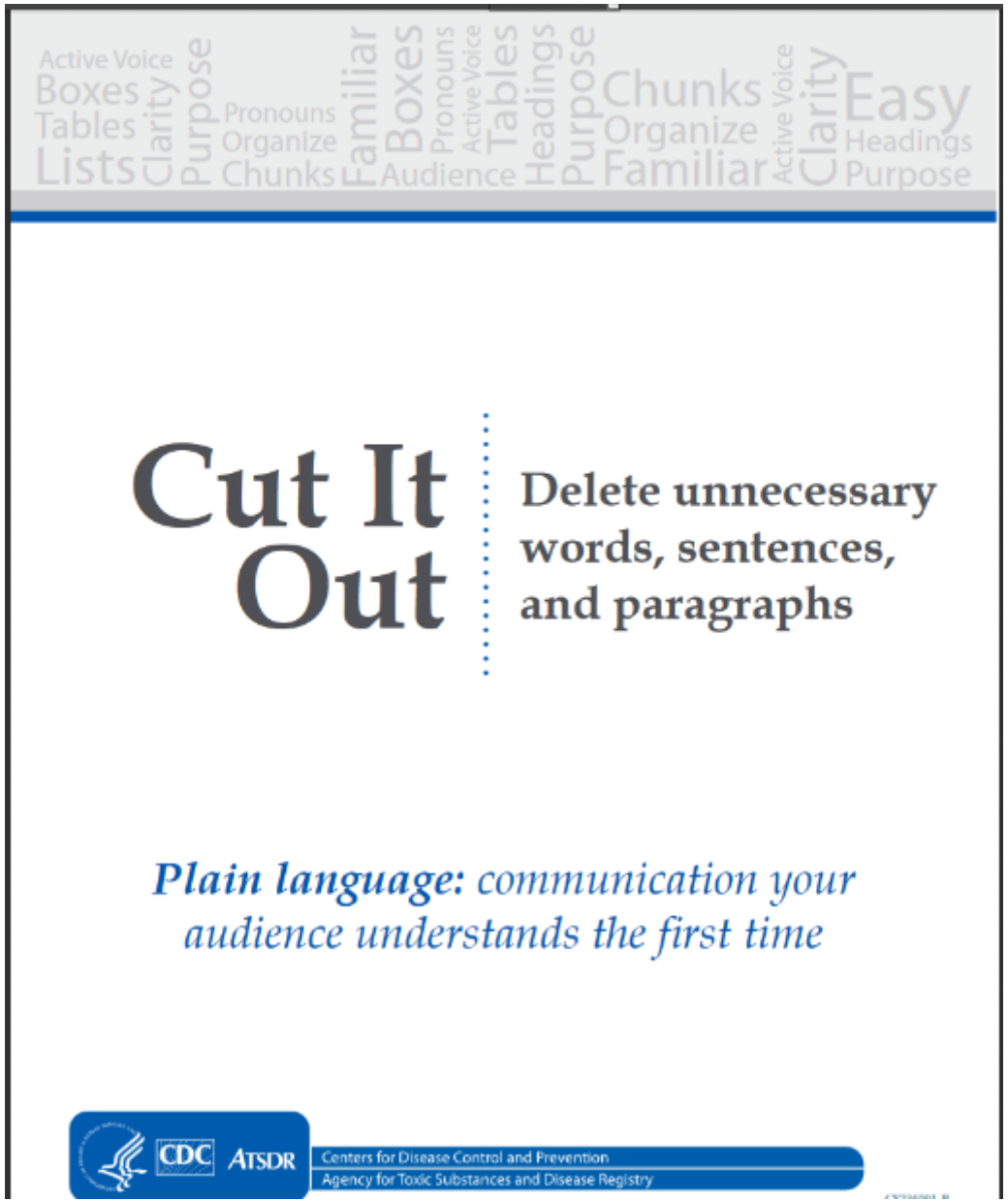
CDC Original Sentence

Currently, most **interventions** for children with Fetal Alcohol Spectrum Disorders (FASDs) are often non-specific, unsystematic, and/or lack scientific evaluation or validation.

Plain Language Sentence

Most **programs** to help children with fetal alcohol spectrum disorders (FASDs) don't have enough solid results to show they work.

http://www.cdc.gov/other/pdf/everydaywordsforpublichealthcommunication.pdf


Active Voice
Boxes
Tables
Lists
Clarity
Purpose
Pronouns
Organize
Chunks
Familiar
Boxes
Audience
Pronouns
Active Voice
Tables
Headings
Purpose
Chunks
Organize
Familiar
Active Voice
Clarity
Easy
Headings
Purpose
Cut It Out
Delete unnecessary words, sentences, and paragraphs
Plain language: communication your audience understands the first time
CDC
ATSDR
Centers for Disease Control and Prevention
Agency for Toxic Substances and Disease Registry

Plain Language

Training

Resources

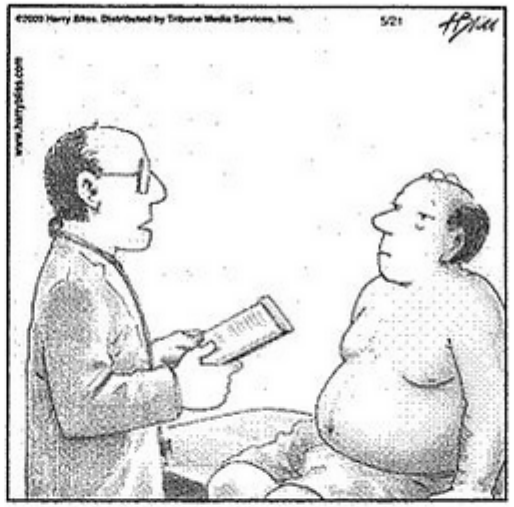
Awards Planning

Contacts

Language Access

Plain Language at NIH

Plain language is grammatically correct language that includes complete sentence structure and accurate word usage. Plain language is *not* unprofessional writing or a method of "dumbing down" or "talking down" to the reader.



Harry Bliss

Writing that is clear and to the point helps improve communication and takes less time to read and understand. Clear writing tells the reader exactly what the reader needs to know without using unnecessary words or expressions.

Communicating clearly is its own reward and saves time and money. It also improves reader response to messages. Using plain language avoids creating barriers that set us apart from the people with whom we are communicating.

Part of the NIH mission is to reach all Americans with health information they can use and to communicate in a way that helps people to easily understand research results. The NIH fully supports the Plain Language initiative, which has its origins in a Federal directive that requires agencies to incorporate plain language elements in the development of communications materials for the public. The NIH is committed to the use of plain language in all new documents written for the public, other government entities, and fellow workers.

Plain Language: Getting Started or Brushing Up

Use this handy tool to learn about using plain language in your work.

Plain Language Act

President Barack Obama signed the Plain Writing Act of 2010 (H.R. 946/Public Law 111-274) on October 13, 2010.

The Act requires the federal government to write documents, such as tax returns, federal college aid applications, and Veterans Administration forms in simple easy-to-understand language..."

Read the Act » pdf

https://www.nih.gov/institutes-nih/nih-office-director/office-communications-public-liaison/clear-communication/plain-language

Handout

Plain Language Word Suggestions

INSTEAD OF	TRY	INSTEAD OF	TRY
a and/or b	a or b or both	consolidate	combine, join, merge
accompany	go with	constitutes	is, forms, makes up
accomplish	carry out, do	contains	has
accorded	given	convene	meet
accordingly	so	currently	(omit), now
accrue	add, gain	deem	believe, consider, think
accurate	correct, exact, right	delete	cut, drop
additional	added, more, other	demonstrate	prove, show
address	discuss	depart	leave
addressees	you	designate	appoint, choose, name
addressees are requested	(omit), please	desire	want, wish
adjacent to	next to	determine	decide, figure, find
advantageous	helpful	disclose	show
adversely impact on	hurt, set back	discontinue	drop, stop
advise	recommend, tell	disseminate	give, issue, pass, send
afford an opportunity	allow, let	due to the fact that	due to, since
aircraft	plane	during the period	during
allocate	divide	effect modifications	make changes
anticipate	expect	elect	choose, pick
a number of	some	eliminate	cut, drop, end
apparent	clear, plain	employ	use
appreciable	many	encounter	meet
appropriate	(omit), proper, right	endeavor	try
approximate	about	ensure	make sure
arrive onboard	arrive	enumerate	count
as a means of	to	equipments	equipment
ascertain	find out, learn	equitable	fair
as prescribed by	in, under	establish	set up, prove, show
assist, assistance	aid, help	evidenced	showed
attain	meet	evident	clear
attempt	try	exhibit	show
at the present time	at present, now	expedite	hasten, speed up
be advised	(omit)	expeditious	fast, quick
benefit	help	expend	spend
by means of	by, with	expertise	ability
capability	ability	expiration	end
caveat	warning	facilitate	ease, help
close proximity	near	failed to	didn't
combat environment	combat	feasible	can be done, workable
combined	joint	females	women
commence	begin, start	finalize	complete, finish
comply with	follow	for a period of	for
component	part	for example,_____etc.	for example, such as
comprise	form, include, make up	forfeit	give up, lose
concerning	about, on	forward	send
consequently	so	frequently	often

Source: http://www.plainlanguage.gov/howto/wordsuggestions/simplewords.cfm

function	act, role, work	magnitude	size
furnish	give, send	maintain	keep, support
has a requirement for	needs	maximum	greatest, largest, most
herein	here	methodology	method
heretofore	until now	minimize	decrease, method
herewith	below, here	minimum	least, smallest
however	but	modify	change
identical	same	monitor	check, watch
identify	find, name, show	necessitate	cause, need
immediately	at once	notify	let know, tell
impacted	affected, changed	not later than 10 May	by 10 May, before 11 May
implement	carry out, start	not later than 1600	by 1600
in accordance with	by, following, per, under	notwithstanding	inspite of, still
in addition	also, besides, too	numerous	many
in an effort to	to	objective	aim, goal
inasmuch as	since	obligate	bind, compel
in a timely manner	on time, promptly	observe	see
inception	start	on a _____basis	(omit)
incumbent upon	must	operate	run, use, work
indicate	show, write down	optimum	best, greatest, most
indication	sign	option	choice, way
initial	first	parameters	limits
initiate	start	participate	take part
in lieu of	instead	perform	do
in order that	for, so	permit	let
in order to	to	pertaining to	about, of, on
in regard to	about, concerning, on	portion	part
in relation to	about, with, to	possess	have, own
inter alia	(omit)	practicable	practical
interface	meet, work with	preclude	prevent
interpose no objection	don't object	previous	earlier
in the amount of	for	previously	before
in the event of	if	prioritize	rank
in the near future	shortly, soon	prior to	before
in the process of	(omit)	proceed	do, go ahead, try
in view of	since	procure	(omit)
in view of the above	so	proficiency	skill
is applicable to	applies to	promulgate	issue, publish
is authorized to	may	provide	give, offer, say
is in consonance with	agrees with, follows	provided that	if
is responsible for	(omit) handles	provides guidance for	guides
it appears	seems	purchase	buy
it is	(omit)	pursuant to	by, following, per, under
it is essential	must, need to	reflect	say, show
it is requested	please, we request, I request	regarding	about, of, on
liaison	discussion	relative to	about, on
limited number	limits	relocate	move

Source: http://www.plainlanguage.gov/howto/wordsuggestions/simplewords.cfm

Plain Language Word Suggestions

remain	stay	warrant	call for, permit
remainder	rest	whereas	because, since
remuneration	pay, payment	with reference to	about
render	give, make	with the exception of	except for
represents	is	witnessed	saw
request	ask	your office	you
require	must, need	/ (slash)	and, or
requirement	need		
reside	live		
retain	keep		
said, some, such	the, this, that		
selection	choice		
set forth in	in		
similar to	like		
solicit	ask for, request		
state-of-the-art	latest		
subject	the, this, your		
submit	give, send		
subsequent	later, next		
subsequently	after, later, then		
substantial	large, much		
successfully complete	complete, pass		
sufficient	enough		
take action to	(omit)		
terminate	end, stop		
the month of	(omit)		
there are	(omit)		
therefore	so		
therein	there		
there is	(omit)		
thereof	its, their		
the undersigned	I		
the use of	(omit)		
this activity, command	us, we		
timely	prompt		
time period	(either one)		
transmit	send		
type	(omit)		
under the provisions of	under		
until such time as	until		
utilize, utilization	use		
validate	confirm		
viable	practical, workable		
vice	instead of, versus		

Source: http://www.plainlanguage.gov/howto/wordsuggestions/simplewords.cfm

Centers for Medicare & Medicaid Services (CMS)

Toolkit for making written material clear and effective

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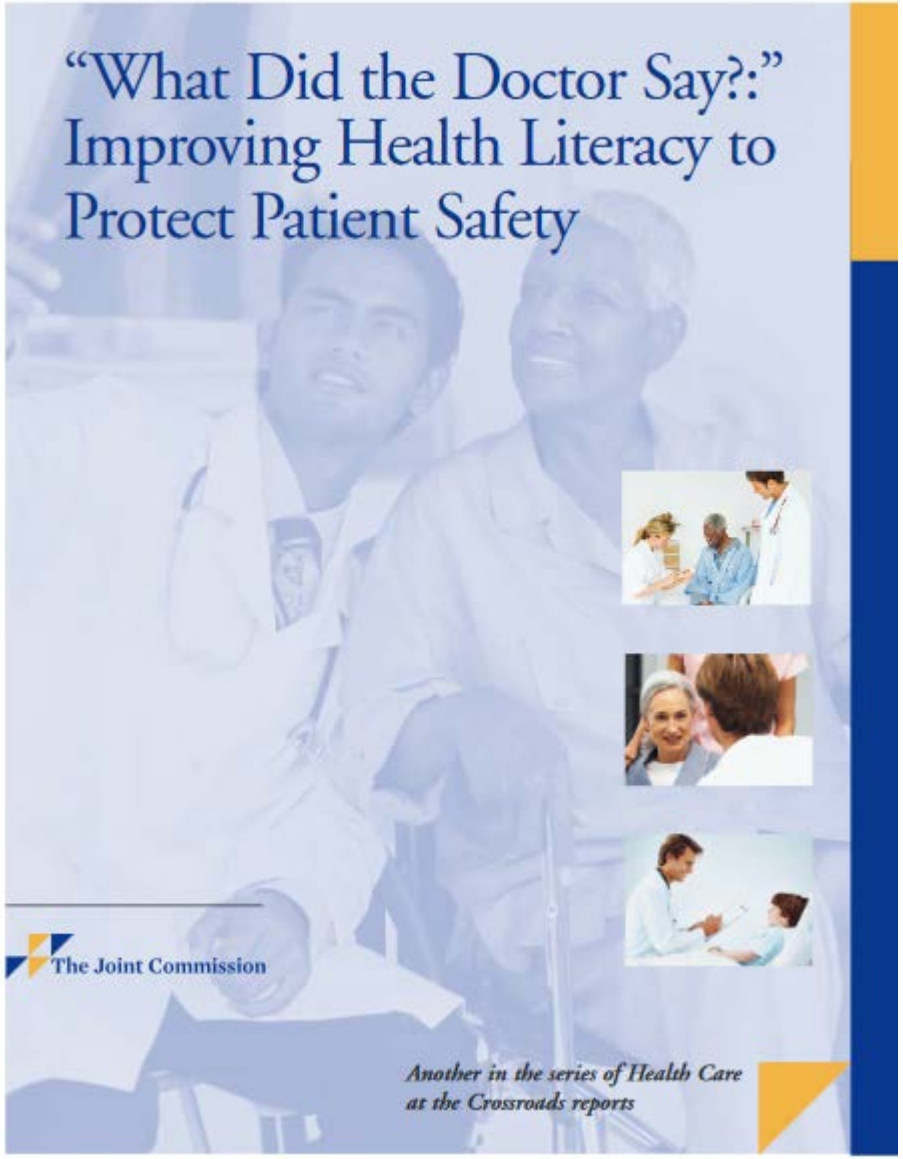
for all 11 parts of the toolkit



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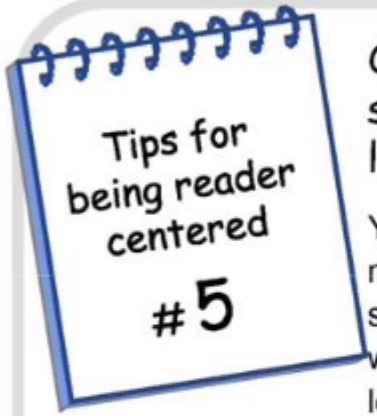
Orient toward the subset of readers who are less knowledgeable, less attentive, and less skilled at reading



Orient your writing and design toward the subset of your readers who are less attentive, less knowledgeable, and less skilled at reading.

Your intended readers will differ in the attention they give to the material as well as the subject matter knowledge and literacy skills they bring to it. If you create written material that works well for those who are less attentive, less knowledgeable, and less skilled at reading, you will reach a larger proportion of your audience.

The tip shown above is a pragmatic suggestion for taking a reader-centered approach to creating low barrier written material. It urges you to **orient toward the subset of your readers *for whom the potential barriers are the greatest***, that is, the readers who are less attentive, less interested, less knowledgeable, and less skilled at reading. If you can make your material work well for these readers, it will work well for the rest of your readers, too.

In terms of reading skills, the Toolkit focuses on material that is written for people with skills at only the

https://www.jointcommission.org/assets/1/18/improving_health_literacy.pdf

Solutions to Make Effective Communications An Organizational Priority to Protect the Safety of Patients:

Tactics	Accountability
• Raise awareness throughout the organization of the impact of health literacy and English proficiency on patient safety.	→ Administrative and Clinical Leaders, Patient Safety Directors
• Train all staff in the organization to recognize and respond appropriately to patients with literacy and language needs.	→ Administrative Leaders, Patient Safety Officers, Social Services, In-Service Educators
• Create patient-centered environments that stress the use of clear communications in all interactions – from the reception desk to discharge planning – with patients.	→ Administrative Leaders, Department Heads, Social Services
• Modify strategies for compliance with The Joint Commission's National Patient Safety Goals to accommodate patients with special literacy and language needs.	→ Administrative and Clinical Leaders, Patient Safety Officers
• Use well-trained medical interpreters for patients with low English proficiency.	→ Administrative Leaders, Department Heads, Social Services
• Provide reimbursement to cover health care organization costs for providing trained interpreters.	→ CMS, State Medicaid Agencies, Private Payers
• Create organization cultures of safety and quality that value patient-centered communications as an integral component of delivering patient-centered care.	→ Administrative and Clinical Leaders
• Assess the organization's patient safety culture using a valid and reliable assessment tool, such as the AHRQ Hospital Survey on Patient Safety Culture.	→ Administrative and Clinical Leaders

https://www.jointcommission.org/assets/1/18/improving_health_literacy.pdf

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Health Literacy and Communication

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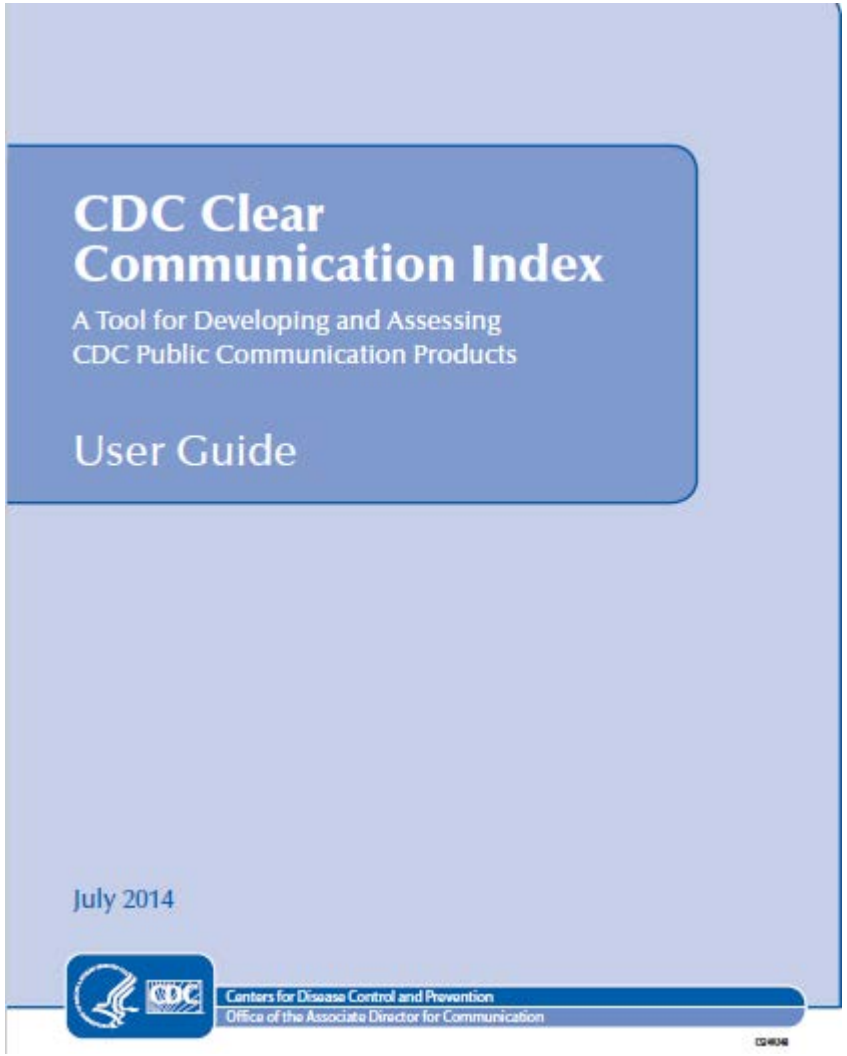
Health Literacy and Communication

ODPHP is dedicated to helping professionals communicate more clearly with consumers — it's a key way of improving health and the quality of health care. We create, promote, and curate evidence-based health literacy and communication tools, practices, and research. Using our resources, professionals will find effective strategies for sharing health information in ways that consumers can understand and use.

https://health.gov/communication/



http://www.cdc.gov/ccindex/pdf/clear-communication-user-guide.pdf

Anatomy of a Material

The following example illustrates how multiple Index items work together to make a material easier to understand and use.

Language

6. Do both the main message and the call to action use the active voice?

Use active voice and allow the subject of the sentence to perform the action. Active voice is used most often in conversation.

Example 1:

Active Voice: Wash fruits and vegetables before you cut or peel them.

Passive Voice: Fruits and vegetables should be washed before they are cut or peeled.

Example 2:

Before (passive voice):	**After (active voice):**
The draft guidance was made available for public comment through publication in the *Federal Register*. Comments received were considered and, when appropriate, incorporated into the document.	CDC published the draft guidelines in the *Federal Register* for public comment. We carefully reviewed the comments and, when it was appropriate, we incorporated them into the guidelines.

✓ **Supporting Plain Language Guideline:** Use active voice. (http://www.plainlanguage.gov/howto/guidelines/FederalPLGuidelines/writeActive.cfm)

✓ **Supported by the CDC Style Guide:** As a rule, use the active voice because it is more accurate, direct, precise, and interesting.

9. Is the material organized in chunks with headings?

Break text into chunks to help the audience remember and group similar information. Chunked information also looks less dense and overwhelming to read.

A "chunk" is the amount of words or numbers that people can hold in their short-term memory and group with other words or numbers. A chunk should be only one idea that people can connect to other, related ideas.

Use headings to organize and label chunks. Headings are sometimes referred to as "advance organizers." Consider information flow in the material when creating headings and chunks. Headings must accurately reflect the information that follows, or they can distract or confuse the audience.

Headings are visually distinct (in font style, size, and with spacing) from the body text of the document. Leave more space above a heading than below.

Example 1:

Before:

Measles is highly contagious, and it easily spreads to unvaccinated people. About 90% of unvaccinated people will get measles if they are exposed to an infected person. Measles spreads through the air when an infected person breathes, coughs, or sneezes. So, you can get measles if you are in the same room or place as an infected person and even after they leave. Measles virus can stay in the air for up to 2 hours.

While traveling, you could be exposed to infected people almost anywhere, including airports, airplanes, buses, hotels, restaurants, and stadiums. Infected people can spread measles even if they do not have the measles rash yet. So, you never know when you might be exposed to someone infected with measles virus.

After:

How contagious is measles?

Measles is highly contagious. This means that is spreads easily from person to person. Most people (about 90%) who have not gotten the measles shot will catch measles if they are around an infected person.

How does measles spread?

Measles spreads through the air when an infected person breathes, coughs, or sneezes. So, you can get measles if you are in the same room or place as an infected person and even after they leave. Measles virus can stay in the air for up to 2 hours.

While traveling, you could around infected people almost anywhere, including airports, airplanes, buses, hotels, restaurants, and stadiums.

How can I tell if someone has measles?

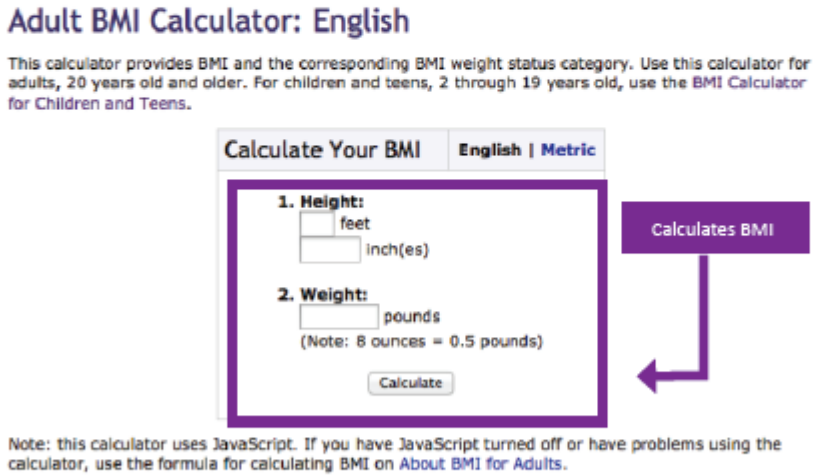
You can't tell. Infected people can spread measles even if they do not have the measles rash yet. So, you never know when you might be near someone infected with measles virus.

17. Does the audience have to conduct mathematical calculations?

Be sure to do the math rather than expect the audience to calculate. Provide calculations and conversions so that the audience isn't distracted, confused or intimidated by the numbers and formulas or misinformed by errors in their calculations. Few people are likely to take the time or able to conduct even basic mathematical calculations such as addition and subtraction. Research shows health professionals and trained statisticians can make wrong assumptions and calculation errors, depending on the context and type of calculations involved.

Keep the denominators constant. When you use different denominators, people can't easily compare numbers. Use the same denominator, even for absolute risk (example: 1 out of 3), throughout the material so that audiences don't have to calculate.

Example 1:



Example 2:

How much money did you spend on alcohol last year?
If you had 3 alcoholic drinks a day and each drink cost $4, then you spent $4,380 last year on alcoholic drinks. What else could you do with $4,380 this year?

CDC Clear Communication Index Score Sheet

Name of material _____

Name of person scoring _____

Date ___ ___ / ___ ___ / ___ ___ ___ ___

Before you begin, identify your primary audience, their health literacy skills, your primary communication objective, and main message. You must know these 4 pieces of information to score the material accurately. If you don't have this information, wait until you do to score the material.

Note about translated materials: If the audiences for the English and non-English versions are different, you should create and score the materials separately to account for audience differences.

1. Who is your primary audience? _____

Note: See Appendix B of the User Guide for a list of common public health audiences.

2. What do you know about the health literacy skills of your audience?

List as many relevant characteristics about your audience as you can. Try and include evidence about their literacy and numeracy skills; words, numbers, and health concepts they find familiar; their prior experience

http://www.cdc.gov/ccindex/pdf/full-index-score-sheet.pdf

ZIKA AND SEXUAL TRANSMISSION

WHAT WE KNOW AND WHAT WE DON'T KNOW.

What we know

- Zika virus can be spread during sex by a man infected with Zika to his partners. This includes vaginal, anal, and oral (mouth-to-penis) sex.
- In known cases of sexual transmission, the men had Zika symptoms. From these cases, we know the virus can be spread when the man has symptoms, before symptoms start, and after symptoms end.
- The virus can stay in semen longer than in blood.

What we don't know

- How long Zika virus can stay in the semen of infected men or spread through sex.
- If men infected with Zika who never develop symptoms can have Zika virus in their semen or spread Zika through sex.
- If a woman can spread Zika virus to her sex partners.

Pregnant?

What you should know about Zika and sex.

Zika virus can be spread during by a man to his partners. Because Zika can cause certain birth defects, take steps to prevent infection during your pregnancy.

If you have a male partner who lives in or has traveled to an area with Zika, protect your pregnancy.

Handout

Checklist for CDC's Clear Communications Index

Before You Begin, Ask Yourself:

1. **Who is my primary audience?**
2. **What do I know about the health literacy skills of my audience?**
3. **What is my primary communication objective?**
4. **What is the main message statement in the material?**

Part A: Core (applies to all materials)

Main Message and Call to Action

- [ ] 1. Does the material contain one main message statement?
- [ ] 2. Is the main message at the top, beginning, or front of the material?
- [ ] 3. Is the main message emphasized with visual cues?
- [ ] 4. Does the material contain at least one visual that conveys or supports the main message?
- [ ] 5. Does the material include one or more calls to action for the primary audience?

Language

- [ ] 6. Do both the main message and the call to action use the active voice?
- [ ] 7. Does the material always use words the primary audience uses?

Information Design

- [ ] 8. Does the material use bulleted or numbered lists?
- [ ] 9. Is the material organized in chunks with headings?
- [ ] 10. Is the most important information the primary audience needs summarized in the first paragraph or section?

State of the Science

- [ ] 11. Does the material explain what authoritative sources, such as subject matter experts and agency spokespersons, know and don't know about the topic?

Part B: Behavioral Recommendations

- [ ] 12. Does the material include one or more behavioral recommendations for the primary audience?
- [ ] 13. Does the material explain why the behavioral recommendation(s) is important to the primary audience?
- [ ] 12. Does the behavioral recommendation(s) include specific directions about how to perform the behavior?

Part C: Numbers

- [ ] 15. Does the material always present numbers the primary audience uses?
- [ ] 16. Does the material always explain what the numbers mean?
- [ ] 17. Does the audience have to conduct mathematical calculations? (NO gets a check)

Part D: Risk – if relevant

- [ ] 18. Does the material explain the nature of the risk?
- [ ] 19. Does the material address both the risks and benefits of the recommended behaviors?
- [ ] 20. If the material uses numeric probability to describe risk, is the probability also explained with words or a visual?

Calculate the Total Score for the Material (90% "yes" for relevant items is good)

Source: Adapted from CDC's Clear Communication Index Score Sheet (https://www.cdc.gov/ccindex/pdf/full-index-score-sheet.pdf)

- These highly useful guides for developing and evaluating health education materials neglect a less obvious but particularly important barrier to patient comprehension:
- the inherent complexity of the self-care concepts and actions that patients must learn (e.g., if-then reasoning, spotting patterns, problem solving in ambiguous situations).

Simple words do not transform complex

ideas into simple ones,

but knowing what makes a task inherently complex

allows the educator to anticipate typical stumbling blocks in

patient learning and to design more effective instruction

Improving the Literacy Level (Readability)

of educational materials does not guarantee

comprehension & compliance

because it does not reduce inherent cognitive demands.

Some ways to assess readability of written materials

- Common readability indices

- Readability necessary but not sufficient for understanding materials
  - Simple words don't make a complicated task easy

    - ASW: Average syllables per word
    - ASL: Average words per sentence

  - **Flesch Reading Ease** = 206.835-(84.6 * ASW) - (1.015 * ASL)

  - **Flesch-Kincaid Grade Level** = (0.39 * ASL) + (11.8 * ASW) -15.59

Handout

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

Insulin is a hormone that helps your body use the sugar (glucose) you get from the food you eat. Insulin levels rise and fall in response to the level of glucose in your blood. Insulin's main job is to help glucose get from your blood into the cells of your body, where it is used as fuel to keep the cells working normally.

The pancreas is the organ in your body that produces insulin throughout the day.

- When you have type 1 diabetes, you do not produce insulin
- When you have type 2 diabetes, you either do not produce enough insulin or your body's cells do not respond to the insulin properly, called insulin resistance

When you need to take insulin, there are different types. In some cases, you may use a mixture of different types, such as short-acting and long-acting insulins.

People with type 1 diabetes must use insulin injections to keep their blood sugar at a normal or close to normal level.

People with type 2 diabetes often need to add insulin to control their blood sugar when oral medications or non-insulin injectable medications (exenatide and liraglutide) are not enough.

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

The number of insulin injections you take may vary from once a day to using different types of insulin at different times of the day. When you first start taking insulin, your healthcare provider will decide on the type, the amount, and frequency of the injections of insulin you need. This will be based on your lifestyle, blood sugar level, and any other diabetic medications you may be taking. Monitoring your diet along with your blood sugar levels will
be important in deciding if any changes are needed in your insulin dose.

Remember that insulin injections will lower your blood sugar level whether you have eaten or not. Very low blood sugar, known as hypoglycemia, can cause serious problems. Eating regular meals is very important when taking insulin.

Most people have no problem getting used to taking insulin injections. They feel better when their blood sugar is well controlled.

All people with diabetes need to help control their blood sugar by

- Eating a healthy diet
- Doing moderate exercise
- Losing weight or maintaining a normal weight

Handout

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Using insulin to treat your diabetes: *What it means for you*

Insulin helps your body get energy from the food you eat. If you do not have enough insulin, or the insulin you have is not working right, you have diabetes and need to take medicine.

- People with type 1 diabetes do not make any insulin and MUST inject insulin.
- People with type 2 diabetes do not make enough insulin or need help using the insulin they have. They need to use pills, insulin shots or both.

The only way to get insulin into your body is with a shot. Many people with diabetes use insulin shots.

There are many kinds of insulin, some work fast, others do not.

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Using insulin to treat your diabetes: *What it means for you*

You may need one shot of insulin a day, or you may need more. Your healthcare provider will explain what kind of insulin, the amount, and when you need it.

Your weight, diet and other medicines are important when deciding how much insulin you will need.

It is important to eat regular meals when you take insulin. Insulin shots help your blood sugar levels stay normal. If you take too much insulin or have not eaten, your blood sugar can drop too low. This is called "hypoglycemia."

Most people get used to using shots to take their insulin.

When you have diabetes it is important to:

- Eat a healthy diet
- Exercise
- Keep your weight down

These **Starting Insulin** fact sheets will help you learn more about insulin.

“low literacy”

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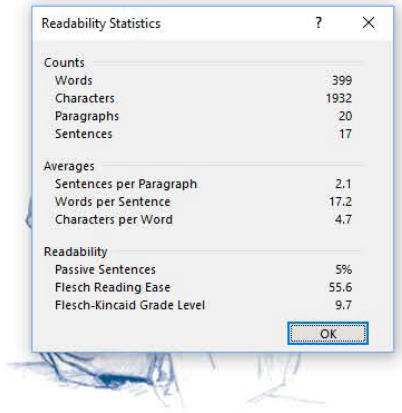

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- Losing weight or maintaining a normal weight

“very low” literacy

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

Readability Statistics

Counts	
Words	267
Characters	1205
Paragraphs	19
Sentences	17
Averages	
Sentences per Paragraph	1.8
Words per Sentence	12.3
Characters per Word	4.3
Readability	
Passive Sentences	0%
Flesch Reading Ease	71.8
Flesch-Kincaid Grade Level	6.3

OK

Insulin helps your body get energy from the food you eat. If you do not have enough insulin, or the insulin you have is not working right, you have diabetes and need to take medicine.

- People with type 1 diabetes do not make any insulin and MUST inject insulin.
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When you have diabetes it is important to:

- Eat a healthy diet
- Exercise
- Keep your weight down

These **Starting Insulin** fact sheets will help you learn more about insulin.

Readability doesn’t make a complex task easy

To be or not to be, that is the question.

(Ctrl)

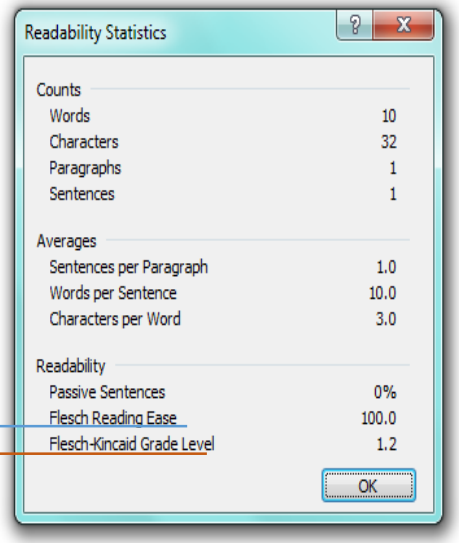
Ingredients of readability:

ASW: Average syllables per word

ASL: Average words per sentence

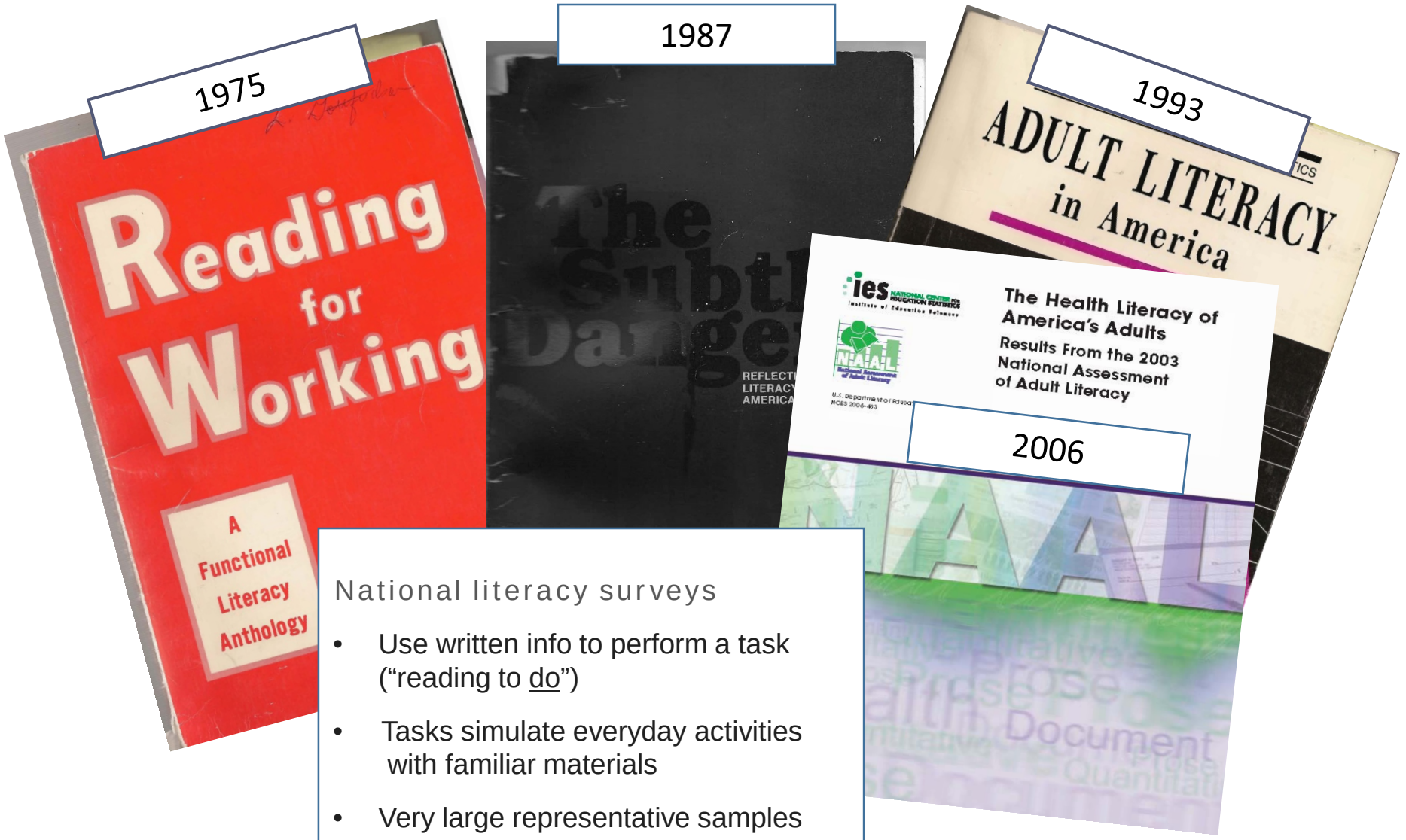
206.835- (84.6 * ASW) - (1.015 * ASL)

(0.39 * ASL) + (11.8 * ASW) -15.59



National Adult Literacy Survey (NALS)

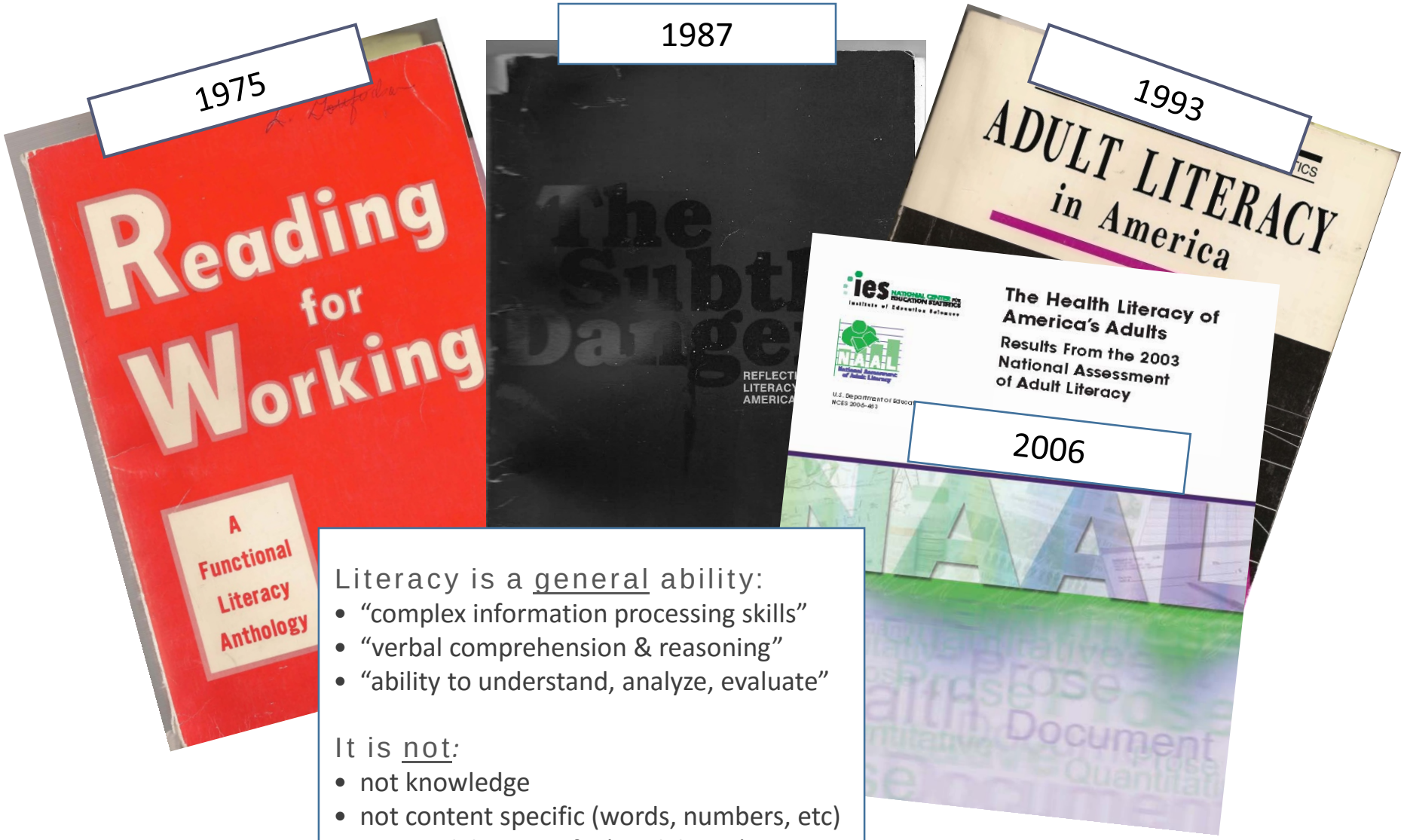
Four decades of literacy research



National literacy surveys

- Use written info to perform a task ("reading to do")
- Tasks simulate everyday activities with familiar materials
- Very large representative samples

Surprising, common conclusion



Literacy is a <u>general</u> ability:

- "complex information processing skills"
- "verbal comprehension & reasoning"
- "ability to understand, analyze, evaluate"

It is <u>not</u>:

- not knowledge
- not content specific (words, numbers, etc)
- not modality specific (read, listen)

How can we screen patients for literacy level?

A short, simple, and non-threatening method is the

Single Item Literacy Screen (SILS)

"How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?"

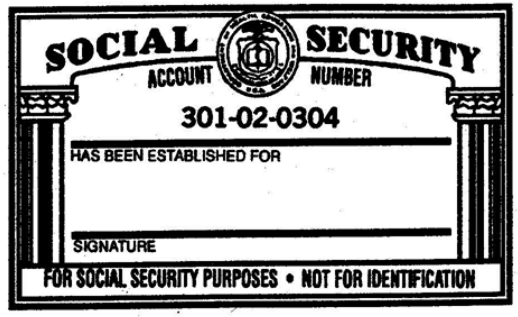
Answers	Literacy*	Cognitive Help Needed
Always	Very low	Strong
Often Sometimes	Low	Moderate
Rarely Never	Average - high	Minimal

* Our judgment

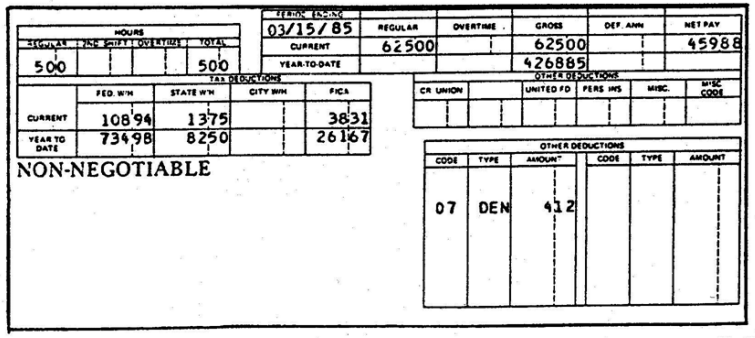
The Single Item Literacy Screener: Evaluation of a brief instrument to identify limited reading ability
Nancy S Morris[1], **Charles D MacLean**[†], **Lisa D Chew**[-] and **Benjamin Littenberg**[-]
BMC Family Practice 2006, **7**:21 doi:10.1186/1471-2296-7-21

Sample tasks

Here is a Social Security card. Sign your name on the line that reads "signature."



What is the gross pay for this year to date?



Pediatric Dosage Chart

Recommend

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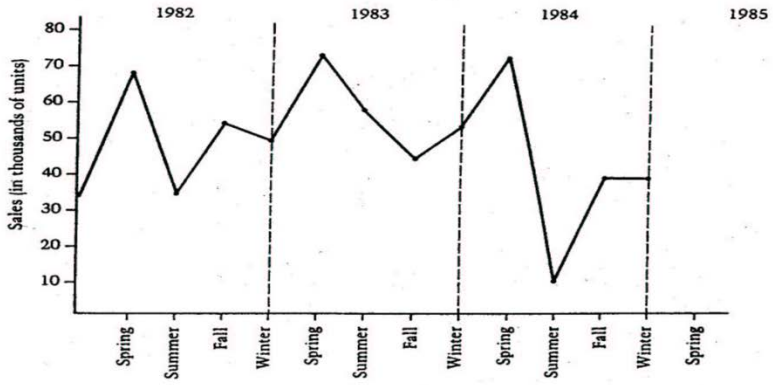
Pediatric Dosage Chart Drops, Syrup, & Chewables

Age	Approximate Weight Range*	Dosage: Drops	Syrup	Chewables 80 mg	Chewables 160 mg
† Under 3 mo	Under 13 lb	½ dropper	¼ tsp	—	—
† 3 to 9 mo	13-20 lb	1 dropper	½ tsp	—	—
† 10 to 24 mo	21-26 lb	1½ droppers	¾ tsp	—	—
2 to 3 yr	27-35 lb	2 droppers	1 tsp	2 tablets	—
4 to 5 yr	36-43 lb	3 droppers	1½ tsp	3 tablets	1½ tablets
6 to 8 yr	44-62 lb	—	2 tsp	4 tablets	2 tablets
9 to 10 yr	63-79 lb	—	2½ tsp	5 tablets	2½ tablets
11 yr	80-89 lb	—	3 tsp	6 tablets	3 tablets
12 yr and older	90 lb & over	—	3-4 tsp	6-8 tablets	3-4 tablets

† Consult with physician before administering to children under the age of 2 years.
Dosage may be given every 4 hours as needed but not more than 5 times daily.
How Supplied:
Drops: Each 0.8 ml dropper contains 80 mg (1.23 grains) acetaminophen.
Syrup: Each 5 ml teaspoon contains 160 mg (2.46 grains) acetaminophen.
Chewables: Regular tablets contain 80 mg (1.23 grains) acetaminophen each. Double strength tablets contain 160 mg (2.46 grains) acetaminophen each.

* If child is significantly under- or overweight, dosage may need to be adjusted accordingly.
The weight categories in this chart are designed to approximate effective dose ranges of 10-15 milligrams per kilogram.
(Current Pediatric Diagnosis and Treatment. 8th ed. CH Kempe and HK Silver, ed. Lange Medical Publications: 1984, p. 1079)
LA-1451-2-88 © 1988, Bristol-Myers U.S. Pharmaceutical and Nutritional Group • Evansville, Indiana 47721 U.S.A.

You are a marketing manager for a small manufacturing firm. This graph shows your company's sales over the last three years. Given the seasonal pattern shown on the graph, predict the sales for Spring 1985 (in thousands) by putting an "x" on the graph.



Handout

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time (breakfast)							
Blood Sugar							
Medicine							
Time (lunch)							
Blood Sugar							
Medicine							
Time (dinner)							
Blood Sugar							
Medicine							
Time (bed)							
Blood Sugar							
Medicine							

Handout

Typical literacy items, by difficulty level

Daily self-maintenance in modern literate societies

NALS difficulty level (& scores)	% US adults peaking at this level			Simulated everyday tasks National Adult Literacy Survey (NALS), 1993)
	Prose	**D**ocu	**Q**uant	
5 **(375-500)**	3%	3%	4%	▪ Use calculator to determine cost of carpet for a room (Q) ▪ Use table of information to compare 2 credit cards (D)
4 **(325-375)**	17%	15%	17%	▪ Use eligibility pamphlet to calculate SSI benefits (Q) ▪ Explain difference between 2 types of employee benefits (P)
3 **(275-325)**	32%	31%	31%	▪ Calculate miles per gallon from mileage record chart (Q) ▪ Write brief letter explaining error on credit card bill (P)
2 **(225-275)**	27%	28%	25%	▪ Determine difference in price between 2 show tickets (Q) ▪ Locate intersection on street map (D)
1 **(0-225)**	21%	23%	22%	▪Total bank deposit entry (Q) ▪ Locate expiration date on driver's license (P)

Patients' Literacy Levels

require *different cognitive support* from

DSME/S:

- Strong (NALS level 1)
- Moderate (NALS level 2)
- Minimal (NALS levels 3-5)

Handout

What makes some items more difficult? "Information processing complexity"

NALS difficulty level (scores)	Three scales, same results: Prose	Docu	Quant	Adult Literacy Survey, 1993)
5 (375-500)	3%	3%	4%	▪ Use calcula ▪ Use table c
4 (325-375)	17%	15%	17%	▪ Use eligibil ▪ Explain diff
3 (275-325)	32%	31%	31%	▪ Calculate n ▪ Write brief
2 (225-275)	27%	28%	25%	▪ Determine ▪ Locate inte
1 (0-225)	21%	23%	22%	▪ Total bank c ▪ Locate exp

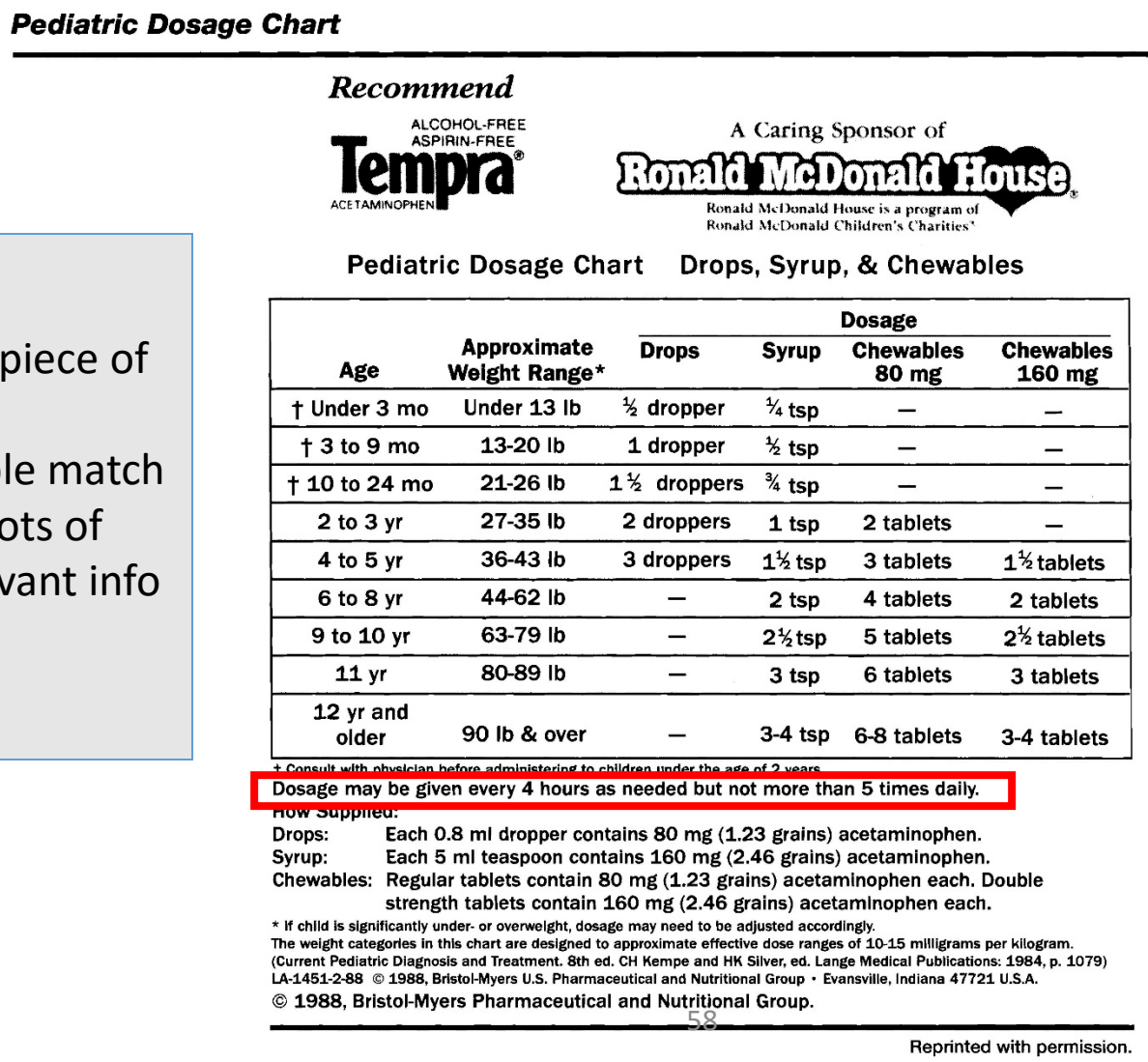
Elements of "process complexity"

- number of features to match
- level of inference
- abstractness of info
- distracting information

Not reading per se, but "problem solving"

Task #1—Underline sentence saying how often to give the medicine

- One piece of info
- Simple match
- But lots of irrelevant info



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11 yr	80-89 lb	—	3 tsp	6 tablets	3 tablets
12 yr and older	90 lb & over	—	3-4 tsp	6-8 tablets	3-4 tablets

† Consult with physician before administering to children under the age of 2 years.

Dosage may be given every 4 hours as needed but not more than 5 times daily.

How Supplied:
Drops: Each 0.8 ml dropper contains 80 mg (1.23 grains) acetaminophen.
Syrup: Each 5 ml teaspoon contains 160 mg (2.46 grains) acetaminophen.
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Caution!
Can train people to do this task, but not all possible tasks like it

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- One piece of info
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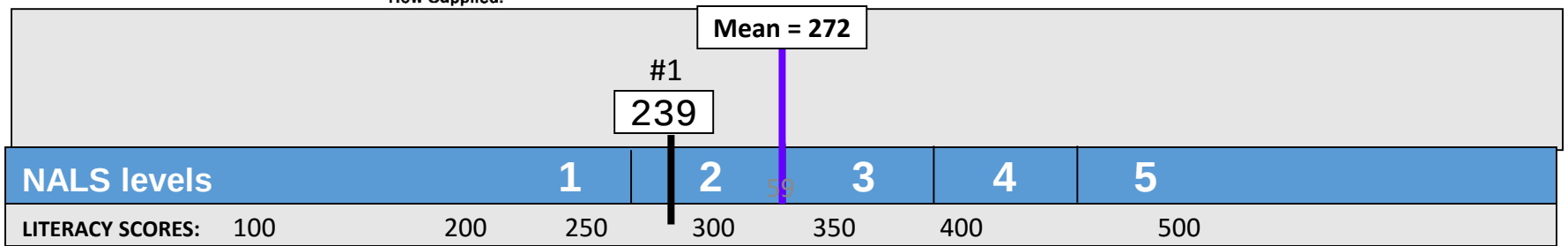
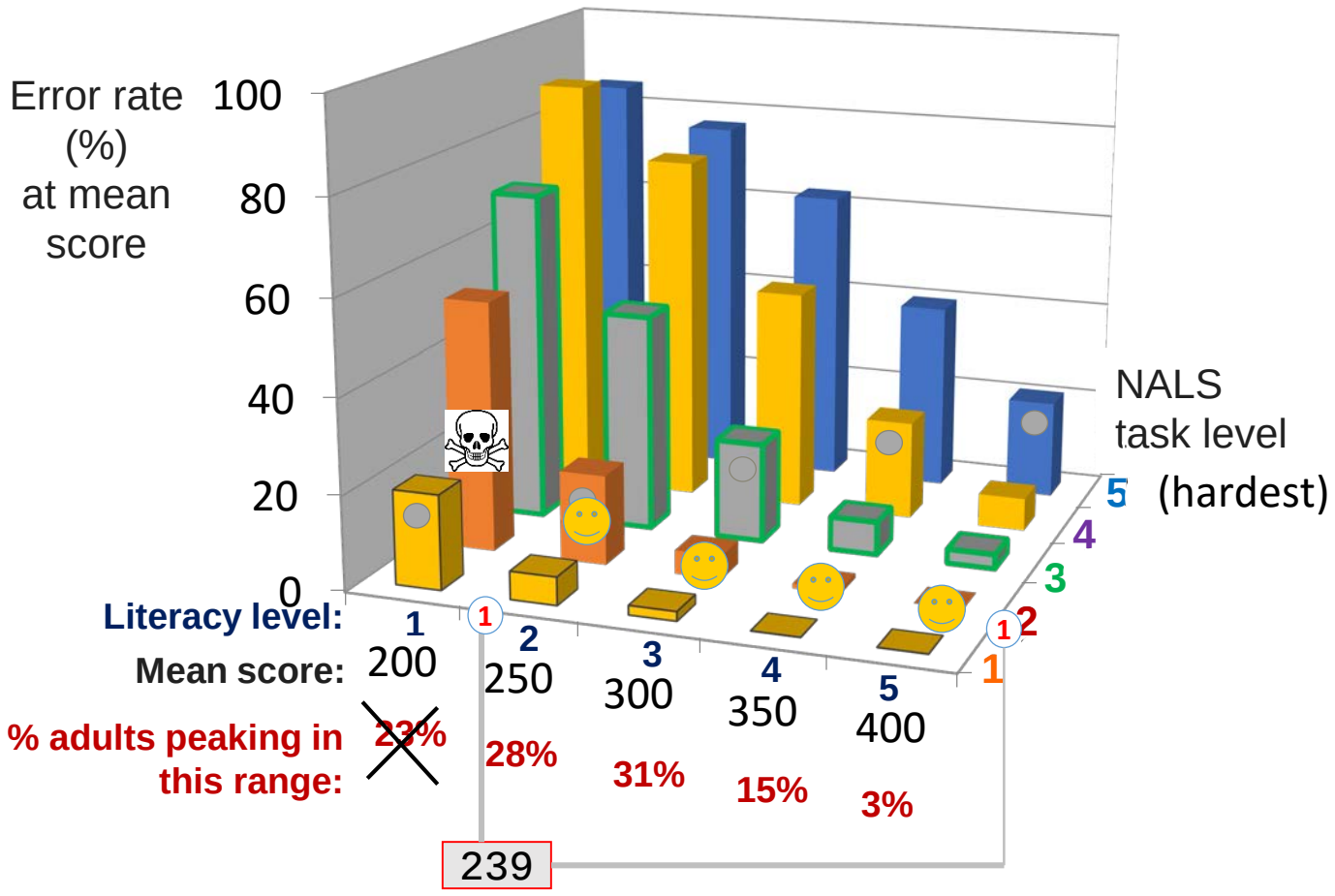


How difficult was item #1?



#3—Your child is 11 years old and weighs 85 pounds. How many 80 mg tablets can you give in 24-hr period?

- Multiple features to match
- Two-step task
- Infer proper math operation
- Select proper numbers to use
- Ignore the most obvious but incorrect number
- Calculate the result

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How Supplied:
Drops: Each 0.8 ml dropper contains 80 mg (1.23 grains) acetaminophen.
Syrup: Each 5 ml teaspoon contains 160 mg (2.46 grains) acetaminophen.
Chewables: Regular tablets contain 80 mg (1.23 grains) acetaminophen each. Double strength tablets contain 160 mg (2.46 grains) acetaminophen each.

* If child is significantly under- or overweight, dosage may need to be adjusted accordingly.
The weight categories in this chart are designed to approximate effective dose ranges of 10-15 milligrams per kilogram.
(Current Pediatric Diagnosis and Treatment. 8th ed. CH Kempe and HK Silver, ed. Lange Medical Publications: 1984, p. 1079)
LA-1451-2-88 © 1988, Bristol-Myers U.S. Pharmaceutical and Nutritional Group • Evansville, Indiana 47721 U.S.A.

#3—Your child is 11 years old and weighs 85 pounds. How many 80 mg tablets can you give in 24-hr period?

- Multiple features to match
- Two-step task
- Infer proper math operation
- Select proper numbers to use
- Ignore the most obvious but incorrect number
- Calculate the result

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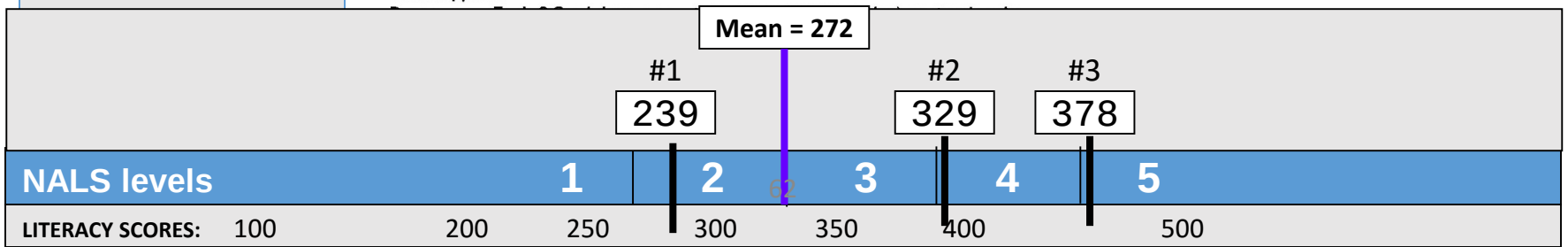
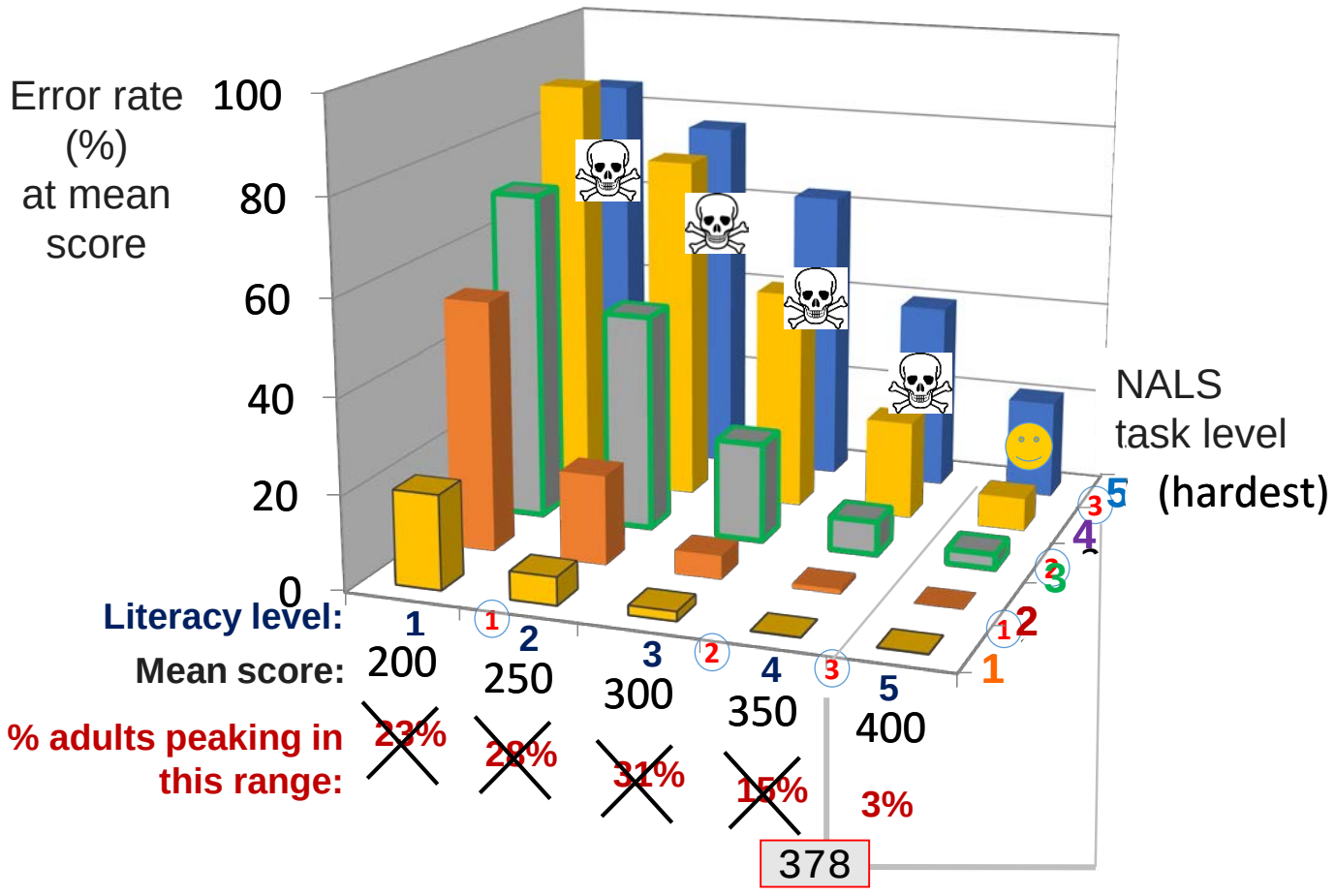
Pediatric Dosage Chart Drops, Syrup, & Chewables

Age	Approximate Weight Range*	Dosage: Drops	Syrup	Chewables 80 mg	Chewables 160 mg
† Under 3 mo	Under 13 lb	½ dropper	¼ tsp	—	—
† 3 to 9 mo	13-20 lb	1 dropper	½ tsp	—	—
† 10 to 24 mo	21-26 lb	1½ droppers	¾ tsp	—	—
2 to 3 yr	27-35 lb	2 droppers	1 tsp	2 tablets	—
4 to 5 yr	36-43 lb	3 droppers	1½ tsp	3 tablets	1½ tablets
6 to 8 yr	44-62 lb	—	2 tsp	4 tablets	2 tablets
9 to 10 yr	63-79 lb	—	2½ tsp	5 tablets	2½ tablets
11 yr	80-89 lb	—	3 tsp	6 tablets	3 tablets
12 yr and older	90 lb & over	—	3-4 tsp	6-8 tablets	3-4 tablets

† Consult with physician before administering to children under the age of 2 years.
Dosage may be given every 4 hours as needed but not more than 5 times daily.
How Supplied:



How difficult was item #3?

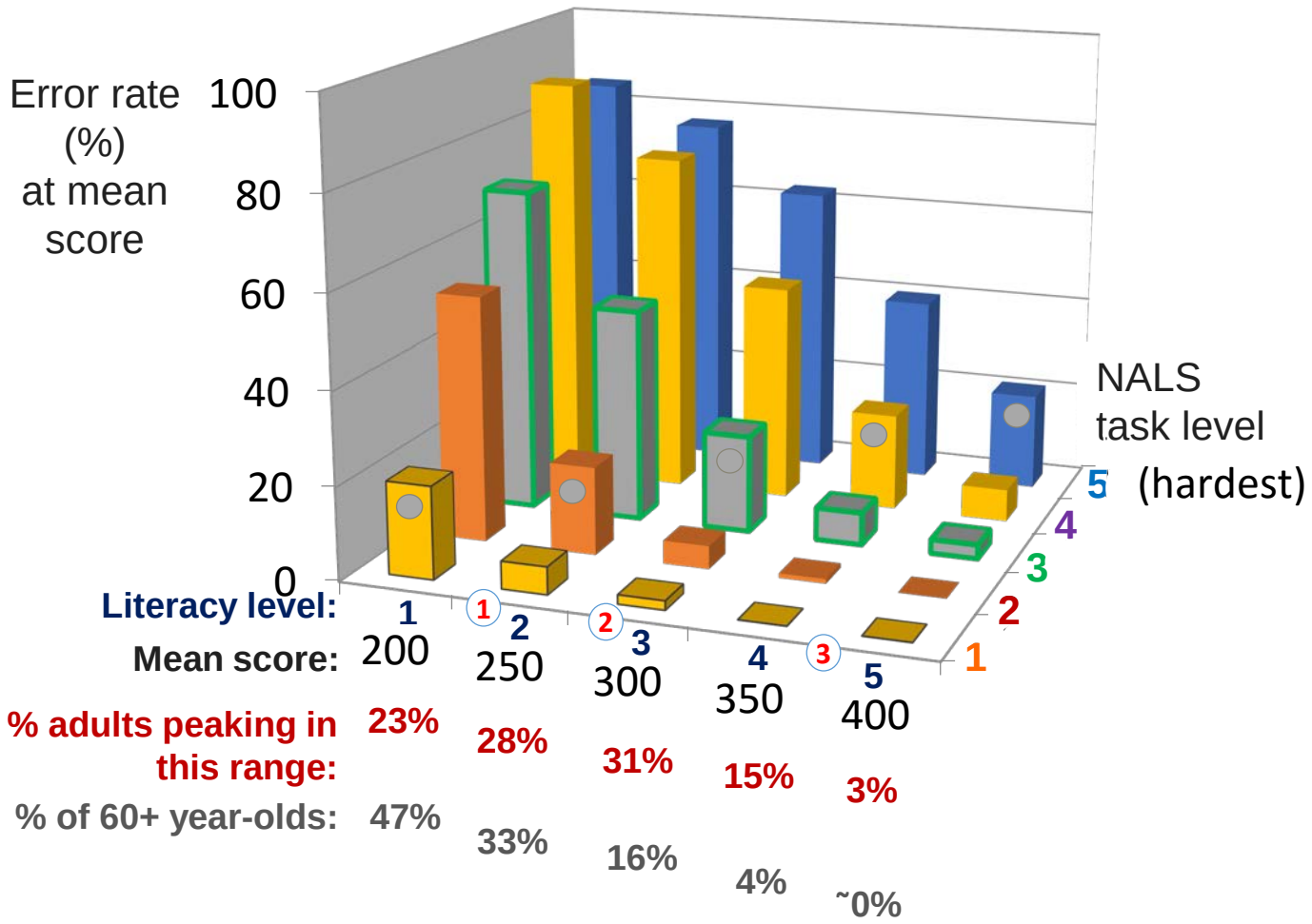


	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time (breakfast)							
Blood Sugar							
Medicine							
Time (lunch)							
Blood Sugar							
Medicine							
Time (dinner)							
Blood Sugar							
Medicine							
Time (bed)							
Blood Sugar							
Medicine							

Complexity & aging

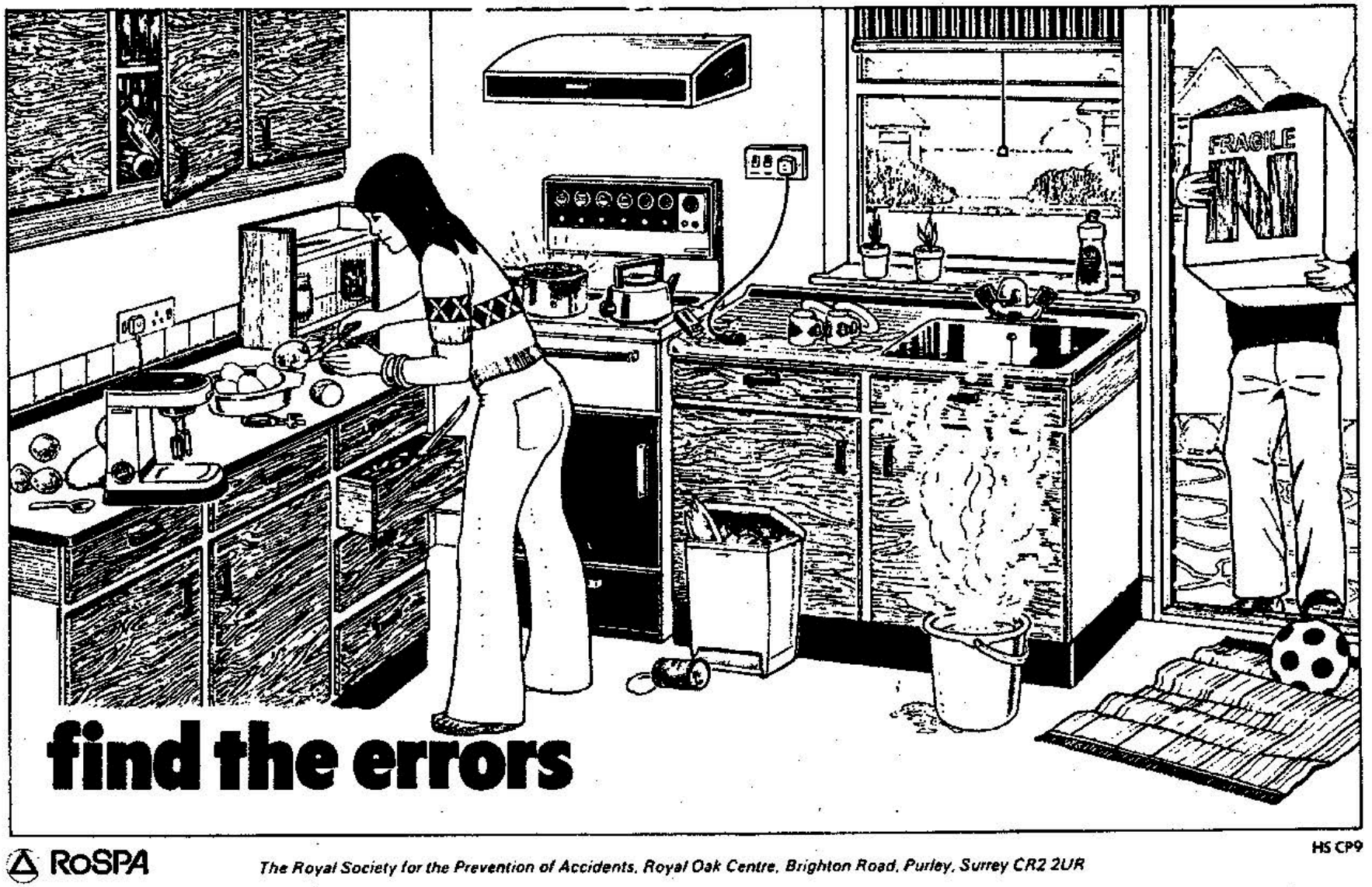
"Okay your father
managed to get a mouse.
Now how do we use it?"

Seniors are at much greater risk for low literacy



Handout

Using the Mind's Eye to Spot Hazards



How many hazards can you spot?

Figure 4.4. RoSPA hazard spotting picture

Blood Glucose Log

Name ____ ____________

Date	Time	Blood Glucose Number	Other Information
Monday 7/25	10:15	310	greens Chicken salad muffins forgot [illegible]
7/26	10:00	229	[illegible] tomato cabbage [illegible] muff strawberries
7/27	10:15	335	Healthy Choice turkey dinner muffin - poppy seed
7/28	10:20	238	salisbury steak salad bread
7/29	9:45	217	Turkey BLT salad
7/30	9:45	211	greens chicken salad bread
7/31	9:45	347	turkey cheese sandwich apple crisp
8/1	9AM	135	
8/1			

Blood Glucose Log

Name ____ ____________

Date	Time	Blood Glucose Number	Other Information
7.19.16	1.05	253	
7-20-16	6.49	125	
7 23-16	9.16	136	
7-26 16	8.05	127	
7-27.16	10.25	126	
7 28 16	10 15	154	
7-29 16	8 20	118	

Lista de Glucosa

Nombre _____

Fecha 2016	Hora	Numero de glucosa	Otra informacion		
5-3		112	6-18	6:52	108
5-4	7.05	124	6-19	6:56	110
5-5		116	6-20	7:58	99
5-6	7.07	121	6-21	12:08	150
5-7	7.20	102	6-22	6:58	146
5-8	7.13	110	6-23	7:05	109
5-9	6-24	102	6-24	6:55	126
5-10	—	—	6-25	7:13	112
5-11	6:55	107	6-26	7:03	108
5-12	7:05	118	6-27	8:23	149
5-13	7:03	121	6-28		
5-14	7:00	132	6-29		
5-15	7:10	121	6-30		
5-16	7:05	(185)	7-9	6:49	122
5-17	6:45	129	7-10	7:06	130
5-18	6:56	124	7-11	6:58	(192)
5-19	6:59	113	7-12	7:47	126
5-20	6:54	114	7-13	6:58	125
5-21	7:00	113	7-14	7:02	136
5-22	7.14	122	7-15	6:50	130
5-23	7:14	106	7-16	6:52	121
5-24	8:15	104	7-17	7:02	126
5-25	6:55	128	7-18	8:21	127
5-26	6.55	107	7-19	7:39	139
5-27	6:58	120	7-20	7:06	109
5-28	6:41	118	7-21	6:59	126
5-29	6:50	111	7-22	6:57	123
5-30	10:43	106	7-23	6:56	(101)
5-31	9:48	113	7-24	7:14	130
6-1	7:56	116	7-25	8:13	136
6-2	6:51	114			
6-3	7:01	106			
6-4	7:03	129			
6-5	6:59	115			
6-6	6:21	110			
6-7	9:13	118			
6-8	6:50	113			
6-9	7:01	112			
6-10	6:52	111			
6-11	6:56	103			
6-12	6:52	92			
6-13	7:31	125			
6-14	8:38	106			
6-15	6:48	102			
6-16	6:57	119			
6-17	6:56	110			

KS 9/15

Beyond Health Literacy:

The cognitive demands of diabetes self-management

2D version of matrix

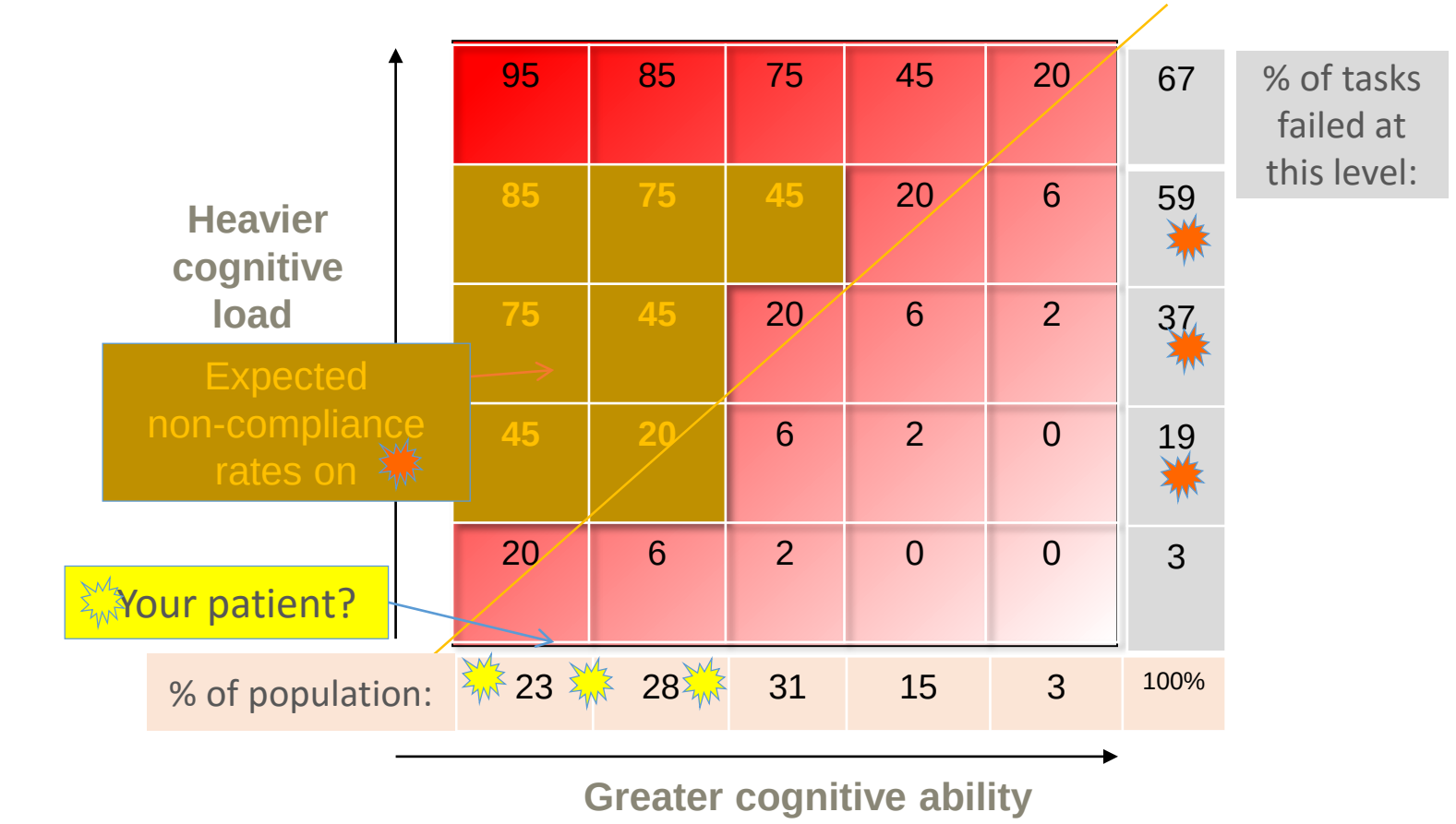
(For NALS document Scale, US adults, 1993)

P Probability of patient error (non-compliance)

2D version of matrix

(For NALS document Scale, US adults, 1993)

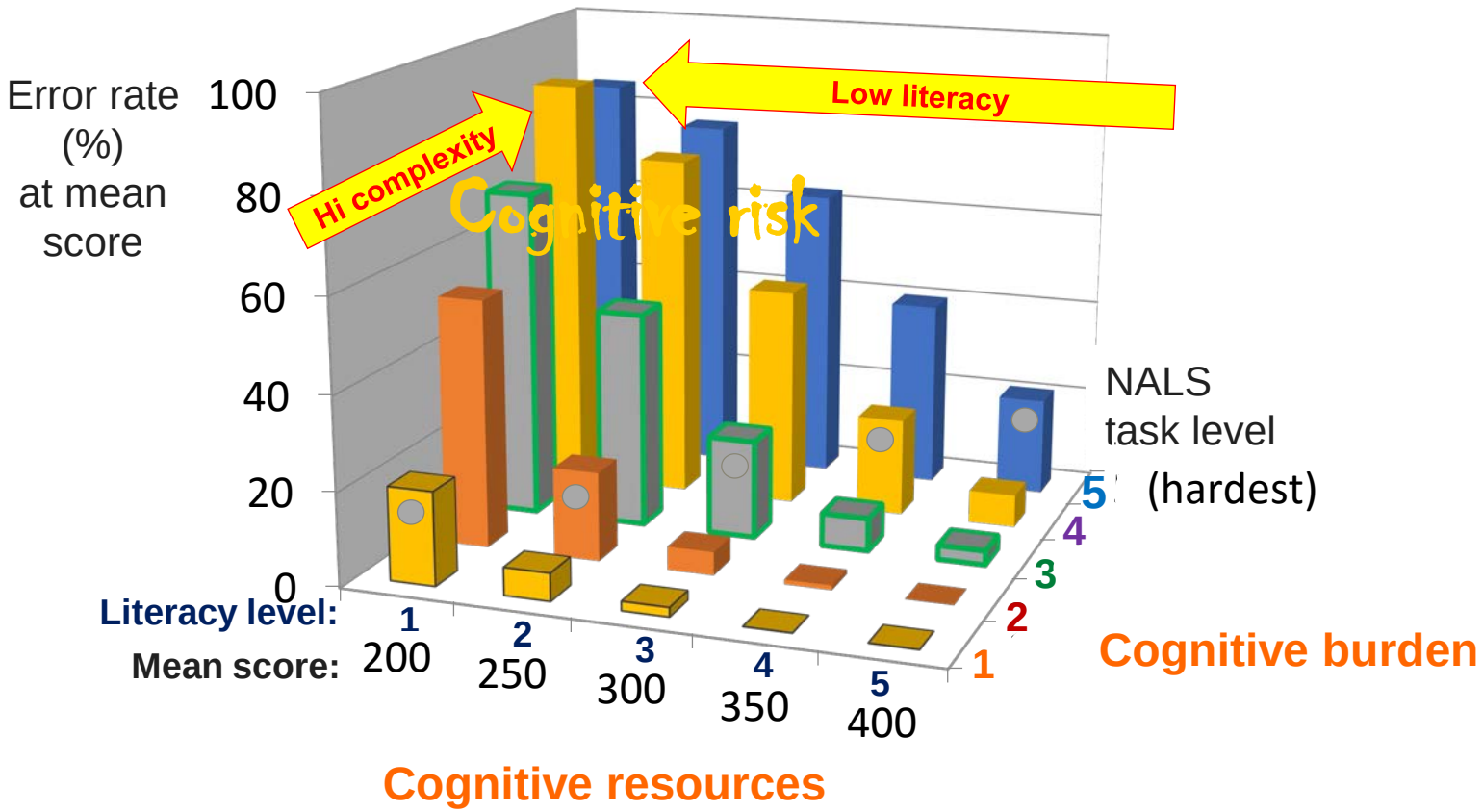
P Probability of patient error (non-compliance)



P Probability of patient error (non-compliance)

Handout

Matrix of cognitive risk



Where are the most critical tasks?

P Probability of patient error (non-compliance)

For effective DSME, identify complexity, reduce it, if possible

P Probability of patient error (non-compliance)

Common critical DSM errors

Top 3 “precipitating factors”

	% of ED visits for IHE
1. Meal-related misadventure	46%
2. Unintentionally took wrong insulin product	22%
3. Unintentionally took wrong dose/confused units	12%

National Estimates of Insulin-Related Hypoglycemia
and Errors Leading to Emergency Department
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Andrew I. Geller, MD; Nadine Shehab, PharmD, MPH; Maribeth C. Lovegrove, MPH; Scott R. Kegler, PhD;
Kelly N.Weidenbach, DrPH; Gina J. Ryan, PharmD, CDE; Daniel S. Budnitz, MD, MPH
JAMA Intern Med. 2014;174(5):678-686

Common critical errors

Recall top 3 “precipitating factors”

		% of ED visits for IHE
1.	Meal-related misadventure	46%
2.	Unintentionally took wrong insulin product	22%
3.	Unintentionally took wrong dose/confused units	12%

What went wrong?

Insights from “near misses”

National Estimates of Insulin-Related Hypoglycemia and Errors Leading to Emergency Department Visits and Hospitalizations
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JAMA Intern Med. 2014;174(5):678-686

1. Meal-related misadventures

- Took insulin, but
  - did not eat

Diabetes Disaster Averted #51: Careful Listening Saves Lives

I reviewed her recent episode with her again, stating "so you ate your dinner, and then you passed out..." at which point she interrupted with "no, I did not eat my dinner, I HAD it, it was right in front of me on the table, and then I passed out...." The conclusion was that she had a severe hypoglycemic reaction because she delayed her dinner.

  - did not eat enough carbs (only a salad)
  - did not count carbs

Basal/Bolus or is it Bolus/Basal or just Bolus/Bolus?

during her visit, I asked her to demonstrate how to calculate basal and bolus insulin, how to draw up her insulin. and how to inject using her own supplies. I was completely surprised when... she based her dose upon her prevailing blood glucose without regard to her food.

  - counted carbs incorrectly—e.g., used weight grams rather than carb grams

Diabetes Disaster Averted #11: Label Literacy The patient had erroneously calculated a higher insulin dose based on weight grams not carb grams. Luckily, he experienced no hypoglycemia.

Diabetes Disaster Averted #60: Helping Patients Decipher Nutrition Labels

I asked him where he got the amount of carbohydrate in a particular food. It turns out he was using the weight of the food in grams listed at the top of the food label (e.g., 56 grams), rather than the amount listed next to Total Carbohydrates (24 g).

Source for Case Studies: Diabetes In Control, "Diabetes Disasters Averted " www.diabetesincontrol.com

2. Unintentionally took wrong insulin

- Used up “leftover” insulin

Educating Elderly Patients

she had been using the short-acting analog that was prescribed. However, the previous week she had come across an unopened bottle of a Humulin mix which she did not want to waste so decided to use it in her pump.

All Insulins Not the Same

The patient's wife had not filled the new prescription for the regular insulin

She had the Lantus insulin which he was on prior to his hospitalization, and she wanted to use that insulin before purchasing any more. She was using Lantus for the sliding scale dosage

- Mixed up bottles for bolus and basal insulins

What's Hiding in that Insulin Box?

The patient had been using the two insulins together for about two years… When she brought them in everything seemed okay until our intern noticed that the bottles were switched in the boxes…The patient told us that it was easier for her to hold onto the bottles for dosing if she left then in the box and did not notice that she had switched then when she had taken them out to pop off the safety tops.

- Used bolus at times when should use basal insulin

- Failed to stop old insulin when changed to new one

Changing Medications

At a recent support group meeting, a patient raised his hand and told me that he had been prescribed both Lantus and Levemir, and was taking them both at night.

patients had been switched from Lantus to Levemir due to issues with weight, and it was assumed he understood that he would no longer be taking Lantus.

Source for Case Studies: Diabetes In Control, “Diabetes Disasters Averted “ www.diabetesincontrol.com

3. Unintentionally took wrong dose

- Split or chewed time release pills

"Do Not Crush, Chew or Cut"

In one case an elderly patient was prescribed Glucotrol XL to treat elevated blood sugars. This is a specially formulated medication that releases an entire day's supply of the medication slowly over a 24-hour period. The pill was too large for the woman to swallow, so she chewed it. She soon complained of feeling dizzy, weak, listless, and lethargic. Chewing the drug caused it to be released all at once, causing dangerously low blood glucose levels, which could have been fatal....

- Based dose on wrong factor

Patient's Method of Figuring Meal-time Insulin Doesn't Quite Work

In reporting his dosing he stated that after he checked his glucose before each meal he took the "first two numbers of the result," and made that his dosage for meal-time insulin. For example, if the glucose reading was 240, he would take 24 units of Humalog.

was the only thing that made sense to me that I could remember."...

Medication Safety Alert

A second patient also had mysteriously low blood glucose levels while using her pump. The pump has a bolus dosing "wizard" that allows patients to enter their blood glucose and the amount of carbohydrate grams they've eaten.

patient was entering the measured blood glucose into the carbohydrate field instead of the number of carbohydrates eaten. For example, 220 was entered in the carbohydrate field instead of 60 grams.

- Administered dose improperly

New FlexTouch Pens Not the Same as the Old

She was administering Levemir, 60 units, with a FlexPen. She said that she just dialed the dose to the maximum it would allow her as she knew it would only dial to 60 units. She did not confirm the dose visually.... I knew that her next refill would probably be the FlexTouch pen, which dials to 80 units. I reiterated the importance of a visual confirmation

Source for Case Studies: Diabetes In Control, "Diabetes Disasters Averted " www.diabetesincontrol.com

Commonalities in patient errors

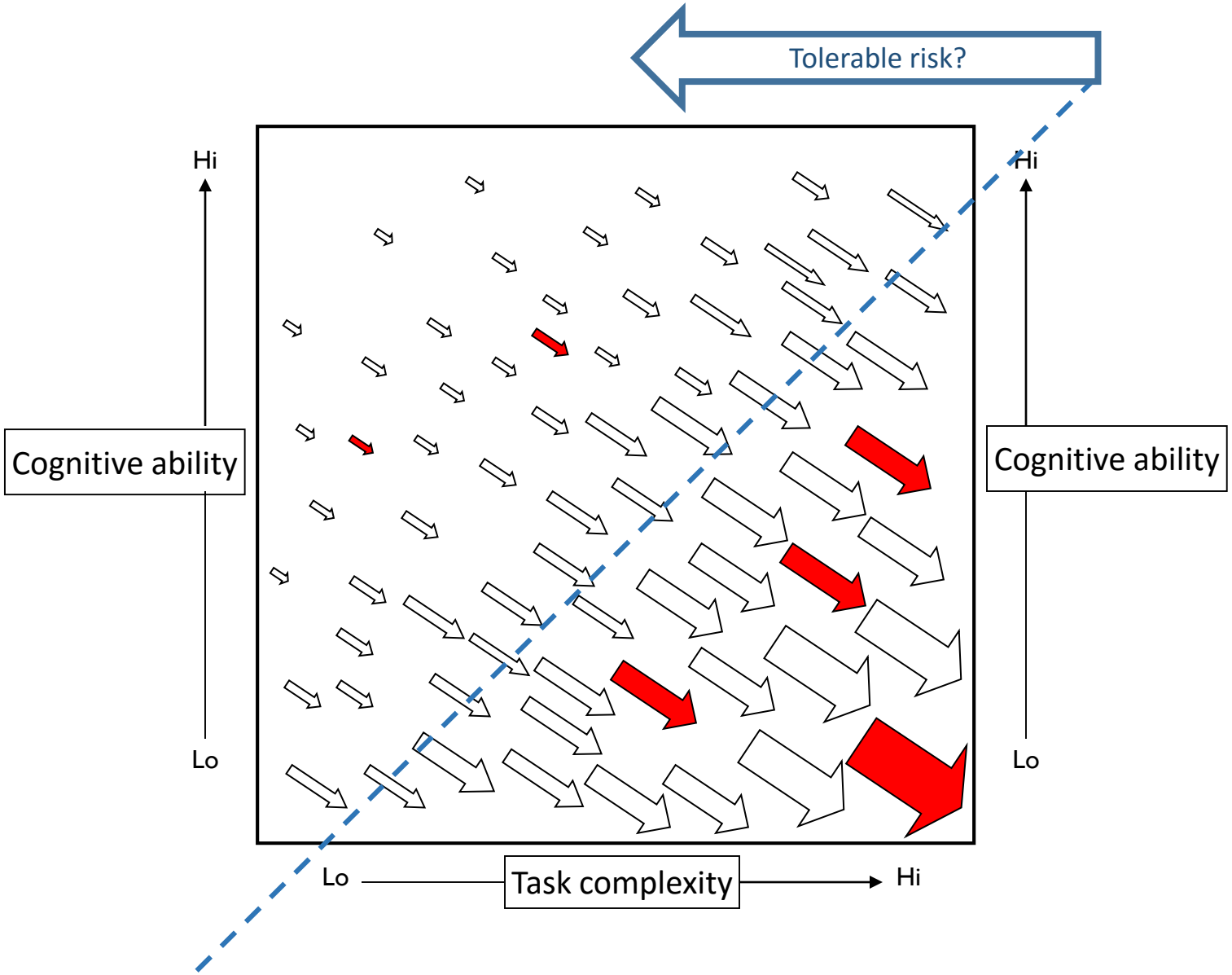
- Treated unlikes as interchangeable (e.g., different insulins)
- Did not grasp relevance of key distinctions
- Performed only one step of multi-step task
- Performed one or more steps incorrectly
- Did not coordinate timing of essential tasks
- Did not notice when things amiss
- Lacked basic skills and knowledge we often take for granted

Elemental cognitive errors

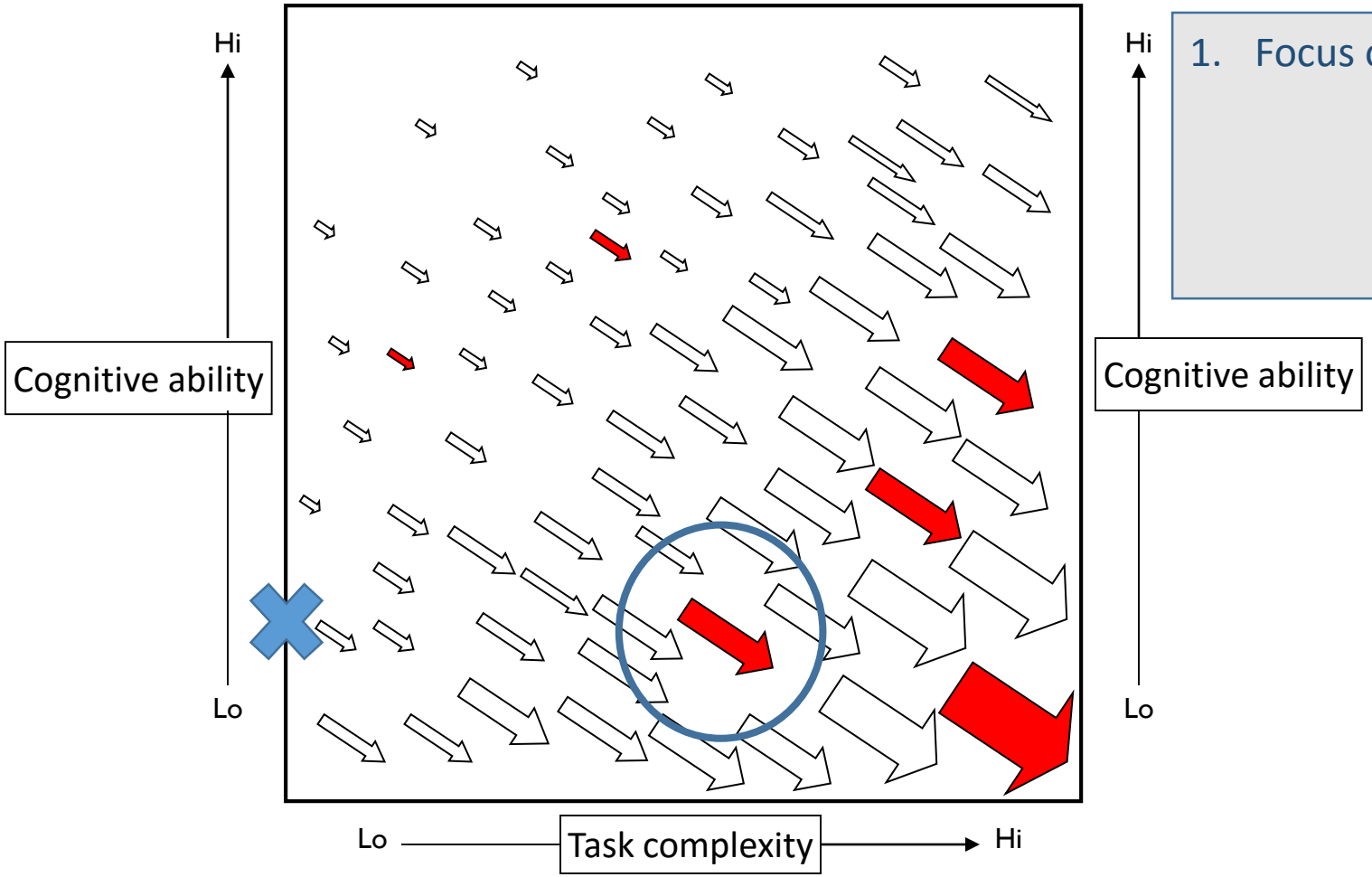
For effective DSME/S,

- identify complexity,
- reduce it, if possible.

Patients need personalized, *differentiated* DSME

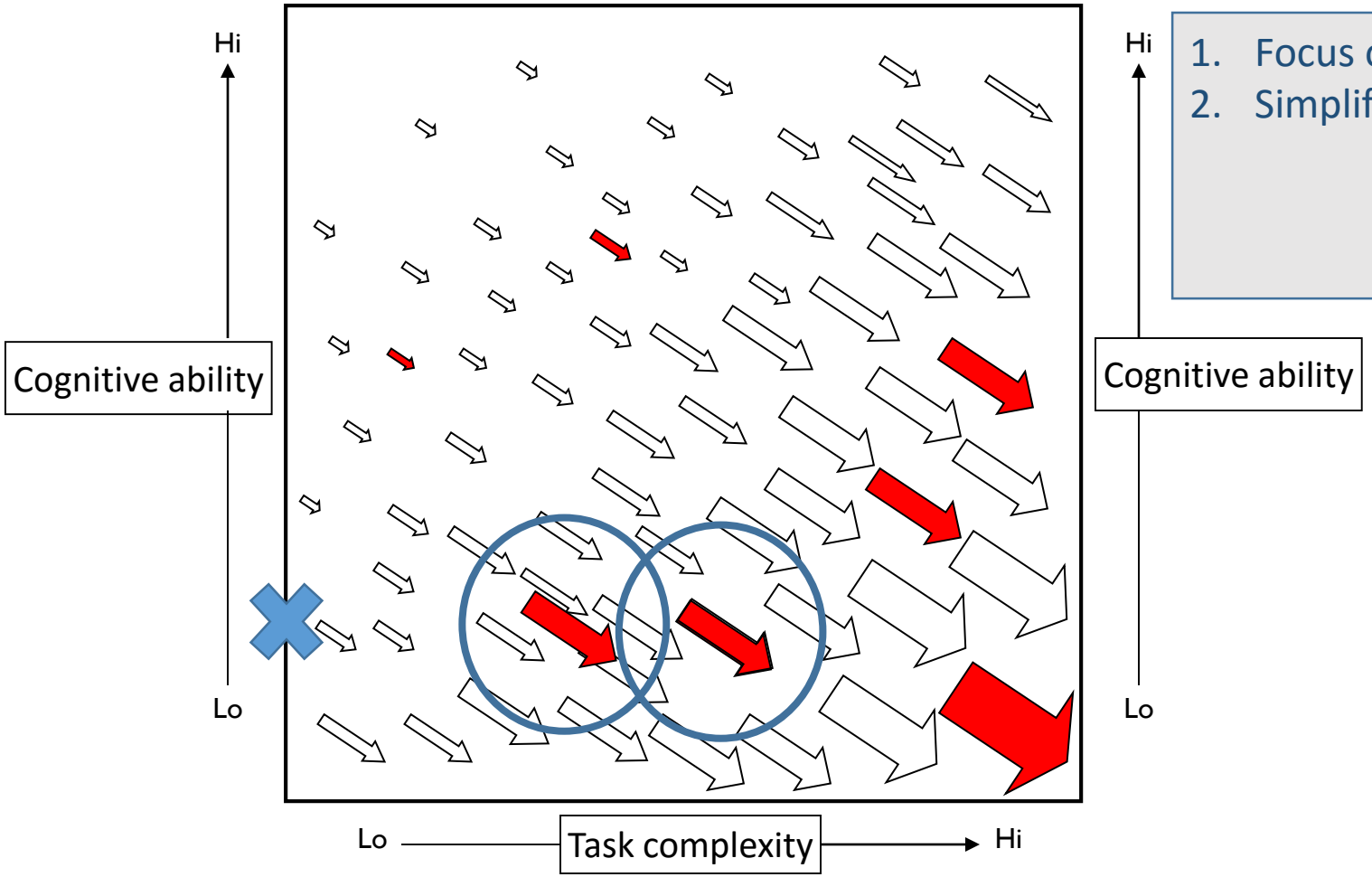


Strategy #1



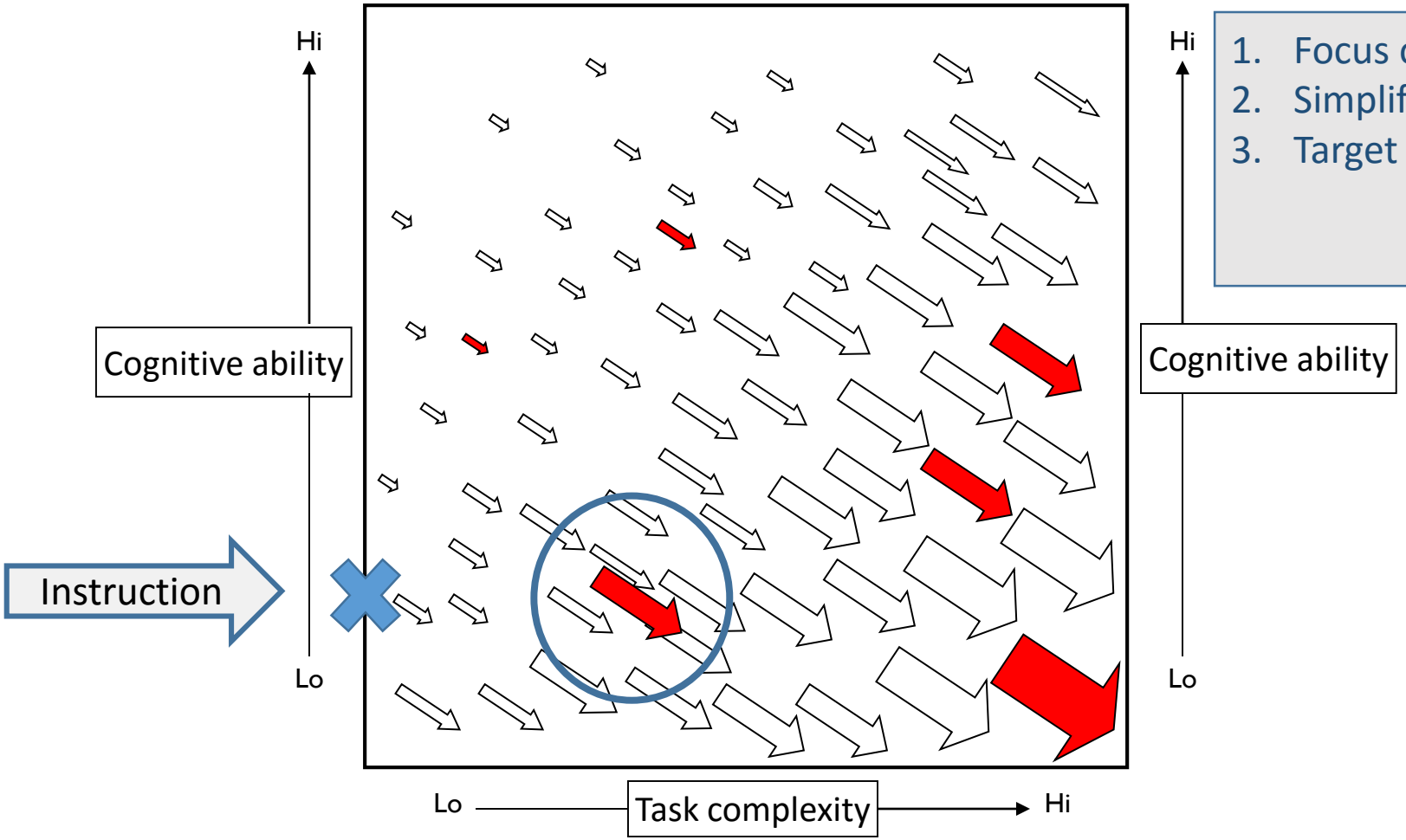
1. Focus on patient's biggest risks

Strategy #2



1. Focus on patient's biggest risks
2. Simplify task, if possible

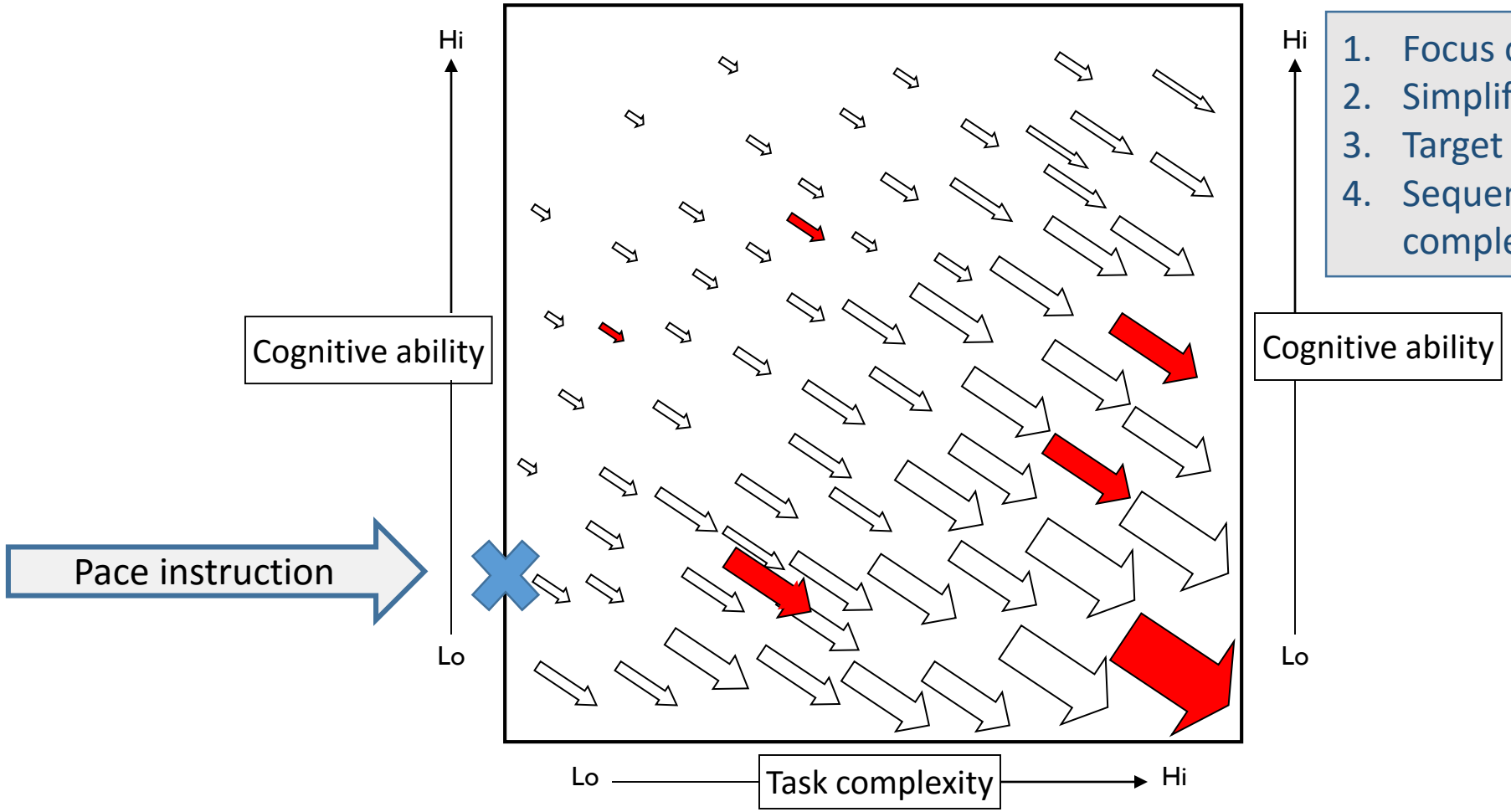
Strategy #3

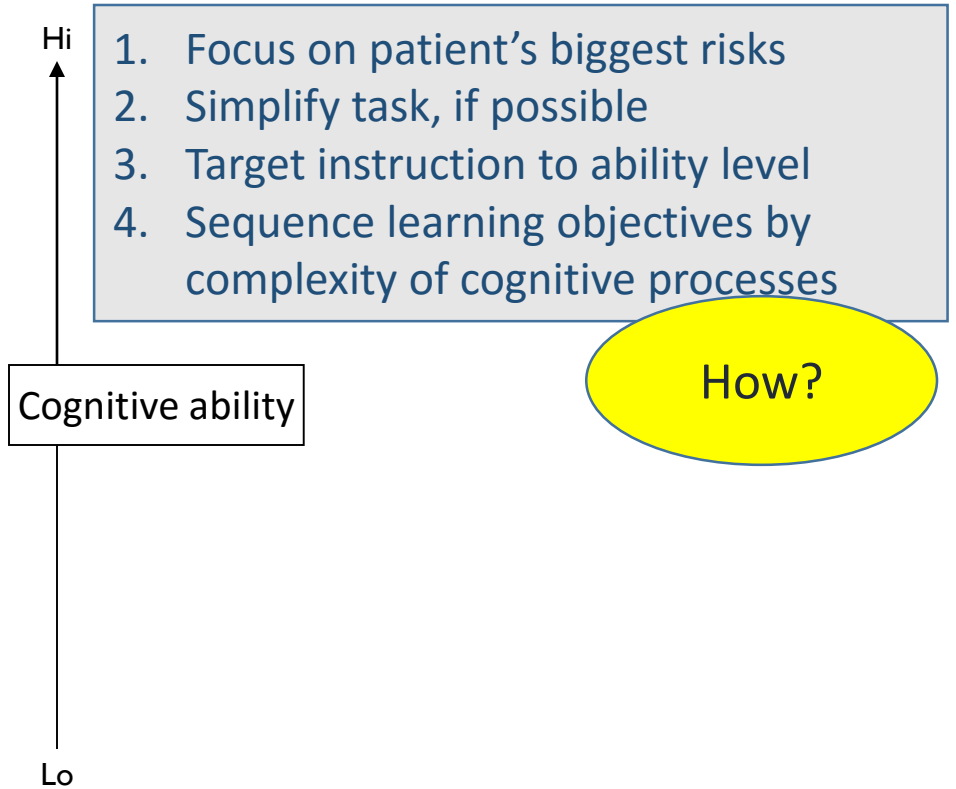


1. Focus on patient's biggest risks
2. Simplify task, if possible
3. Target instruction to ability level

Handout

Strategy #4 for DSME/S





Handout

Bloom's Taxonomy of Learning Objectives

(2001 revision)

Bloom's levels are a *continuum* of cognitive complexity

Table 1. The cognitive processes dimension — categories, cognitive processes (and alternative names)

lower order thinking skills → higher order thinking skills

remember	understand	apply	analyze	evaluate	create
recognizing (identifying) recalling (retrieving)	interpreting (clarifying, paraphrasing, representing, translating) exemplifying (illustrating, instantiating) classifying (categorizing, subsuming) summarizing (abstracting, generalizing) inferring (concluding, extrapolating, interpolating, predicting) comparing (contrasting, mapping, matching) explaining (constructing models)	executing (carrying out) implementing (using)	differentiating (discriminating, distinguishing, focusing, selecting) organizing (finding coherence, integrating, outlining, parsing, structuring) attributing (deconstructing)	checking (coordinating, detecting, monitoring, testing) critiquing (judging)	generating (hypothesizing) planning (designing) producing (construct)

(Table 1 adapted from Anderson and Krathwohl, 2001, pp. 67–68.)

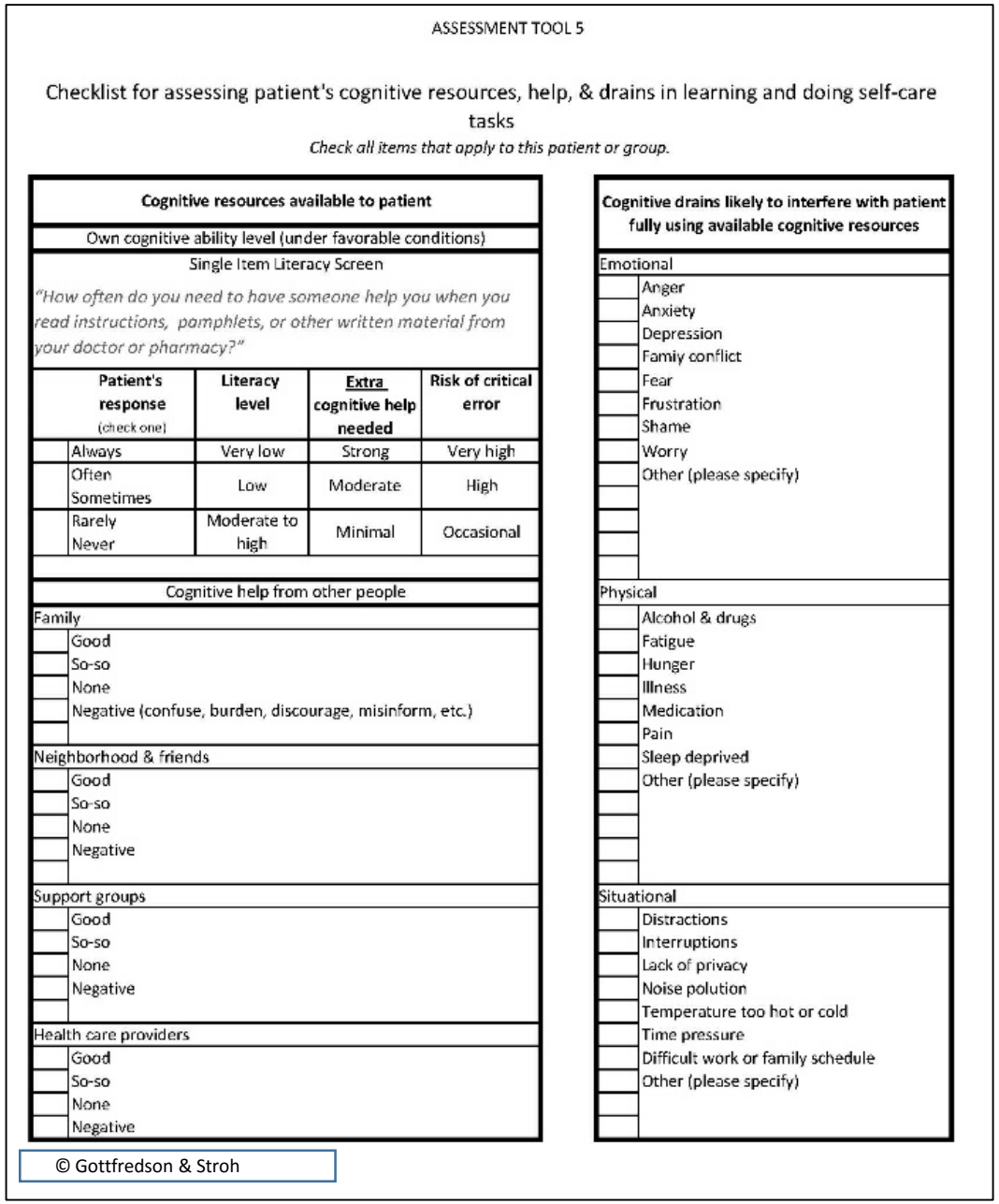
Assessment tool 4

Checklist for assessing cognitive burdens in learning and doing self-care

Check all items that apply to your educational material or plan.

Major sources of task complexity		
Needless complexity	Inherent (inescapable) complexity	
	Increases difficulty beginning at this Bloom level	Increases difficulty at all Bloom levels
Poor writing	*Remember*	*Change*
☐ Written for wrong audience	☐ Recall key facts	☐ Circumstances change
☐ Uses passive voice	*Understand*	☐ Situation not as expected
☐ Not concise, wordy	☐ Recognize operation of unseen physical processes	☐ Situation changing rapidly
☐ Awkward, confusing sentences	☐ Explain timing & sequencing of interdependent tasks	☐ New & evolving knowledge
☐ Uses big words when simple ones will do	☐ Correctly interpret specialized terms & concepts	☐ New opportunities
☐ Uses abstract ideas when concrete ones OK	☐ Identify relevant similarities and differences	☐ New risks
☐ Specialized terms not explained	☐ Anticipate lag times	☐ New rules
☐ Abbreviations not explained	*Apply*	*Uncertainty*
☐ Numbers not explained	☐ Use familiar procedures in familiar situations	☐ Ambiguity
☐ Information not put in context	☐ Calculate amounts	☐ Novelty
Poor selection of information	☐ Select appropriate tool or procedure	☐ Unpredictability
☐ Unnecessary background info	☐ Carry out all steps in a procedure	☐ Inadequate information
☐ Too much theory	☐ Carry out steps in proper order & at proper time	☐ Inexact relation of means to ends
☐ Visuals not used when would clarify text	☐ Respond quickly to unexpected problems	☐ Uncertain or unknown outcomes
☐ Visuals are irrelevant or confusing	☐ Coordinate interdependent tasks	☐ Frequent false alarms
☐ Little or no "to do" advice	☐ Make if-then decisions (use decision tree)	☐ Harm not visible
☐ "To do" advice not specific	*Analyze*	*Functional interdependence*
☐ No way given to get more information	☐ Adjust solutions to fit evolving problems	☐ Processes interdependent
Poor organization of information	☐ Update knowledge independently	☐ Tasks conflict (tradeoffs)
☐ Main point not clear at outset	☐ Identify potential causes	☐ Unintended effects (side effects)
☐ Little or no chunking of ideas	☐ Detect relationships & patterns	*More to do*
☐ Chunking not logical or systematic	☐ Weigh pros & cons	☐ More information to consider
☐ Content does not match headings	☐ Integrate multiple sources of information	☐ More tasks to coordinate
☐ Too few headings	☐ Pick out most important information	☐ Not adequate time to do them
☐ Headings not informative	☐ Predict results of interdependent processes	☐ Complex system to control
☐ Lists not bulleted	*Evaluate (against an external standard)*	*Need to block ingrained responses*
	☐ Monitor results	☐ Outdated knowledge
	☐ Identify problem situations quickly	☐ Misconceptions
	☐ Detect anomolies	☐ Bad habits
	☐ Detect hazards	☐ Expecting the usual in new situations
	☐ Spot signs and symptoms	
	Create	
	☐ Plan ahead	
	☐ Create contingency plans	
	☐ Combine information to create something new	
	☐ Develop hypotheses to explain results	
Eliminate needless burdens	**Teach basics before the more complex**	**Anticipate errors**

Assessment tool 5



ASSESSMENT TOOL 5

Checklist for assessing patient's cognitive resources, help, & drains in learning and doing self-care tasks

Check all items that apply to this patient or group.

Cognitive resources available to patient

Own cognitive ability level (under favorable conditions)

Single Item Literacy Screen

"How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?"

	Patient's response (check one)	Literacy level	Extra cognitive help needed	Risk of critical error
	Always	Very low	Strong	Very high
	Often Sometimes	Low	Moderate	High
	Rarely Never	Moderate to high	Minimal	Occasional

Cognitive help from other people

Family

- Good
- So-so
- None
- Negative (confuse, burden, discourage, misinform, etc.)

Neighborhood & friends

- Good
- So-so
- None
- Negative

Support groups

- Good
- So-so
- None
- Negative

Health care providers

- Good
- So-so
- None
- Negative

Cognitive drains likely to interfere with patient fully using available cognitive resources

Emotional

- Anger
- Anxiety
- Depression
- Family conflict
- Fear
- Frustration
- Shame
- Worry
- Other (please specify)

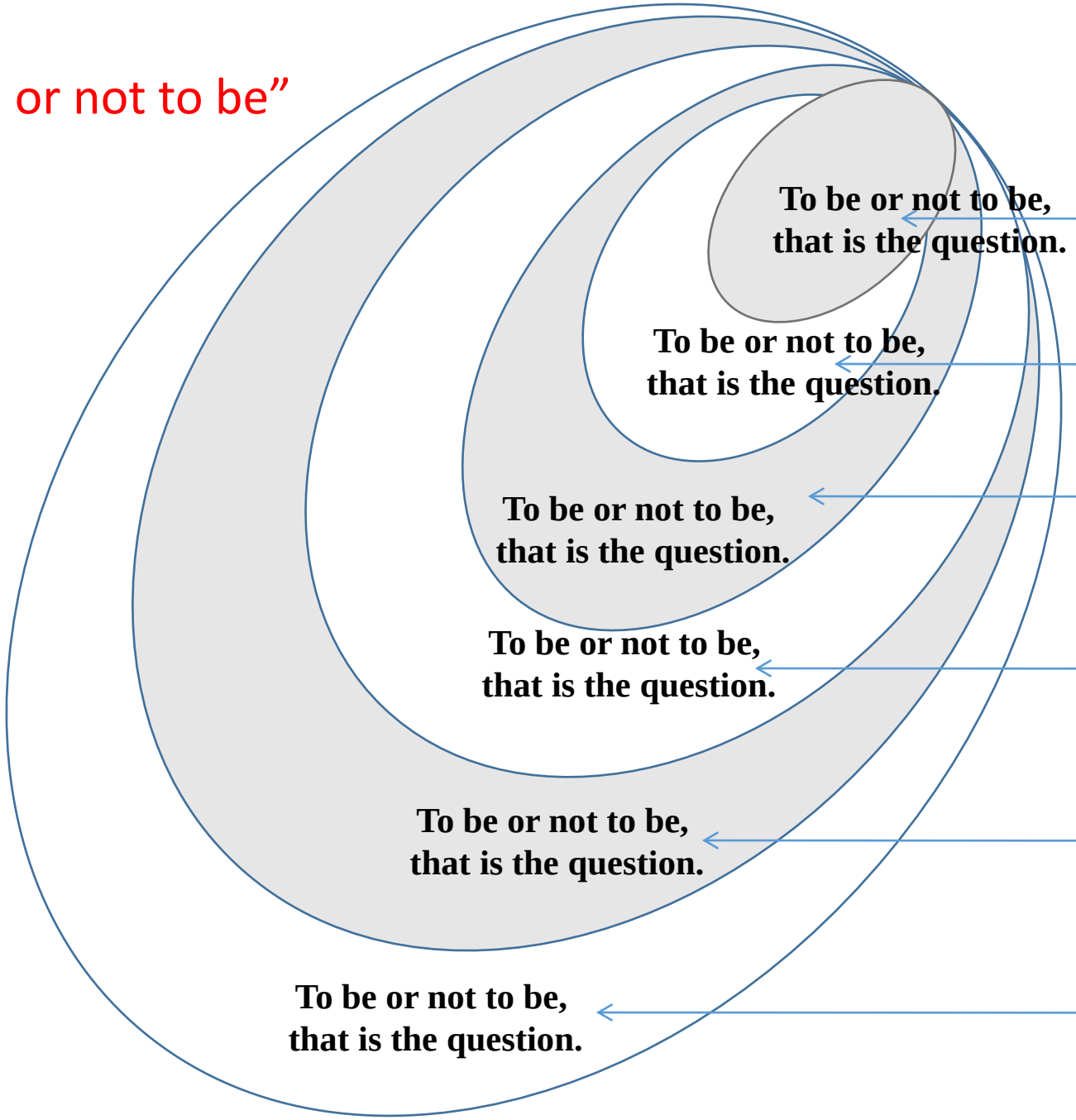
Physical

- Alcohol & drugs
- Fatigue
- Hunger
- Illness
- Medication
- Pain
- Sleep deprived
- Other (please specify)

Situational

- Distractions
- Interruptions
- Lack of privacy
- Noise polution
- Temperature too hot or cold
- Time pressure
- Difficult work or family schedule
- Other (please specify)

"To be or not to be"



Bloom's taxonomy of educational objectives (cognitive domain)

Simplest tasks

1. Remember
   recognize, recall, Identify, retrieve
2. Understand
   paraphrase, summarize, compare, predict, infer,
3. Apply
   execute familiar task,, apply procedure to unfamiliar task
4. Analyze
   distinguish, focus, select, integrate, coordinate
5. Evaluate
   check, monitor, detect inconsistencies, judge effectiveness
6. Create
   hypothesize, plan, invent, devise, design

Most complex tasks

Bloom's Taxonomy

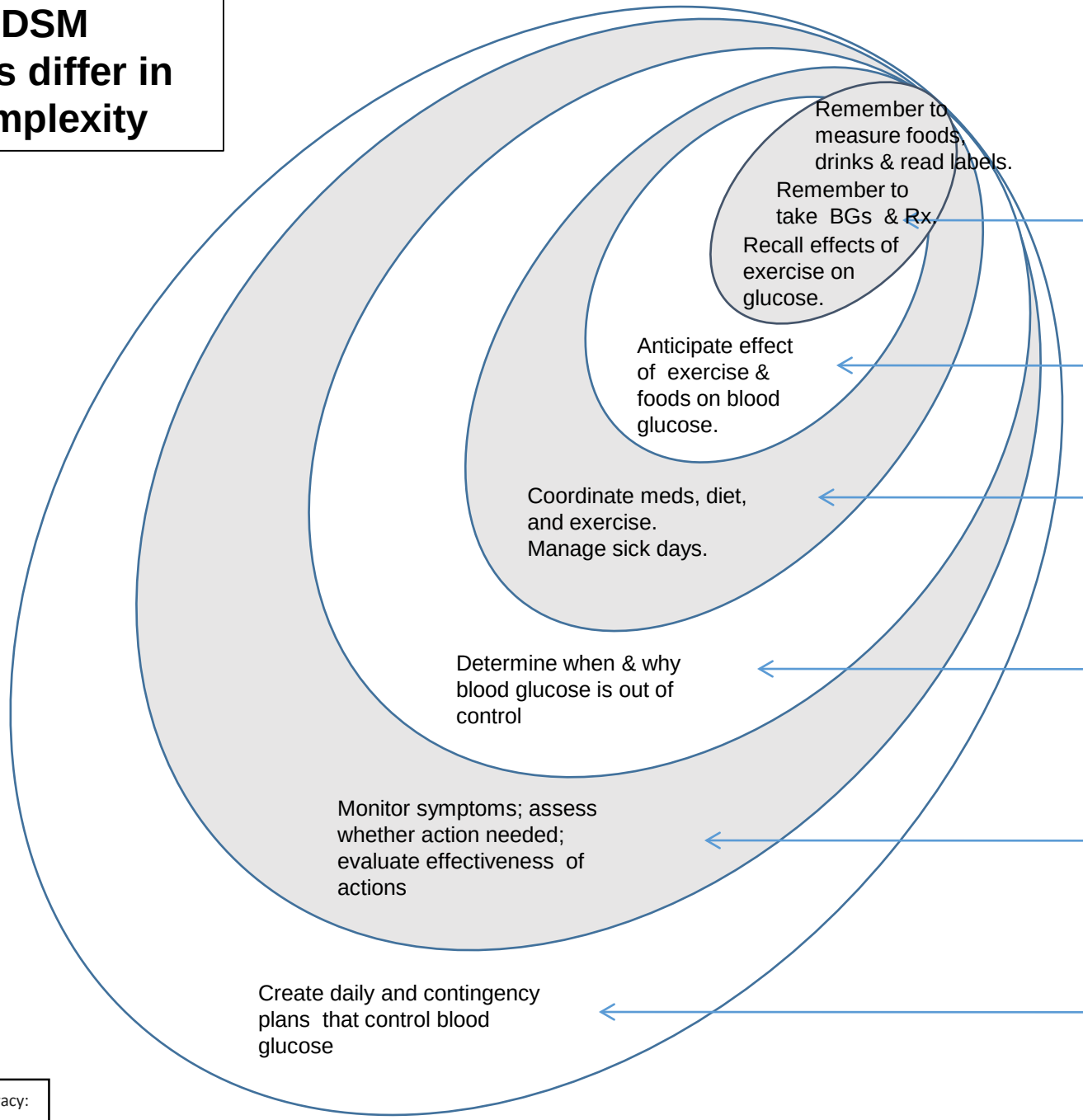
is the basis

for effective DSME/S,

because it focuses on

the *complexity of learning a task.*

DSM tasks differ in complexity



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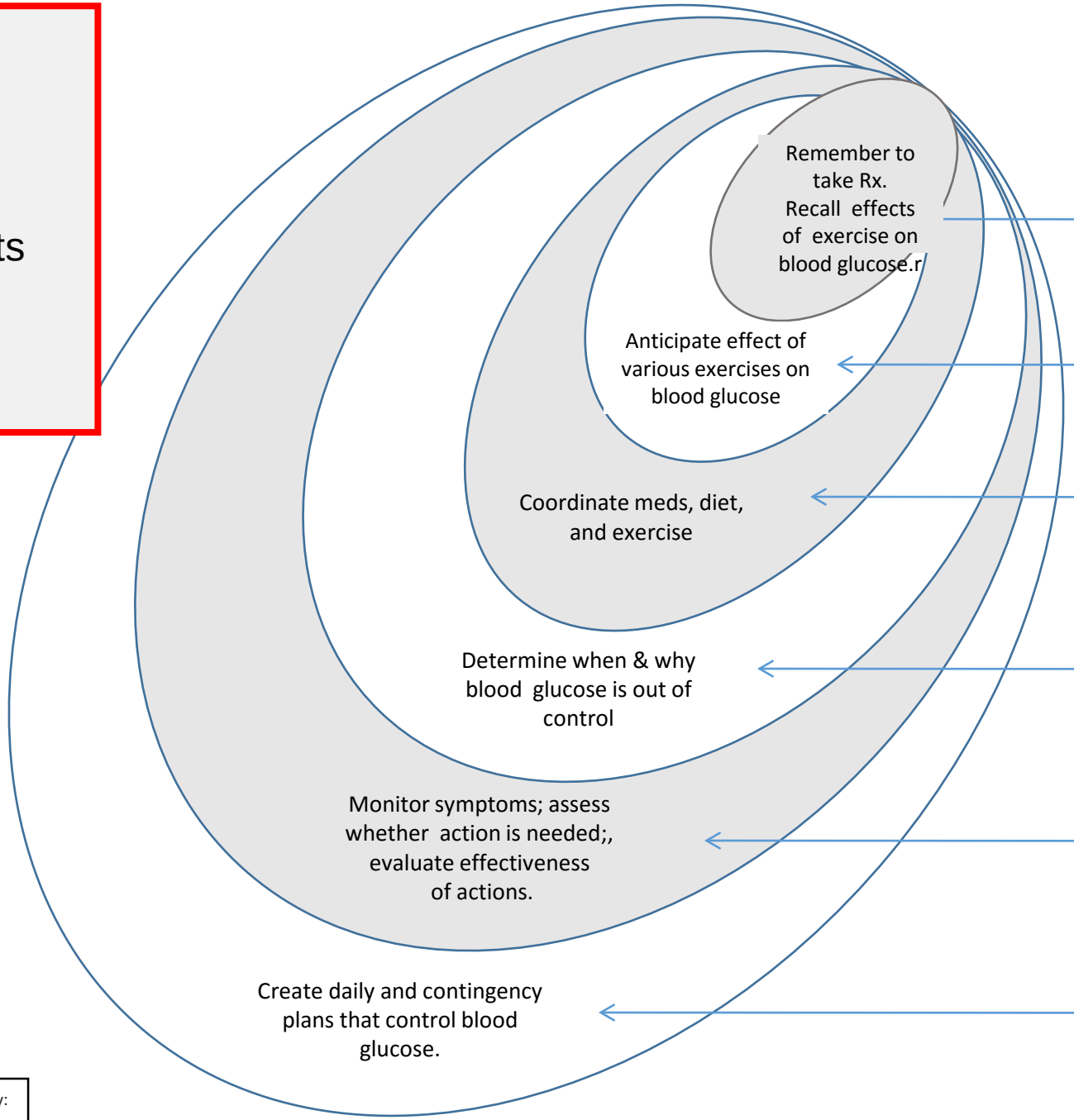
4. **Analyze**
   distinguish, focus, select, integrate, coordinate
5. **Evaluate**
   check, monitor, detect inconsistencies, judge effectiveness
6. **Create**
   hypothesize, plan, invent, devise, design

Most complex tasks

*Revised 2001: Anderson, L. W., & Krathwohl,D. R. *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* NY: Addison Wesley Longman.

DSM Goals

- Keep BG under control
- Deal with unexpected events
- Prevent and/or manage complications



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3. Apply
   execute familiar task,, apply procedure to unfamiliar task
4. Analyze
   distinguish, focus, select, integrate, coordinate
5. Evaluate
   check, monitor, detect inconsistencies, judge effectiveness
6. Create
   hypothesize, plan, invent, devise, design

Most complex tasks

Differentiated Instruction/DSME

~~Or~~

And

Existing Literacy Strategies

Components of Effective DSME/S

- Recognize that “To be or not to be” is not easy to ***do***.
- Assess and know implications of patient’s literacy level.
- Minimize the unnecessary cognitive complexity of educational materials & programs.
- Recognize inherent cognitive complexity of patient’s DSM tasks
- Use Bloom’s Taxonomy to focus & sequence learning tasks from low to high in complexity level (thinking skills)

Increasing the

cognitive accessibility

of DSM

1. Target the most critical tasks

2. Identify tasks' cognitive demands

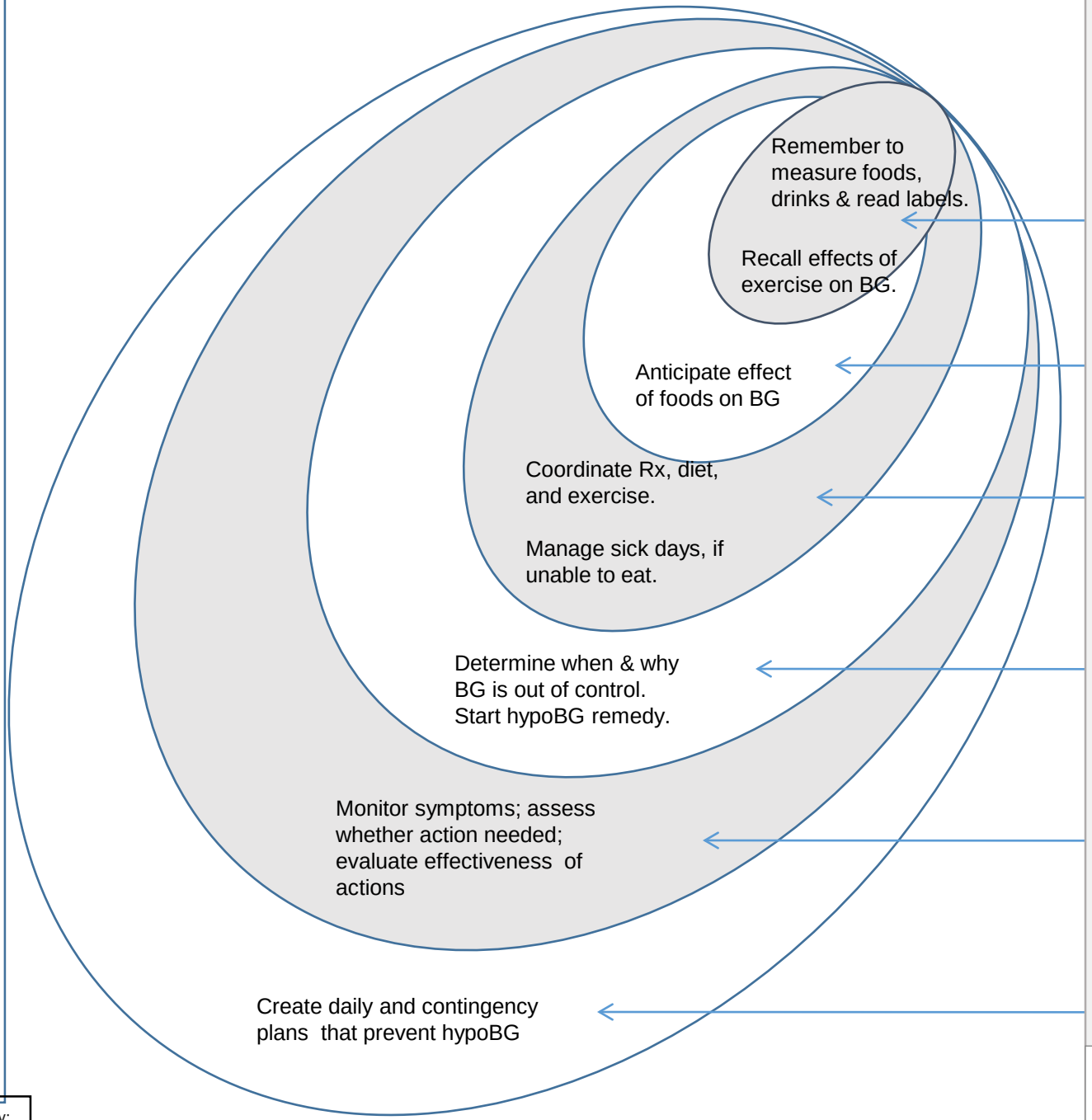
3. Deliver instruction based on cognitive taxonomy (Bloom's)

For effective DSME/S:

- Deconstruct an error. What went wrong? _____
- How might you simplify the mis-performed task (e.g., fewer steps)?_____
- How would you use Bloom's Taxonomy of learning objectives to teach an at-risk patient to perform it with less risk.

Instructional strategy—minimize *unnecessary* cognitive load

- Teach essential DSM tasks first, one at a time
- Sequence instruction from simple to complex ideas & skills
- Adjust speed and abstractness of instruction to accommodate individual's learning needs
- **Never** assume that something is "simple" or obvious
- Confirm mastery before moving on
- Don't squander individual's cognitive resources by teaching non-essential skills and content, using too-complex materials, etc.



Bloom's taxonomy of educational objectives (cognitive domain)*

Simplest tasks

1. **Remember**
   recognize, recall, Identify, retrieve
2. **Understand**
   paraphrase, summarize, compare, predict, infer
3. **Apply**
   execute familiar task,, apply procedure to unfamiliar task
4. **Analyze**
   distinguish, focus, select, integrate, coordinate
5. **Evaluate**
   check, monitor, detect inconsistencies, judge effectiveness
6. **Create**
   hypothesize, plan, invent, devise, design

Most complex tasks

*Revised 2001: Anderson, L. W., & Krathwohl,D. R. *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* NY: Addison Wesley Longman.

The challenge in DM self-management

Diabetes self-management is inherently complex

↓

Relentless, evolving cognitive demands

↓

Frequent cognitive overload

↓

High-risk errors = noncompliance

Effective DSME includes
***recognizing* the cognitive burdens of DSM**

And *educating* for how to reduce those burdens

RECALL

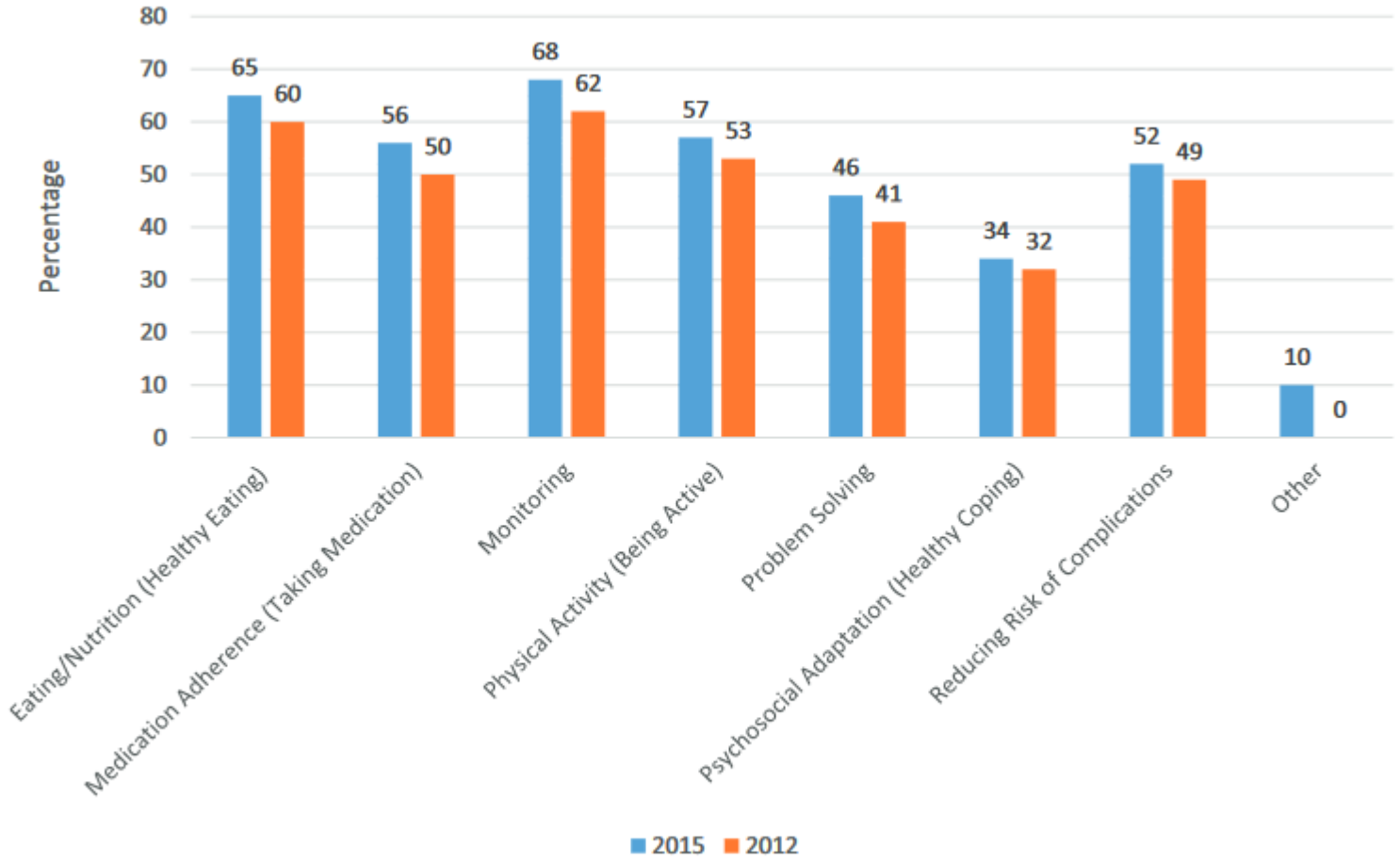


Figure 5. Comparison of reported behavioral strategy engagement in 2012 and 2015.

The Diabetes Educator and the Diabetes Self-management Education Engagement
The 2015 National Practice Survey

Group Activities

RECALL

Differentiated Instruction

~~Or~~

And

Existing Strategies

What are we asking the patient to do ????

Identify

Memorize

Recognize

Measure

Calculate

Repeat

. Collect

Identify Pattern

Modify

Predict

Interpret

Distinguish

Compare

Cause/Effect

Make observations

Use concepts to solve non-routine problems

Draw conclusions

Connect

Apply Concepts

Create

Creating and Evaluating DSME/S Materials

- Formatting
- Literacy
- Cognitive complexity of task(s)

Assessment tools for DSME/S materials

1. Plain Language word suggestions
2. Clear Communication Index (abbreviated)
3. Bloom's Taxonomy
4. Checklist for assessing cognitive burdens
5. Checklist for assessing patient’s cognitive resources

AADE-7 Self-Care Behaviors

Healthy Eating

Being Active

Monitoring

Taking Medication

Problem Solving

Reducing Risks

Healthy Coping

Checklist for assessing cognitive burdens in learning and doing self-care

Check all items that apply to your educational material or plan.

Major sources of task complexity		
Needless complexity	Inherent (inescapable) complexity	
	Increases difficulty beginning at this Bloom level	Increases difficulty at all Bloom levels
Poor writing	*Remember*	*Change*
☐ Written for wrong audience	☐ Recall key facts	☐ Circumstances change
☐ Uses passive voice	*Understand*	☐ Situation not as expected
☐ Not concise, wordy	☐ Recognize operation of unseen physical processes	☐ Situation changing rapidly
☐ Awkward, confusing sentences	☐ Explain timing & sequencing of interdependent tasks	☐ New & evolving knowledge
☐ Uses big words when simple ones will do	☐ Correctly interpret specialized terms & concepts	☐ New opportunities
☐ Uses abstract ideas when concrete ones OK	☐ Identify relevant similarities and differences	☐ New risks
☐ Specialized terms not explained	☐ Anticipate lag times	☐ New rules
☐ Abbreviations not explained	*Apply*	*Uncertainty*
☐ Numbers not explained	☐ Use familiar procedures in familiar situations	☐ Ambiguity
☐ Information not put in context	☐ Calculate amounts	☐ Novelty
Poor selection of information	☐ Select appropriate tool or procedure	☐ Unpredictability
☐ Unnecessary background info	☐ Carry out all steps in a procedure	☐ Inadequate information
☐ Too much theory	☐ Carry out steps in proper order & at proper time	☐ Inexact relation of means to ends
☐ Visuals not used when would clarify text	☐ Respond quickly to unexpected problems	☐ Uncertain or unknown outcomes
☐ Visuals are irrelevant or confusing	☐ Coordinate interdependent tasks	☐ Frequent false alarms
☐ Little or no "to do" advice	☐ Make if-then decisions (use decision tree)	☐ Harm not visible
☐ "To do" advice not specific	*Analyze*	*Functional interdependence*
☐ No way given to get more information	☐ Adjust solutions to fit evolving problems	☐ Processes interdependent
Poor organization of information	☐ Update knowledge independently	☐ Tasks conflict (tradeoffs)
☐ Main point not clear at outset	☐ Identify potential causes	☐ Unintended effects (side effects)
☐ Little or no chunking of ideas	☐ Detect relationships & patterns	*More to do*
☐ Chunking not logical or systematic	☐ Weigh pros & cons	☐ More information to consider
☐ Content does not match headings	☐ Integrate multiple sources of information	☐ More tasks to coordinate
☐ Too few headings	☐ Pick out most important information	☐ Not adequate time to do them
☐ Headings not informative	☐ Predict results of interdependent processes	☐ Complex system to control
☐ Lists not bulleted	*Evaluate (against an external standard)*	*Need to block ingrained responses*
	☐ Monitor results	☐ Outdated knowledge
	☐ Identify problem situations quickly	☐ Misconceptions
	☐ Detect anomolies	☐ Bad habits
	☐ Detect hazards	☐ Expecting the usual in new situations
	☐ Spot signs and symptoms	☐
	Create	
	☐ Plan ahead	
	☐ Create contingency plans	
	☐ Combine information to create something new	
	☐ Develop hypotheses to explain results	
Eliminate needless burdens	**Teach basics before the more complex**	**Anticipate errors**

Healthy Eating

Subject: question

What kind of approaches do you take with someone who is illiterate and has DM?

For example, a lot of carb counting info requires reading labels, or using measuring cups. How do you best portray that or do you have any handouts you give them to take home other than the “Plate Method” of meal planning?

RECALL

Meal-related misadventures

- ***Took insulin, but***
  - did not eat
  - did not eat enough carbs (only a salad)
  - did not count carbs
  - counted carbs incorrectly—e.g., used weight grams rather than carb grams

Source for Case Studies: Diabetes In Control, "Diabetes Disasters Averted " www.diabetesincontrol.com

RECALL

1. Meal-related misadventures

- Took insulin, but
  - did not eat

Diabetes Disaster Averted #51: Careful Listening Saves Lives

I reviewed her recent episode with her again, stating "so you ate your dinner, and then you passed out..." at which point she interrupted with "no, I did not eat my dinner, I HAD it, it was right in front of me on the table, and then I passed out...." The conclusion was that she had a severe hypoglycemic reaction because she delayed her dinner.

  - did not eat enough carbs (only a salad)
  - did not count carbs

Basal/Bolus or is it Bolus/Basal or just Bolus/Bolus?

during her visit, I asked her to de she strate how to calculate basal and bolus insulin, how to draw up her insulin, and how to inject using her own supplies. I was completely surprised when.... based her dose upon her prevailing blood glucose without regard to her food.

  - counted carbs incorrectly—e.g., used weight grams rather than carb grams

Diabetes Disaster Averted #11: Label Literacy The patient had erroneously calculated a higher insulin dose based on weight grams not carb grams. Luckily, he experienced no hypoglycemia.

Diabetes Disaster Averted #60: Helping Patients Decipher Nutrition Labels

I asked him where he got the amount of carbohydrate in a particular food. It turns out he was using the weight of the food in grams listed at the top of the food label (e.g., 56 grams), rather than the amount listed next to Total Carbohydrates (24 g).

Source for Case Studies: Diabetes In Control, "Diabetes Disasters Averted " www.diabetesincontrol.com

Healthy Eating:

Multiple Dietary Changes

Drop Your Cholesterol With TLC

You get a lot of benefit from the TLC Program. Here are some estimates of how much you can lower your LDL cholesterol by following various steps in the program. The estimates are what is expected based on research. The more you do with the program, the lower your LDL will go. Further, even if you take a cholesterol-lowering medication, you will still benefit from the program—it will keep the dose down.

	Change	LDL Reduction
Saturated fat	Decrease to less than 7% of calories	8–10%
Dietary cholesterol	Decrease to less than 200 mg/day	3–5%
Weight	Lose 10 pounds if overweight	5–8%
Soluble fiber	Add 5–10 grams/day	3–5%
Plant sterols/stanols	Add 2 grams/day	5–15%
Total		**20–30%***

Healthy Eating:

The Nutrition Label

Macaroni and Cheese

Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 250	Calories from Fat 110
	% Daily Value*
Total Fat 12g	**18%**
Saturated Fat 3g	**15%**
Cholesterol 30mg	**10%**
Sodium 470mg	**20%**
Total Carbohydrate 31g	**10%**
Dietary Fiber 0g	**0%**
Sugars 5g	
Protein 5g	
Vitamin A	**4%**
Vitamin C	**2%**
Calcium	**20%**
Iron	**4%**

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	60g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Cookie Dough

Nutrition Facts

Serv. Size: 1 33/100 oz (38g), Servings: 36,
Amount Per Serving: **Calories** 170, Fat Cal. 80, **Total Fat** 9g (13%DV), Sat. Fat 3g (15%DV), *Trans* Fat 0g, **Cholest.** 15mg (5%DV), **Sodium** 135mg (6%DV), **Total carb.** 21g (7%DV), Fiber 1g (3%DV), Sugars 12g, **Protein** 3g, Vitamin A (0%DV), Vitamin C (0%DV), Calcium (0%DV), Iron (6%DV). Percent Daily Values (DV) are based on a 2,000 calorie diet.

granulated sugar, flour (wheat flour, malted barley flour, niacin, iron, thiamine mononitrate, riboflavin, folic acid), whole eggs, butter, vanilla, cinnamon, baking soda, salt. May contain traces of peanuts.

(0%DV), Vitamin C (0%DV), C lcium (2%DV), Iron (4%DV). Percent Daily Values (DV) are based on a 2,000 ca rie diet.

Peanut Butter: Flour (wheat flour, malted barley flour, niacin, iron, thiamine mononitrate, riboflavin, folic acid), peanut butter, granulated sugar, margarine (palm oil, water, soybean oil, salt, vegetable mono & diglycerides, soy lecithin, sodium benzoate (a preservative), citric acid, mitate

Nutrition Facts Serv. Size: 1 33/100 oz (38g), Servings: 36, Amount Per Serving: Calories 170, Fat Cal. 80, Total Fat 9g (13%DV), Sat. Fat 3g (15%DV), Trans Fat 0g, Cholest. 15mg (5%DV), Sodium 135mg (6%DV), Total carb. 21g (7%DV), Fiber 1g (3%DV), Sugars 12g, Protein 3g, Vitamin A (0%DV), Vitamin C (0%DV), Calcium (0%DV), Iron (6%DV). Percent Daily Values

www.dough-to-go.com/Ingredients and Nutritional.htm

Attention-diverting labeling

Attention-diverting labeling

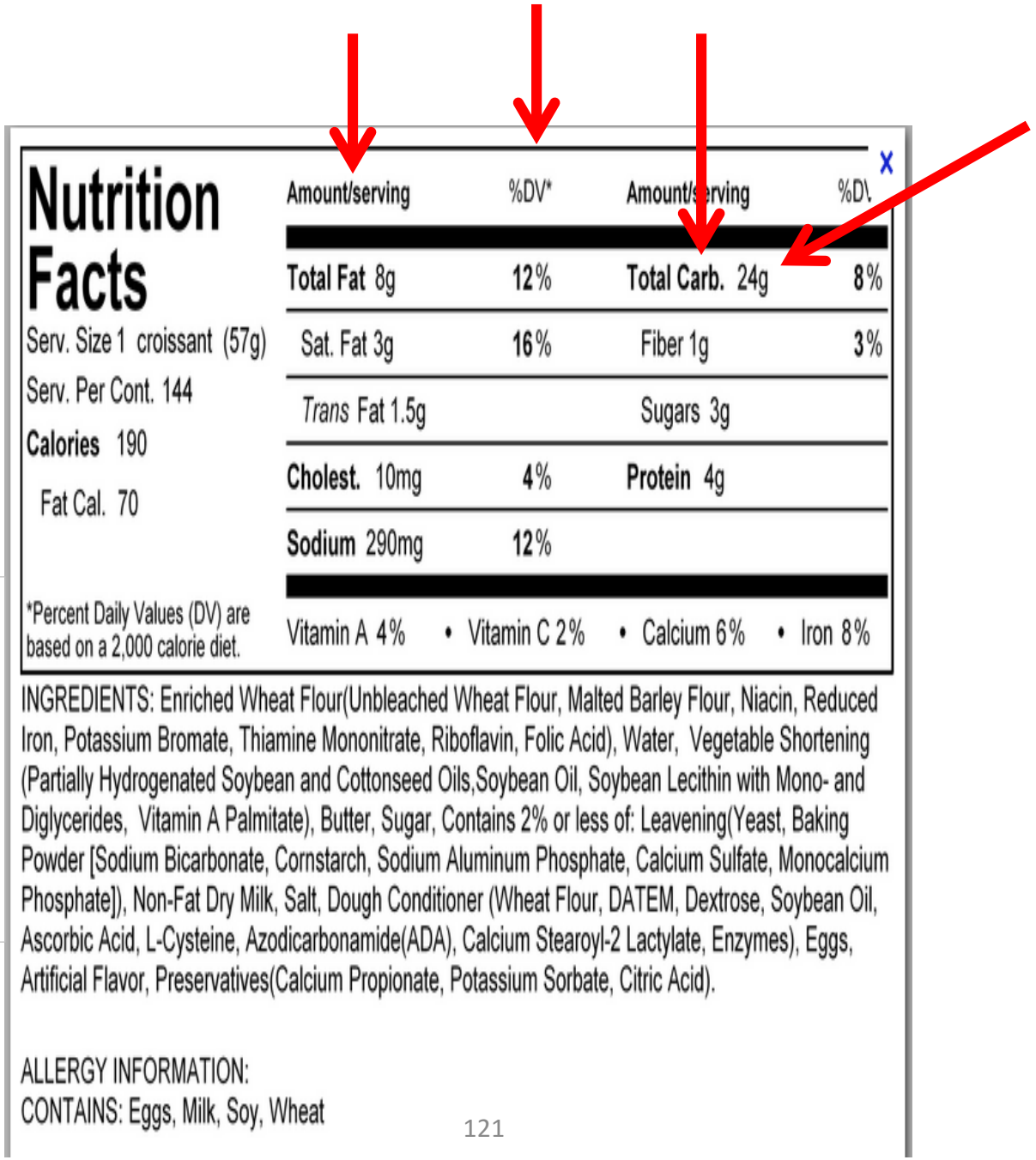
Information is better

- In chart form

But:

- Confusing technical symbols
-

Can you spot them?



Nutrition Facts

Serv. Size 1 croissant (57g)

Serv. Per Cont. 144

Calories 190

Fat Cal. 70

*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/serving	%DV*	Amount/serving	%DV
Total Fat 8g	**12%**	**Total Carb.** 24g	**8%**
Sat. Fat 3g	**16%**	Fiber 1g	**3%**
Trans Fat 1.5g		Sugars 3g	
Cholest. 10mg	**4%**	**Protein** 4g	
Sodium 290mg	**12%**		

Vitamin A 4% • Vitamin C 2% • Calcium 6% • Iron 8%

INGREDIENTS: Enriched Wheat Flour(Unbleached Wheat Flour, Malted Barley Flour, Niacin, Reduced Iron, Potassium Bromate, Thiamine Mononitrate, Riboflavin, Folic Acid), Water, Vegetable Shortening (Partially Hydrogenated Soybean and Cottonseed Oils,Soybean Oil, Soybean Lecithin with Mono- and Diglycerides, Vitamin A Palmitate), Butter, Sugar, Contains 2% or less of: Leavening(Yeast, Baking Powder [Sodium Bicarbonate, Cornstarch, Sodium Aluminum Phosphate, Calcium Sulfate, Monocalcium Phosphate]), Non-Fat Dry Milk, Salt, Dough Conditioner (Wheat Flour, DATEM, Dextrose, Soybean Oil, Ascorbic Acid, L-Cysteine, Azodicarbonamide(ADA), Calcium Stearoyl-2 Lactylate, Enzymes), Eggs, Artificial Flavor, Preservatives(Calcium Propionate, Potassium Sorbate, Citric Acid).

ALLERGY INFORMATION:
CONTAINS: Eggs, Milk, Soy, Wheat

Pros:

- Fewer items
- Single vertical list
- Major headings stand out

Macaroni and Cheese

Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

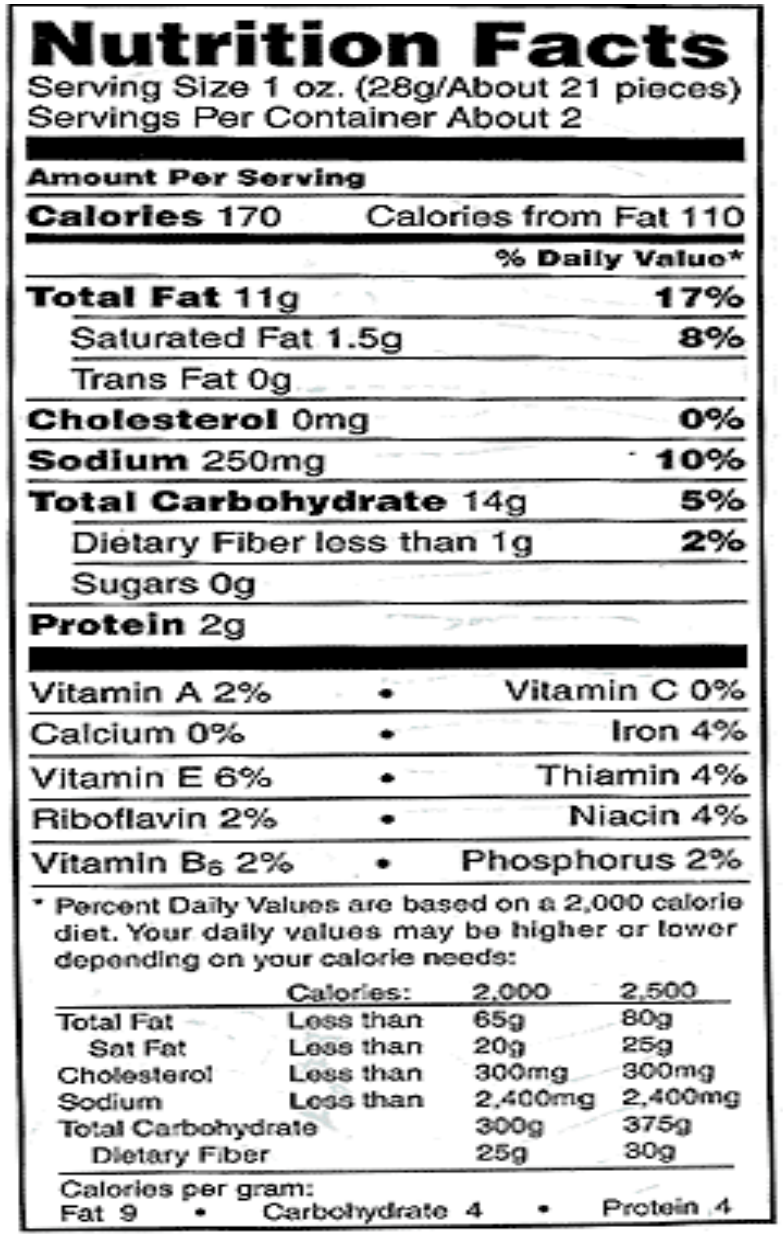
Amount Per Serving	
Calories 250	Calories from Fat 110
	% Daily Value*
Total Fat 12g	**18%**
Saturated Fat 3g	**15%**
Cholesterol 30mg	**10%**
Sodium 470mg	**20%**
Total Carbohydrate 31g	**10%**
Dietary Fiber 0g	**0%**
Sugars 5g	
Protein 5g	
Vitamin A	**4%**
Vitamin C	**2%**
Calcium	**20%**
Iron	**4%**

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Cons:

- Lots of irrelevant info
- Seemingly inconsistent info



Nutrition Facts

Serving Size 1 oz. (28g/About 21 pieces)
Servings Per Container About 2

Amount Per Serving	
Calories 170	Calories from Fat 110
	% Daily Value*
Total Fat 11g	**17%**
Saturated Fat 1.5g	**8%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 250mg	**10%**
Total Carbohydrate 14g	**5%**
Dietary Fiber less than 1g	**2%**
Sugars 0g	
Protein 2g	

Vitamin A 2%	•	Vitamin C 0%
Calcium 0%	•	Iron 4%
Vitamin E 6%	•	Thiamin 4%
Riboflavin 2%	•	Niacin 4%
Vitamin B_6 2%	•	Phosphorus 2%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Bloom's taxonomy of educational objectives (cognitive domain)

Simplest tasks

1. Remember
   recognize, recall, Identify, retrieve

2. Understand
   paraphrase, summarize, compare, predict, infer,

3. Apply
   execute familiar task,, apply procedure to unfamiliar task

4. Analyze
   distinguish, focus, select, integrate, coordinate

5. Evaluate
   check, monitor, detect inconsistencies, judge effectiveness

6. Create
   hypothesize, plan, invent, devise, design

Most complex tasks

Location of relevant CHO gms

Carb vs non-carb ??
Sequence of label
Total CHOs = important;
"Sugars" not = Total CHOs
Volume vs wt

How many CHO gms in 1 serving ?
Subtract fiber gms from CHO gms ?

Distractors
CHOs vs Fiber vs Fat

Part of meal or OK snack ?
CHOs in intended serving ?
CHOs vs Fat/Chol vs Na

Plan a meal or snack

RECALL

Grams vs. grams on label

Diabetes Disaster Averted #11: Label Literacy

I am a dietitian working as a diabetes educator. I often work with patients on insulin, and teach insulin to carb ratios and correction factors....

Patients need to be able to read food labels and know portion size in order to dose their mealtime insulin correctly. I often get referred patients who have had some education about food choices and carbs and I help them determine these ratios.

I was reviewing a patient's food logs and insulin dose, and I questioned the amount of carbohydrate he had stated for a particular food item, as it seemed high. I quickly found out the patient was actually looking at the weight of the food item in grams instead of looking at Total Carbohydrates grams on the food label.

The patient had erroneously calculated a higher insulin dose based on weight grams not carb grams. Luckily, he experienced no hypoglycemia.

Now I make sure to point out to patients the difference in serving weight and Total Carbohydrates, and to use only the value next to Total Carbohydrates (adjusting for serving size).

He has not been the only patient who gets confused by this.

Marilyn Baker, MS, RD, CDE

Take home message:

In addition to looking at weight grams patients often use the % of daily allowance as the amount of carbs they eat. And even the most experienced counter can make a big mistake. It is always good to remind your patients exactly what they should be looking for on the label each time you see them.

Diabetes Disaster Averted #60: Helping Patients Decipher Nutrition Labels

I had a patient who came in for instruction on carbohydrate counting in order to dose his insulin based on his carbohydrate intake. I instructed him on the use of food lists and food labels. When the patient returned for follow-up, his doses of insulin did not correlate with the amount of carbohydrate in some of his foods....

I asked him where he got the amount of carbohydrate in a particular food. It turns out he was using the weight of the food in grams listed at the top of the food label (e.g., 56 grams), rather than the amount listed next to Total Carbohydrates (24 g). His blood sugars were still elevated, so luckily he had not experienced any hypoglycemia. We again reviewed how to read a food label, and the patient was able to calculate the correct amount of carbohydrate.

Lesson learned:

Never assume a patient knows how to read a food label. Now I point out the difference between the weight in grams and the total carbs.

Marilyn Baker, MS, RD, CDE

Diabetes Disaster Averted series:
http://www.diabetesincontrol.com/articles/practicum

Grams vs. grams on label

Complexity of task/opportunity for error:

- Patient did not recognize the correct location for CHO grams.
- Label is inherently complex.

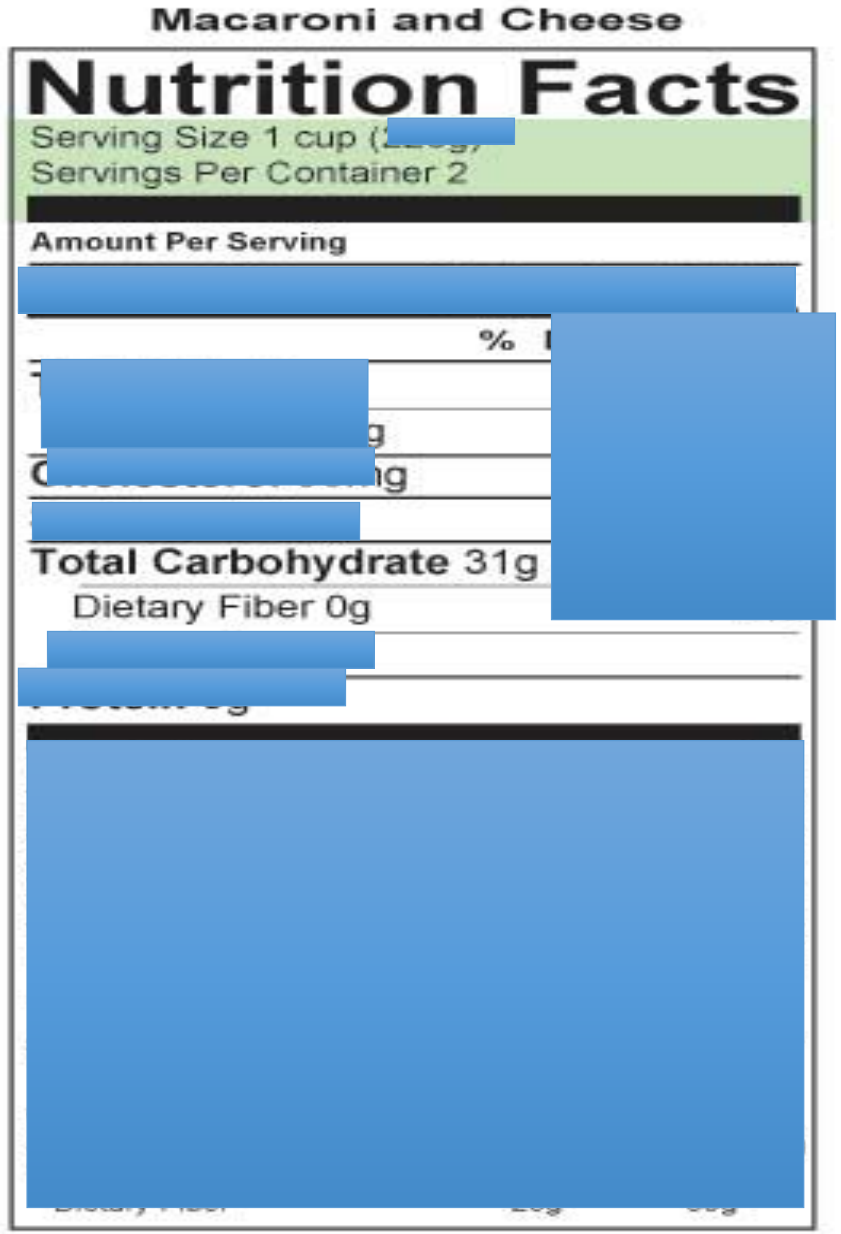
DSME/S for labels:

- Identify correct location for CHO grams.
- Differentiate weight in grams vs Total CHO.
- Locate total CHO.

Do not assume that patients understand labels !

Source of error:

- Person error (cognitive mistakes)
- Task demands (cognitive burden)
- Compounding of label/information & person errors.



Distracting, non-relevant information makes a task *more* complex.

Eliminating non-relevant information makes a task *less* complex

Milk Label

Nutrition Facts

Serving Size 1 cup (236ml)
Servings Per Container 1

Amount Per Serving

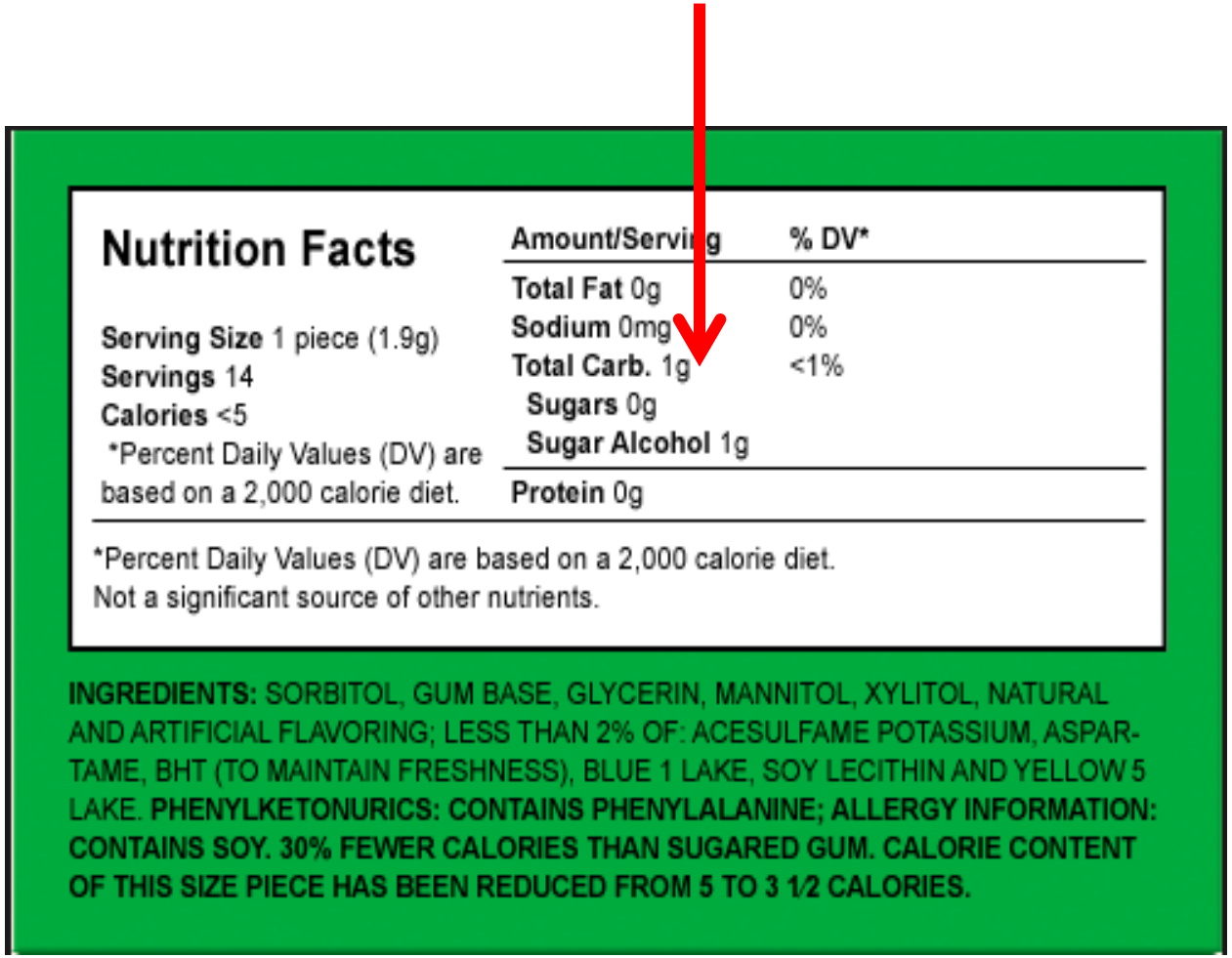
Calories 120 Calories from Fat 45

	% Daily Value*
Total Fat 5g	**8%**
Saturated Fat 3g	**15%**
Trans Fat 0g	
Cholesterol 20mg	**7%**
Sodium 120mg	**5%**
Total Carbohydrate 11g	**4%**
Dietary Fiber 0g	**0%**
Sugars 11g	
Protein 9g	**17%**

Vitamin A 10% • Vitamin C 4%
Calcium 30% • Iron 0% • Vitamin D 25%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

Handout



Nutrition Facts

Serving Size 1 piece (1.9g)
Servings 14
Calories <5
*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/Serving	% DV*
Total Fat 0g	0%
Sodium 0mg	0%
Total Carb. 1g	<1%
Sugars 0g	
Sugar Alcohol 1g	
Protein 0g	

*Percent Daily Values (DV) are based on a 2,000 calorie diet.
Not a significant source of other nutrients.

INGREDIENTS: SORBITOL, GUM BASE, GLYCERIN, MANNITOL, XYLITOL, NATURAL AND ARTIFICIAL FLAVORING; LESS THAN 2% OF: ACESULFAME POTASSIUM, ASPARTAME, BHT (TO MAINTAIN FRESHNESS), BLUE 1 LAKE, SOY LECITHIN AND YELLOW 5 LAKE. **PHENYLKETONURICS: CONTAINS PHENYLALANINE; ALLERGY INFORMATION: CONTAINS SOY. 30% FEWER CALORIES THAN SUGARED GUM. CALORIE CONTENT OF THIS SIZE PIECE HAS BEEN REDUCED FROM 5 TO 3 1/2 CALORIES.**

Handout

Sugar Free

Chocolate Chip

Nutrition Facts

Serv. Size 3 Cookies (32g)
Servings About 5
Calories 160
Calories from Fat 80
*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/Serving	%DV*
Total Fat 9g	**14%**
Saturated Fat 3.5g	**18%**
Trans Fat 0g	
Cholesterol less than 5mg	**1%**
Sodium 130mg	**5%**

Amount/Serving	%DV*
Total Carbohydrate 20g	**7%**
Dietary Fiber 1g	**4%**
Sugars 0g	
Sugar Alcohol 7g	
Protein 2g	

Vitamin A 0% • Vitamin C 0% • Calcium 0% • Iron 6%

INGREDIENTS: ENRICHED FLOUR (WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMIN MONONITRATE [VITAMIN B_1], RIBOFLAVIN [VITAMIN B_2], FOLIC ACID), VEGETABLE OIL (SOYBEAN, PALM AND PALM KERNEL OIL WITH TBHQ FOR FRESHNESS), SUGAR FREE CHOCOLATE FLAVORED CHIPS (MALTITOL, CHOCOLATE PROCESSED WITH ALKALI, COCOA BUTTER, SOY LECITHIN, NATURAL FLAVOR), MALTITOL, LACTITOL, POLYDEXTROSE, MALTODEXTRIN, SORBITOL**, CONTAINS TWO PERCENT OR LESS OF SALT, NATURAL AND ARTIFICIAL FLAVOR, LEAVENING (BAKING SODA, SODIUM ACID PYROPHOSPHATE), EGG, SOY LECITHIN, XANTHAN GUM, SODIUM STEAROYL LACTYLATE, ACESULFAME POTASSIUM, CARAMEL COLOR, SUCRALOSE.

****EXCESS CONSUMPTION MAY HAVE A LAXATIVE EFFECT.**

CONTAINS WHEAT, SOY, MILK AND EGG INGREDIENTS.
MAY CONTAIN TRACES OF PEANUT AND TREE NUTS.

EXCHANGE INFORMATION: 3 cookies = 1 carbohydrate and 2 fats exchange. The dietary exchanges are based on the *Exchange List for Meal Planning*, ©2003 by The American Diabetes Association, Inc., and The American Dietetic Association.

Handout

Sugar Free Cookies

Shortbread

Nutrition Facts

Serving Size 8 Cookies (30g)

Amount Per Serving	%DV*
Calories	130
Calories from Fat	50
Total Fat 5g	**8%**
Saturated Fat 1.5g	**8%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 140mg	**6%**

Amount Per Serving	%DV*
Total Carbohydrate 22g	**7%**
Dietary Fiber 2g	**8%**
Sugars 0g	
Sugar Alcohol 4g	
Protein 2g	

*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Vitamin A 0% • Vitamin C 0% • Calcium 0% • Iron 4%

INGREDIENTS: ENRICHED FLOUR (WHEAT FLOUR, NIACIN, REDUCED IRON, VITAMIN B_1 [THIAMIN MONONITRATE], VITAMIN B_2 [RIBOFLAVIN], FOLIC ACID), SOYBEAN AND PALM OIL, SORBITOL*, MALTITOL, POLYDEXTROSE, MALTODEXTRIN, CONTAINS 2% OR LESS OF OAT FIBER, NATURAL AND ARTIFICIAL FLAVORS, SALT, LEAVENING (BAKING SODA, SODIUM ACID PYROPHOSPHATE), WHEY PROTEIN CONCENTRATE, DATEM, SOY LECITHIN, ANNATTO EXTRACT FOR COLOR, XANTHAN GUM, ACESULFAME POTASSIUM, SUCRALOSE.

***EXCESS CONSUMPTION MAY HAVE A LAXATIVE EFFECT.**

CONTAINS WHEAT, MILK AND SOY INGREDIENTS. MAY CONTAIN PEANUTS AND OTHER TREE NUTS.

Handout

Macaroni and cheese

Nutrition Facts	
Serving Size 2 Servings Per Container: 2	
Amount Per Serving	
Calories 340	Calories from Fat 140
	% Daily Value *
Total Fat 16	25.00 %
Saturated Fat 7	35.00 %
Cholesterol 25mg	8.00 %
Sodium 820mg	34.00 %
Total Carbohydrate 33g	11.00 %
Dietary Fiber 3g	
Sugars 2g	
Protein 15g	
Vitamin A	0.00 %
Vitamin C	0.00 %
Calcium	30.00 %
Iron	4.00 %

Not a significant source of Saturated Fat, Trans Fat, Cholesterol, Calcium or Iron.

* The Percent Daily Values are based on a 2,000 calorie diet, so your values may change depending on your calorie needs. The values here may not be 100% accurate because the recipes have not been professionally evaluated nor have they been evaluated by the U.S. FDA.

Nutritional Information

Serving Size: 1oz
Servings Per Package: 1

Amount Per Serving:

Calories 300
Calories from Fat 50

				% Daily Value*
Total Fat (g)	**6**	**Cholesterol (mg)**	**20**	7%
Saturated Fat (g)	4	**Sodium (mg)**	**560**	23%
Trans Fat (g)	0	**Potassium (mg)**	**510**	15%
Polyunsaturated Fat (g)	0	**Total Carbohydrate (g)**	**48**	16%
Monounsaturated Fat (g)	1	Dietary Fiber (g)	2	8%
Protein (g)	13	Sugars (g)	5	

Diet Exchanges 1 ½ Lean Meat 1 ½ Starch

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories:	**2,000**	**2,500**
Total Fat	Less Than	65g	80g
Sat Fat	Less Than	20g	25g
Cholesterol	Less Than	300mg	300mg
Sodium	Less Than	2,400mg	2,400mg
Potassium	Less Than	3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Nutritional information is subject to change. Please see label of product on store shelves for the most current information.

Handout **Grilled Chicken**

Nutritional Information

Serving Size: 5 oz.
Servings Per Package: 1

Amount Per Serving:

Calories 250
Calories from Fat 45

				% Daily Value*
Total Fat (g)	**5**	**Cholesterol (mg)**	**40**	13%
Saturated Fat (g)	2	**Sodium (mg)**	**590**	25%
Trans Fat (g)	0	**Potassium (mg)**	**540**	15%
Polyunsaturated Fat (g)	1	**Total Carbohydrate (g)**	**33**	11%
Monounsaturated Fat (g)	1	Dietary Fiber (g)	3	12%
Protein (g)	19	Sugars (g)	6	

Diet Exchanges 1 ½ Lean Meat 1 ½ Starch

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

	Calories:	**2,000**	**2,500**
Total Fat	Less Than	65g	80g
Sat Fat	Less Than	20g	25g
Cholesterol	Less Than	300mg	300mg
Sodium	Less Than	2,400mg	2,400mg
Potassium	Less Than	3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Nutritional information is subject to change. Please see label of product on store shelves for the most current information.

Grilled Chicken Bake Print

Nutrition Facts

Serving Size 1 meal (369g)
Servings Per Container 1

Amount Per Serving

Calories 480 Calories from Fat 190

	% Daily Value*
Total Fat 21g	32%
Saturated Fat 8g	40%
Trans Fat .5g	
Cholesterol 60mg	20%
Sodium 900mg	38%
Potassium 450mg	13%
Total Carbohydrate 45g	15%
Dietary Fiber 6g	24%
Sugars 4g	
Protein 28g	

Vitamin A 40%	Vitamin C 25%
Calcium 25%	Iron 10%
Riboflavin 20%	Niacin 15%
Folic Acid 20%	Vitamin B_{12} 15%
Pantothenic Acid 20%	Phosphorus 40%
Magnesium 15%	Manganese 30%

Product formulations and packaging may change. For the most current information regarding a particular product, please refer to the product package.

Handout

Hazelnut Liquid Creamer

Nutrition Facts

Serving Size 1 tbsp (15mL)

Amount Per Serving	
Calories 35	Calories From Fat 15
	% Daily Value*
Total Fat 1.5g	**2%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Polyunsaturated Fat 0g	
Monounsaturated Fat 1g	
Cholesterol 0mg	**0%**
Sodium 5mg	**0%**
Total Carbohydrate 5g	**2%**
Sugars 5g	
Protein 0g	

Sugar Free Hazelnut Liquid

Nutrition Facts

Serving Size 1 tbsp (15mL)

Amount Per Serving	
Calories 15	Calories From Fat 10
	% Daily Value*
Total Fat 1g	**2%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Polyunsaturated Fat 0g	
Monounsaturated Fat 1g	
Cholesterol 0mg	**0%**
Sodium 10mg	**0%**
Total Carbohydrate 2g	**1%**
Sugars 0g	
Protein 0g	

*Percent Daily Values are based on a 2,000 calorie diet.

Not a significant source of dietary fiber, sugar, vitamin A, vitamin C, calcium, and iron.

Fat Free Hazelnut Liquid

Nutrition Facts

Serving Size 1 tbsp (15mL)

Amount Per Serving	
Calories 25	Calories From Fat 0
	% Daily Value*
Total Fat 0g	**0%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Polyunsaturated Fat 0g	
Monounsaturated Fat 0g	
Cholesterol 0mg	**0%**
Sodium 0mg	**1%**
Total Carbohydrate 5g	**2%**
Sugars 5g	
Protein 0g	

*Percent Daily Values are based on a 2,000 calorie diet.

Not a significant source of dietary fiber, sugar, vitamin A, vitamin C, calcium, and iron.

Handout

Reading food labels

Can you find the facts on a food label? Whether you are counting "carbs" or finding fats, the Nutrition Facts panel helps you know just what you're eating. Take a look at the label shown here and find the key facts.

Serving size
The first thing to check on a label is the serving size. All of the nutrition facts listed on the label, such as the calories, fat, and carbs, relate to this serving size. But look carefully! The serving size listed may not match the serving size you usually eat. So, for example, if the serving size for pasta is 1/2 cup- and you are about to put 1 cups on your plate-you'll need to triple the nutrition facts to match your serving size.

Total fat
It is recommended that less than 30% of your total calories for the day come from fat. Based on the number of calories you eat, the chart below shows you how many grams of fat equals 30% of your total calories.

Total daily calories	Total daily fat grams
1400	47
1600	53
2000	67
2400	80

When you look at the total fat listed on a food label, compare this to your fat limit for the day. Look at labels of similar foods to find the lowest fat choice. Foods labeled "low fat" have 3 g (grams) or less of fat per serving.

Nutrition Facts

Serving Size pita (39g)
Servings Per Container 10

Amount Per Serving	
Calories 105	Calories from Fat 10
	% Daily Value*
Total Fat 1g	**1%**
Saturated Fat 0g	**0%**
Cholesterol 0mg	**0%**
Sodium 255mg	**10%**
Total Carbohydrate 19g	**6%**
Dietary Fiber 2g	**9%**
Sugars 2g	
Protein 5g	

Vitamin A 0% • Vitamin C 0%
Calcium 2% • Iron 7%

*Percent Daily Values are based on a 2000-calorie diet. **Your daily values may be higher or lower depending on your calorieneeds.**

Total carbohydrate
The total carbohydrate is a total of all the starch, sugars, and fiber in a serving of food. You don't need to single out sugar, just focus on the total carb number. One slice of bread has 15 grams of carbohydrate, or "1 carb choice." Use this number to get a better sense of what the amount of total carbohydrate means on a label. On the sample label shown, 1/2 pita has 19 grams of total carbohydrate, which is equal to about 1 carb choice.

Fiber
Eating 20 to 35 grams of dietary fiber a day can be good for your health. When shopping for crackers, breads, or cereals, compare labels to find one that is higher in dietary fiber. A food is a good source of fiber if it has 2.5 grams or more of fiber in a serving.

What's in a Word?

Here's what common terms mean when used on a label:

LIGHT

A **"light"** food has 1/3 the calories or 1/2 the fat of the food to which it is being compared. For example, 1 tablespoon of light mayo has 50 calories and 5 grams of fat, while 1 tablespoon of the real thing has 100 calories and 11 grams of fat.

LOW CALORIE

There still might be some calories in a serving of a **"low calorie"** food, but by law it has to be 40 calories or less.

SUGAR FREE

If something is labeled **"sugar free:'** it has only a half gram (0.5) of sugar or less per serving. Keep in mind, "sugar free" foods are not always low carbohydrate or lowfat foods. Read the label carefully.

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Total Carbohydrate 19g	6%
Dietary Fiber 2g	9%
Sugars 2g	
Protein 5g	

Vitamin A 0% Vitamin C 0%

Calcium 2% Iron 7%

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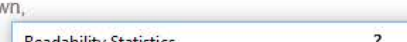


Healthy Eating:

Planning Recommended Daily Menus

Handout

Traditional American Cuisine—Reduced Calories

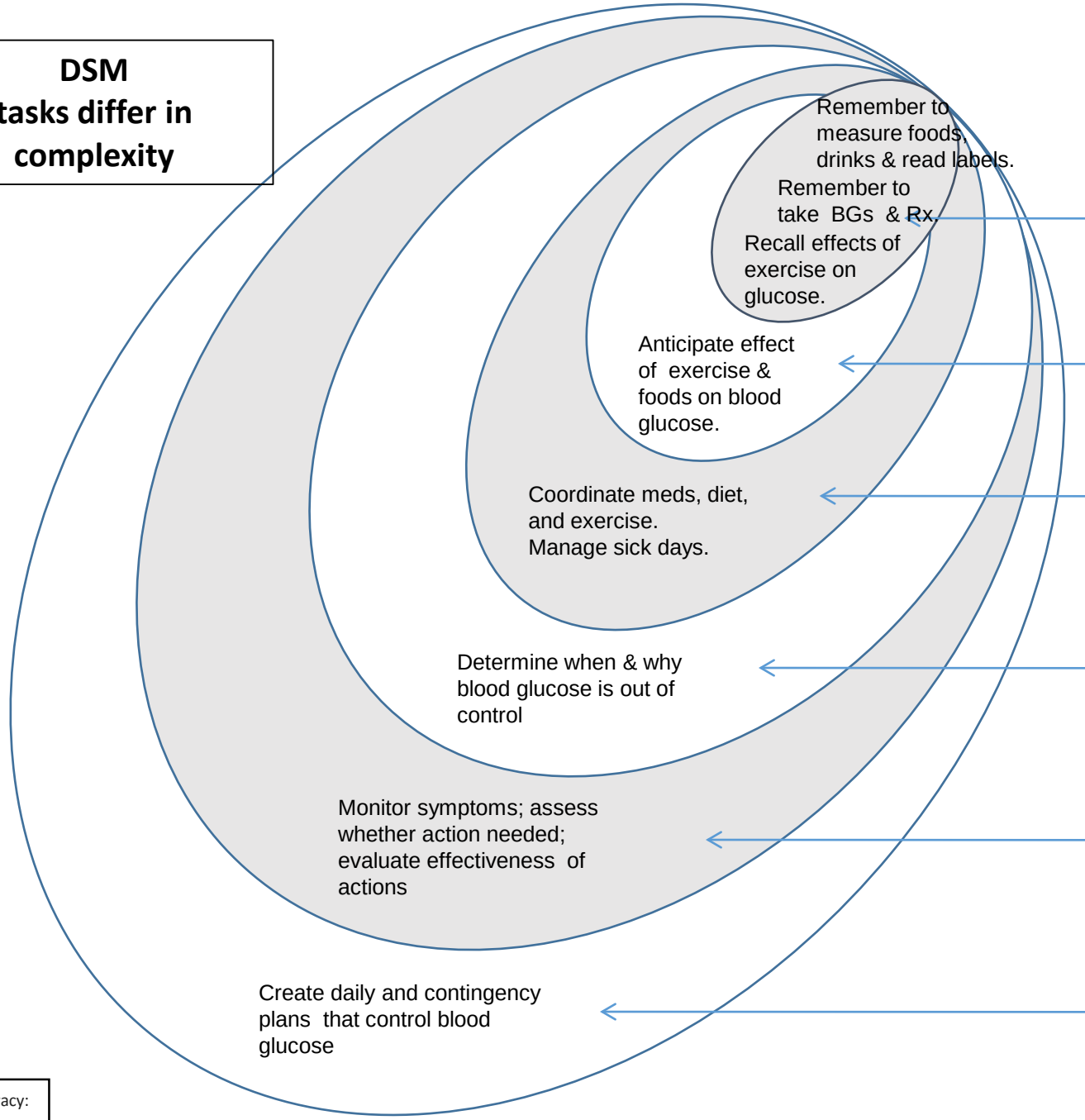
	1,200 Calories	1,600 Calories
Breakfast		
Whole wheat bread	1 med slice	1 med slice
Jelly, regular	2 tsp	2 tsp
Cereal, shredded wheat	½ cup	1 cup
Milk, 1%	1 cup	1 cup
Orange juice	¾ cup	¾ cup
Coffee, regular	1 cup	1 cup with 1 oz of 1% milk
Lunch		
Roast beef sandwich:		
Whole wheat bread	2 med slices	2 med slices
Lean roast beef, unseasoned	2 oz	2 oz
American cheese, low fat and low sodium	—	1 slice, ¾ oz
Lettuce	1 leaf	1 leaf
Tomato	3 med slices	3 med slices
Mayonnaise, low caloric	1 tsp	2 tsp
Apple	1 med	1 med
Water	1 cup	1 cup
Dinner		
Salmon	2 oz edible	3 oz edible
Vegetable oil	1½ tsp	1½ tsp
Baked potato	¾ med	¾ med
Margarine	1 tsp	1 tsp
Green beans, seasoned, with margarine	½ cup	½ cup
Carrots, seasoned	½ cup	—
Carrots, seasoned, with margarine	—	½ cup
White dinner roll	1 small	1 med
Ice milk	—	½ cup
Iced tea, unsweetened	1 cup	1 cup
Water	2 cup	2 cup
Snack		
Popcorn	2½ cup	2½ cup
Margarine	¾ tsp	½ tsp

Calories	1,247	Calories	1,613
Total carbohydrate, % calories	58	Total carbohydrate, % calories	55
Total fat, % calories	26	Total fat, % calories	29
*Saturated fat, % calories	7	*Saturated fat, % calories	8
Sodium, mg	1,043	Sodium, mg	1,341
Cholesterol, mg	96	Cholesterol, mg	142
Protein, % calories	19	Protein, % calories	19

Note: Calories have been rounded. No salt added in recipe preparation or as seasoning.
** At these reduced calorie levels, the amount of saturated fat is low even if the percent of calories from saturated fat is slightly over 7 percent.*

RECALL

DSM tasks differ in complexity



Bloom's taxonomy of educational objectives (cognitive domain)*

Simplest tasks

1. **Remember**
   recognize, recall, Identify, retrieve
2. **Understand**
   paraphrase, summarize, compare, predict, infer
3. **Apply**
   execute familiar task,, apply procedure to unfamiliar task
4. **Analyze**
   distinguish, focus, select, integrate, coordinate
5. **Evaluate**
   check, monitor, detect inconsistencies, judge effectiveness
6. **Create**
   hypothesize, plan, invent, devise, design

Most complex tasks

*Revised 2001: Anderson, L. W., & Krathwohl,D. R. *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* NY: Addison Wesley Longman.

Reuters Health Information

Insulin Dosing Requires Attention to Fat, as Well as Carbs

By Anne Harding

July 19, 2016

Print Email

NEW YORK (Reuters Health) - People with type 1 diabetes should account for the amount of fat in a meal, as well as its carbohydrate content, when calculating their insulin dose, according to new findings.

"Insulin dosing for food needs to be based not only on carbohydrate content, but on meal composition," Dr. Howard Wolpert of the Joslin Diabetes Center in Boston, an author of the study, told Reuters Health. "What it entails is a shift in the way we approach dosing for meals."

Adjustment is necessary when a meal contains at least 40 grams of fat, he added, and the adjusted dose should be spread out rather than given all at once because fat can slow gastric emptying.

Studies have shown that both fat and protein can cause postprandial hyperglycemia, Dr. Wolpert and his team note in their report, published online July 7 in Diabetes Care. But there is little data on how patients should adjust insulin to account for the amount of fat or protein in a meal, they add.

The researchers looked at differences in postprandial glycemia over a six-hour period when 10 adults with type 1 diabetes consumed a low-fat, low-protein meal (LFLP) and a high-fat, high-protein (HFHP) meal, both covered by the same insulin dose. The study participants later repeated the HFHP meal using an adaptive model-predictive bolus (MPB) of insulin. All patients were on an insulin pump.

When patients received the same insulin dose, the HFHP meal more than doubled glucose incremental area under the curve compared with the LFLP meal (27,092 vs. 13,320 mg/dL/min).

Adjusting the dose to achieve target glucose control with the HFHP meal required, on average, a 65% increase in insulin dose, although the additional amount varied widely among study participants, from 17% to 124%.

Most of the fat-related increase in glucose occurred 80 minutes after the meal.

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A major limitation of past research is that investigators have assumed that people would all need the same increase in insulin when eating a higher-fat meal, Dr. Wolpert noted.

"There's huge interindividual variation in the effect of fat on people's insulin requirement, so dosing requirements need to be individualized," he said.

Protein has less of an impact on post-meal glucose, according to Dr. Wolpert, and requires insulin dose adjustment only with meals containing at least 75 grams of protein.

Dr. Wolpert is currently working on developing smartphone-based tools to provide insulin dosing guidance based on a meal's macronutrient content.

SOURCE: http://bit.ly/2a1UCtu

Diabetes Care 2016.

Being Active

Physical activity:

Using a Pedometer

Handout

Increasing Physical Activity by using a Pedometer.

The goal is to track your steps to increase by 10% each week during the month.

- Do you have an activity tracker or pedometer?
- Now could be a good time to purchase an inexpensive option OR if not, you can always download a FREE pedometer app and keep your cell phone in your pocket.
- At the end of each week during the month, your goal is:

1. Increase steps by 10%

OR

2. Reach an average of 10,000 steps per day over the course of one week (TOTAL of 70,000 steps)

- How to track steps:
- Use a Pedometer, Activity Tracker, or Pedometer App on your phone to log steps at the end of each day
- Log TOTAL STEPS at the end of the week (if you reach at least 70,000 steps at the end of the week.
- Take your total steps and multiply by 1.1 (this increases that number by 10%)
- Your new goal for the next week is to INCREASE YOUR STEPS BY 10%

Handout

Pedometer Challenge

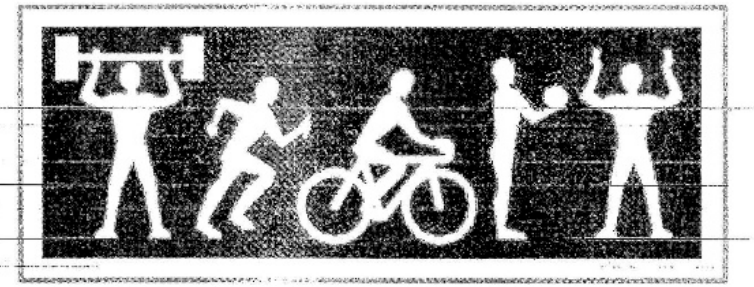
1. Fill in the date and steps at the end of each day.
2. At the end of each week, calculate the average steps per day and multiply by 1.2 to determine what would be a ***20% increase*** for the next week.
3. Check in with your nutritionist for tips and motivation.

Did you know there are approximately 10,000 steps in 5 miles?
Can you reach 10,000 steps by the end of 4 weeks?
The challenge is to try to beat last week's steps by 20%!

Week 1:

Date	**Total Daily Steps**
Weekly Total:	
Divide by 7 =	
Multiply by 1.2 = **This is your step goal per day for week #2**	

Live.Life.Healthy



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Weekly TOTAL
5	6	7	8	9	10	11	TOTAL STEPS: _____ Multiply by 1.1 = _____
12	13	14	15	16	17	18	TOTAL STEPS: _____ Multiply by 1.1 = _____
19	20	21	22	23	24	25	TOTAL STEPS: _____ Multiply by 1.1 = _____
26	27	28	29	30	1	2	TOTAL STEPS: _____ Multiply by 1.1 = _____

NAME ______________________________ DATE _____________

℞ for walking with pedometer

Number of steps per day and per week:

Week 1:	1000 steps	in 15 minutes	3-4 days per week
Weeks 2 & 3:	1500 steps	in 15 minutes	3-4 days per week
After week 3:	2000 steps	in 20 minutes	3-4 days per week

Next visit: _____________

Date	Minutes Walking	Number of Steps

Teaching the teacher: Script for CDE when prescribing "Rx for Walking"

Key idea	Sample statements
Why	
[general benefit]	"Exercise is important for staying healthy."
[concrete example]	"Walking helps keep your heart strong; it can help you lose weight; it also helps to relieve stress."
[personalize]	"Exercise is especially important for you because you have diabetes."
[meaningful metaphor]	"For people with diabetes, exercise is as important as the medicines they take to control their blood sugar."
What	
[pull out Rx for walking] *[sign & enter patient's name]*	"I am giving you a prescription for something that helps many people to start walking more."
[basics of a pedometer]	"It's for a pedometer. It's a little thing that you clip onto your belt/pants/skirt, and it counts many steps you take."
[most crucial point in prescription] *[point to the contents of the Rx]*	"This prescription tells you how many extra steps I want you to take."
[next most important point]	"The idea is to gradually increase how much walking you do each week, and how fast you do it."
[specify end-goal]	"That way you can work up to getting the amount of exercise you need to control your diabetes, and have more energy for the things you like to do."
[activate mindset that good health requires active self-care]	"The pedometer is a tool to help you do that in a way that works for you."
Where	
[Tell patient where to take the prescription to get the pedometer.]	
[preview of session—reassurance that all will be explained]	"The [nurse, physician assistant/etc.] will give you the pedometer and show you how to use it."
[reinforce active self-care mindset]	"S/he will also help you think about different ways you might enjoy taking the extra steps I have prescribed for you."

NOTE: Record "prescribed pedometer" in the patient's chart

Provides the CDE with:

Educationally sound curriculum
- Key ideas
- Content, sequence, and pace of instruction, etc.

Implicit training
- Be concrete, personalize, use meaningful metaphors, etc.

Key idea	Sample statements
Why	
[general ben	
[concrete ex	
[personalize]	
[meaningful	
What	
[pull out Rx f *[sign & enter*	
[basics of a p	
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??

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[Tell patient where to take the prescription to get the pedometer.]	
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how to use it."

NOTE: Record "prescribed pedometer" in the patient's chart

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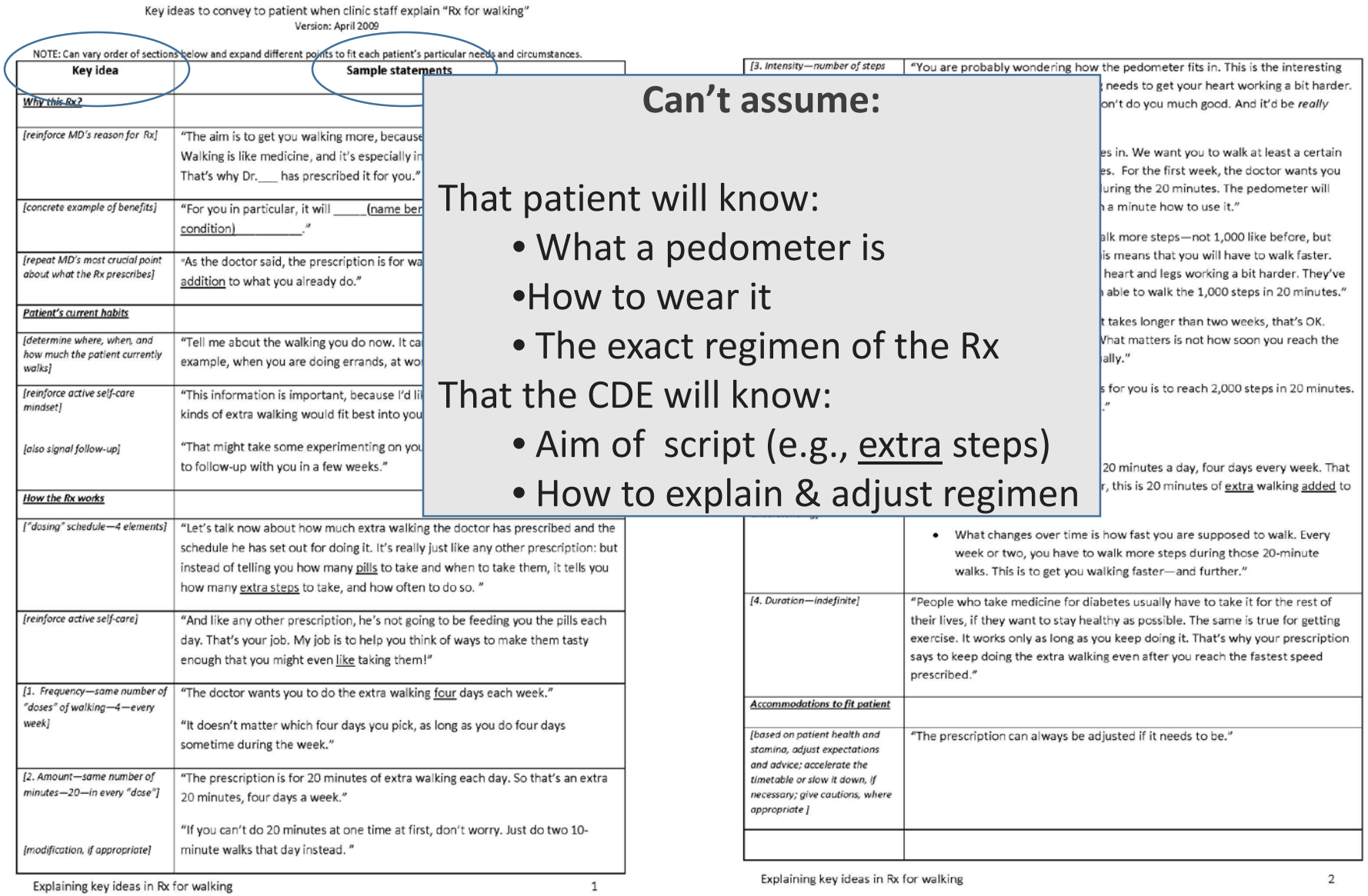
Curriculum design: Don't assume they know what's obvious to you



Key ideas to convey to patient when clinic staff explain "Rx for walking"
Version: April 2009

NOTE: Can vary order of sections below and expand different points to fit each patient's particular needs and circumstances.

Key idea	Sample statements
Why this Rx?	
[reinforce MD's reason for Rx]	"The aim is to get you walking more, because Walking is like medicine, and it's especially in That's why Dr.___ has prescribed it for you."
[concrete example of benefits]	"For you in particular, it will _____(name ben condition)_____."
[repeat MD's most crucial point about what the Rx prescribes]	"As the doctor said, the prescription is for wa addition to what you already do."
Patient's current habits	
[determine where, when, and how much the patient currently walks]	"Tell me about the walking you do now. It ca example, when you are doing errands, at wo
[reinforce active self-care mindset] *[also signal follow-up]*	"This information is important, because I'd li kinds of extra walking would fit best into you "That might take some experimenting on you to follow-up with you in a few weeks."
How the Rx works	
["dosing" schedule—4 elements]	"Let's talk now about how much extra walking the doctor has prescribed and the schedule he has set out for doing it. It's really just like any other prescription: but instead of telling you how many pills to take and when to take them, it tells you how many extra steps to take, and how often to do so. "
[reinforce active self-care]	"And like any other prescription, he's not going to be feeding you the pills each day. That's your job. My job is to help you think of ways to make them tasty enough that you might even like taking them!"
[1. Frequency—same number of "doses" of walking—4—every week]	"The doctor wants you to do the extra walking four days each week." "It doesn't matter which four days you pick, as long as you do four days sometime during the week."
[2. Amount—same number of minutes—20—in every "dose"] *[modification, if appropriate]*	"The prescription is for 20 minutes of extra walking each day. So that's an extra 20 minutes, four days a week." "If you can't do 20 minutes at one time at first, don't worry. Just do two 10-minute walks that day instead. "

Explaining key ideas in Rx for walking 1

[3. Intensity—number of steps	"You are probably wondering how the pedometer fits in. This is the interesting needs to get your heart working a bit harder. on't do you much good. And it'd be *really* es in. We want you to walk at least a certain es. For the first week, the doctor wants you uring the 20 minutes. The pedometer will a minute how to use it." lk more steps—not 1,000 like before, but is means that you will have to walk faster. heart and legs working a bit harder. They've able to walk the 1,000 steps in 20 minutes." t takes longer than two weeks, that's OK. What matters is not how soon you reach the ally." s for you is to reach 2,000 steps in 20 minutes. ." 20 minutes a day, four days every week. That r, this is 20 minutes of extra walking added to • What changes over time is how fast you are supposed to walk. Every week or two, you have to walk more steps during those 20-minute walks. This is to get you walking faster—and further."
[4. Duration—indefinite]	"People who take medicine for diabetes usually have to take it for the rest of their lives, if they want to stay healthy as possible. The same is true for getting exercise. It works only as long as you keep doing it. That's why your prescription says to keep doing the extra walking even after you reach the fastest speed prescribed."
Accommodations to fit patient	
[based on patient health and stamina, adjust expectations and advice; accelerate the timetable or slow it down, if necessary; give cautions, where appropriate]	"The prescription can always be adjusted if it needs to be."

Explaining key ideas in Rx for walking 2

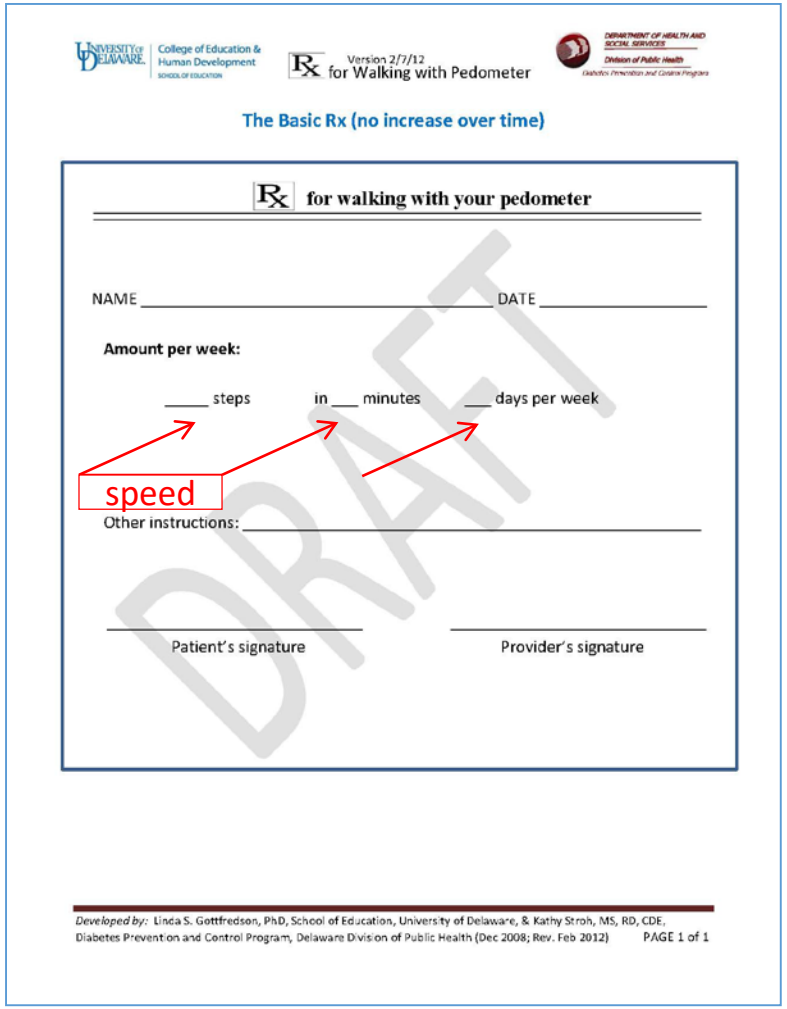
Can't assume:

That patient will know:
- What a pedometer is
- How to wear it
- The exact regimen of the Rx

That the CDE will know:
- Aim of script (e.g., extra steps)
- How to explain & adjust regimen

Graduated Rx

Basic Rx



College of Education & Human Development
Version 2/7/12
for Walking with Pedometer

The Basic Rx (no increase over time)

℞ for walking with your pedometer

NAME _____ DATE _____

Amount per week:

_____ steps in ___ minutes ___ days per week

speed

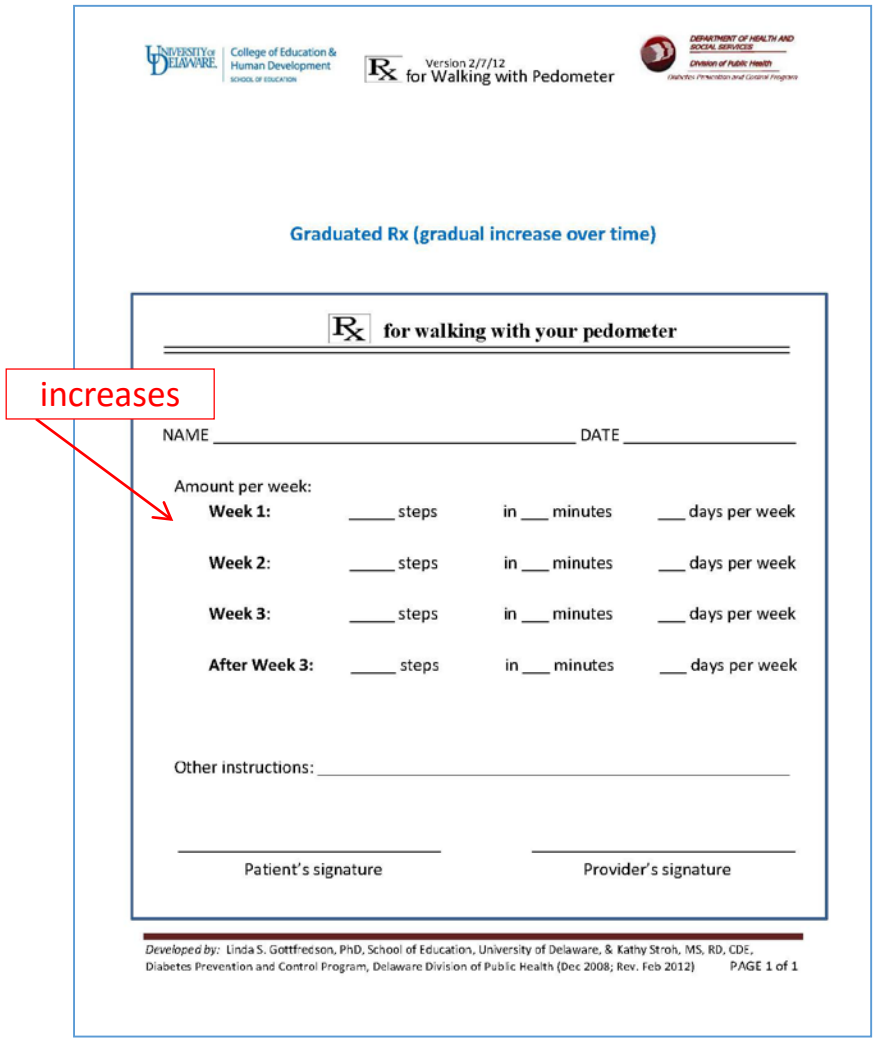
Other instructions: _____

Patient's signature

Provider's signature

DRAFT

Developed by: Linda S. Gottfredson, PhD, School of Education, University of Delaware, & Kathy Stroh, MS, RD, CDE, Diabetes Prevention and Control Program, Delaware Division of Public Health (Dec 2008; Rev. Feb 2012) PAGE 1 of 1



College of Education & Human Development
Version 2/7/12
for Walking with Pedometer

Graduated Rx (gradual increase over time)

increases

℞ for walking with your pedometer

NAME _____ DATE _____

Amount per week:

Week 1:	_____ steps	in ___ minutes	___ days per week
Week 2:	_____ steps	in ___ minutes	___ days per week
Week 3:	_____ steps	in ___ minutes	___ days per week
After Week 3:	_____ steps	in ___ minutes	___ days per week

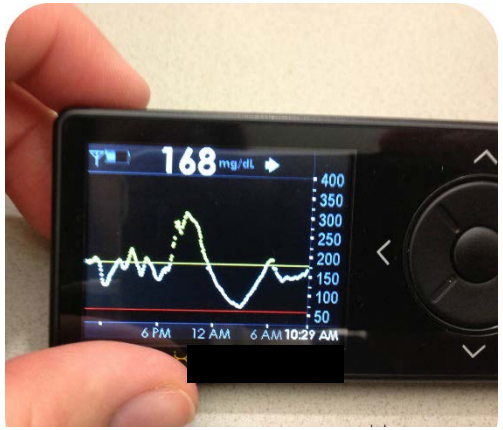
Other instructions: _____

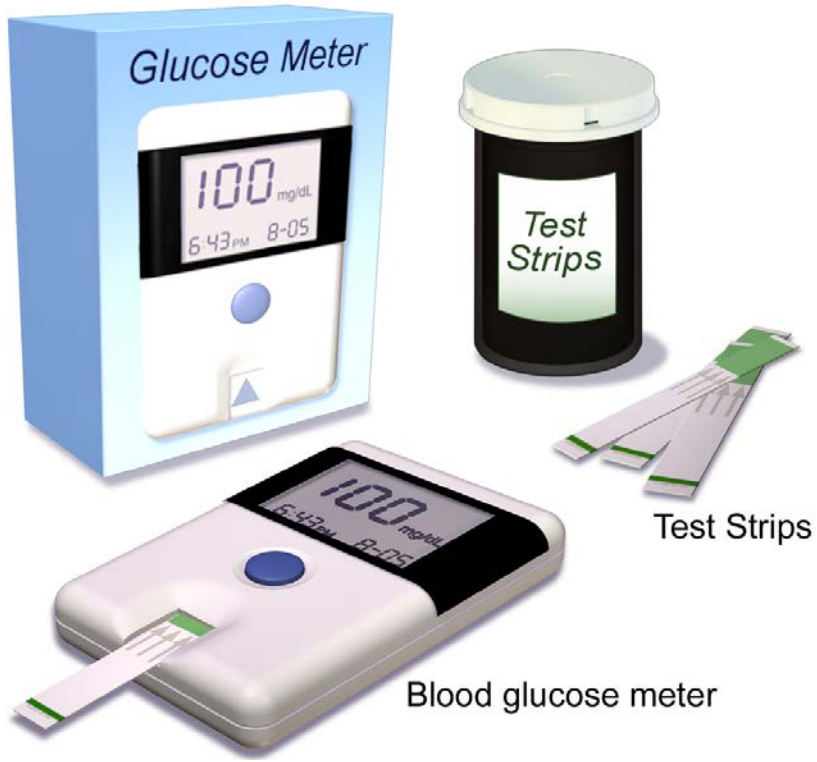
Patient's signature

Provider's signature

Developed by: Linda S. Gottfredson, PhD, School of Education, University of Delaware, & Kathy Stroh, MS, RD, CDE, Diabetes Prevention and Control Program, Delaware Division of Public Health (Dec 2008; Rev. Feb 2012) PAGE 1 of 1

Monitoring


168 mg/dL
400
350
300
250
200
150
100
50
6 PM
12 AM
6 AM
10:29 AM


Glucose Meter
100 mg/dL
6:43 PM 8-05
Test Strips
Test Strips
Blood glucose meter

SMBG Accuracy Factors

Factors Affecting BGM Results

- Factors that interfere with BGM overall accuracy:
  - Environmental issues (eg, cold temperature, high altitude)
  - Contaminants on the skin from food sources and lotions.
- Reduced accuracy and precision in tests performed by patients/other lay users compared with trained health professionals.
- Under filling the test strip can introduce errors >20%
- Use of alternate sites (sampling from palm, upper arm, forearm, thigh, or calf) can generate inaccurate results
  - Particularly true when glucose levels are changing rapidly
    - after meals or exercise
    - when the patient is ill or under stress
    - shortly after insulin administration[5,6]

BGM = blood glucose monitor.

Handout

Measuring blood sugar: Version 1

Starting Insulin – a patient guide

Measuring Your Blood sugar

Testing your blood sugar often can help you control your diabetes.

Check your blood sugar regularly when:

- Taking diabetes pills or insulin
- Pregnant
- Blood sugar is hard to control
- Blood sugar results are low
- Blood sugar results are high and your urine has ketones
- Low blood sugar occurs without the usual warning signs
- Changing eating habits
- Taking certain medications, such steroids or liquid medications

Check your blood sugar at different times during the day

- Upon waking, before breakfast
- Before meals
- 2 hours after the start of a meal
- When you feel blood sugar is too high or too low

A glucometer is a machine that measures your blood sugar.

Choosing a glucometer

- Does your healthcare provider prefer a certain glucometer?
- What is the cost of the glucometer, batteries, and test strips
  - Which glucometers are covered by your insurance company?
  - Is there a rebate toward the cost of the glucometer
- Ease of use
  - Some glucometers have more steps to follow than others.
  - Are the numbers easy to read?
  - Some glucometers allow you to stick your forearm, thigh, or fleshy part of your hand instead of your fingertip. Read the manufacturer's instructions.
  - Is the glucometer easy to clean?
- How to make sure the glucometer is accurate
  - Some glucometers have special coding or a computer chip that must be changed, or calibrated, with every new bottle of test strips.
  - Some glucometers have a "control" substance to check the machine.
  - Most glucometers are accurate and precise if used properly.

Starting Insulin – a patient guide

Measuring Your Blood sugar

Glucometers may be a little different in how they are used. Here are some general steps.

- Wash your hands.
- Insert a test strip in your glucometer. This often turns the glucometer on, but some glucometers may have an on-off switch.

- Using a lancet, prick your fingertip. You may want to prick the side of your fingertip near the fingernail to avoid soreness on the end of your finger.
- Gently squeeze or massage your fi until a drop of blood forms.
- Touch and hold the edge of the test strip to the drop of blood.
- Often your glucometer will "beep" when there is enough blood.
- Your blood sugar result will appear on the glucometer's display.

Write down your blood sugar results each time you take them. Most glucometers come with log books, or you can use a notebook. Some glucometers can store blood sugar results. Be sure you have the date and time set and know how to use a glucometer with a memory. Show your record to your healthcare provider at every visit.

Poor meter readings result from:

- Dirty glucometer
- Glucometer or test strip that is not at room temperature
- Old or outdated test strips
- Glucometer that is not calibrated to the bottle of test strips used by that glucometer
- Too much or too little blood on the test strip

Your healthcare provider can help you understand how to use your glucometer.

Handout

Measuring blood sugar: Version 2

Starting Insulin – a patient guide

Measuring Your Blood sugar

Checking your blood sugar is important when you have diabetes.

Check your blood sugar when:

- Taking diabetes pills or insulin
- Pregnant
- Traveling
- Changing eating habits
- On new medicines
- Starting new exercise
- Sick

Your healthcare provider may tell you to check your blood sugar:

- When you wake up before you eat
- Before meals
- Two hours after you eat
- If you feel like your blood sugar is too high or too low

A glucometer is a machine that measures your blood sugar.

Choosing a glucometer:

- Ask your healthcare provide which glucometer is best for you.
- How much does the glucometer cost?
- How much do the batteries and test strips cost?
- Does your insurance pay for the glucometer and supplies?
- Is it easy to use?
- Are the numbers clear to read?
- Is it easy to clean?
- Is it easy to program?
  - Some glucometers have special coding or a computer chip that must be changed with every new bottle of test strips.
  - Some glucometers have a "control" substance to check the machine.

Starting Insulin – a patient guide

Measuring Your Blood sugar

To use your glucometer:

1. Wash your hands
2. Put the test strip in your glucometer.
3. Using a sharp lancet, prick your fingertip.
4. Squeeze a small drop of blood out of your finger.
5. Touch the edge of the test strip to the blood.
6. Your machine might "beep" when there is enough blood.
7. Your results will show up on the glucometer.

Write down your blood sugar results and the time of day you tested in the glucometer log book or a notebook. Some glucometers can store blood sugar results. Be sure you have the date and time set and know how to use a glucometer with a memory.

Show your record to your healthcare provider at every visit.

Causes of incorrect results:

- Dirty glucometer
- Glucometer and test strip are not at room temperature
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- Too much or too little blood on the test strip

Your healthcare provider can help you understand how to use your glucometer.

“Low literacy”

Starting Insulin – a patient guide

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Readability Statistics

Counts	
Words	513
Characters	2535
Paragraphs	49
Sentences	30
Averages	
Sentences per Paragraph	1.3
Words per Sentence	11.1
Characters per Word	4.8
Readability	
Passive Sentences	3%
Flesch Reading Ease	63.5
Flesch-Kincaid Grade Level	7.1

OK

Starting Insulin – a patient guide

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Place label here.

“Very low” literacy

Starting Insulin – a patient guide

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Readability Statistics

Counts	
Words	358
Characters	1680
Paragraphs	48
Sentences	23
Averages	
Sentences per Paragraph	1.1
Words per Sentence	9.3
Characters per Word	4.4
Readability	
Passive Sentences	4%
Flesch Reading Ease	77.7
Flesch-Kincaid Grade Level	4.7

OK

Starting Insulin – a patient guide

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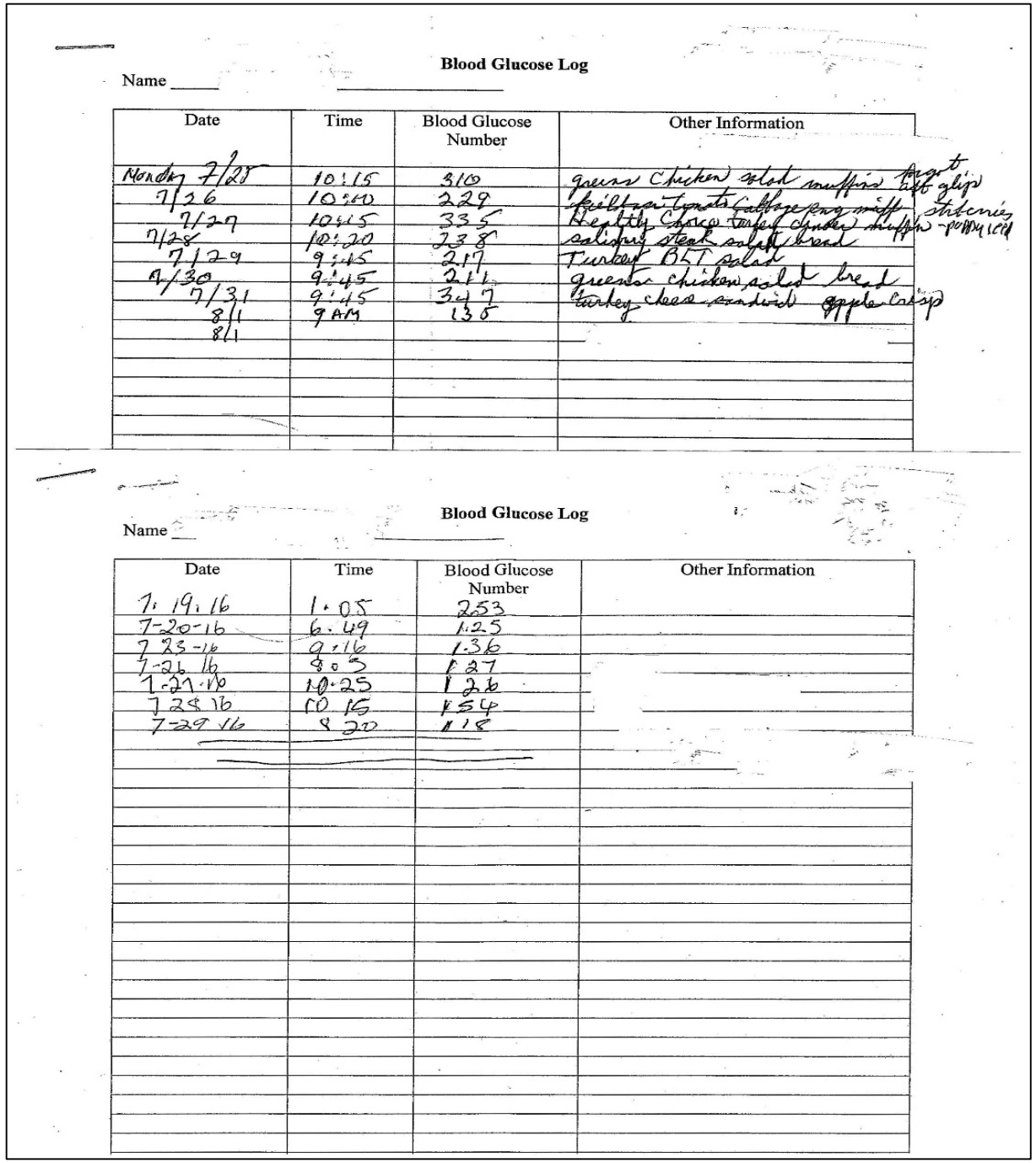
Blood Glucose Logs

RECALL



Blood Glucose Log

Name _____

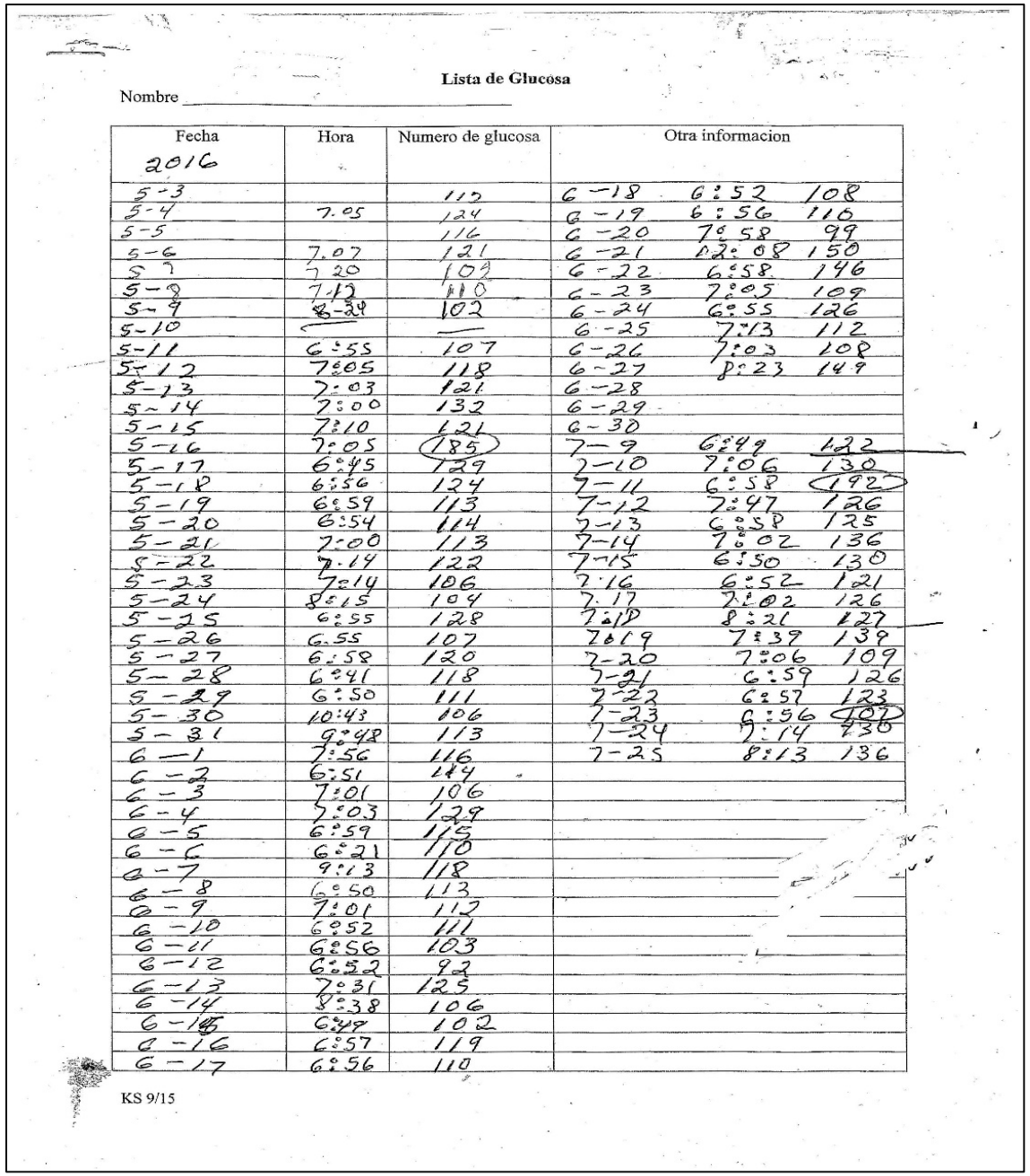
Date	Time	Blood Glucose Number	Other Information
Monday 7/25	10:15	310	greens Chicken salad muffins forgot to take glip
7/26	10:40	229	grilled cheese tomato cabbage soup muffin strawberries
7/27	10:45	335	Healthy Choice turkey dinner muffin - pretty good
7/28	10:20	238	salisbury steak salad bread
7/29	9:45	217	Turkey BLT salad
7/30	9:45	211	greens chicken salad bread
7/31	9:45	347	turkey cheese sandwich apple crisp
8/1	9AM	130	
8/1			

Blood Glucose Log

Name _____

Date	Time	Blood Glucose Number	Other Information
7.19.16	1.05	253	
7-20-16	6.49	125	
7-23-16	9:16	136	
7-26-16	8.05	127	
7-27-16	10.25	126	
7-28-16	10 15	154	
7-29-16	8 20	118	

RECALL



Lista de Glucosa

Nombre _____

Fecha 2016	Hora	Numero de glucosa	Otra informacion		
5-3		117	6-18	6:52	108
5-4	7.05	124	6-19	6:56	116
5-5		116	6-20	7:58	99
5-6	7.07	121	6-21	12:08	150
5-7	7.20	102	6-22	6:58	146
5-8	7.13	110	6-23	7:05	109
5-9	8-24	102	6-24	6:55	126
5-10			6-25	7:13	112
5-11	6:55	107	6-26	7:03	108
5-12	7:05	118	6-27	8:23	149
5-13	7:03	121	6-28		
5-14	7:00	132	6-29		
5-15	7:10	121	6-30		
5-16	7:05	(185)	7-9	6:49	122
5-17	6:45	129	7-10	7:06	130
5-18	6:56	124	7-11	6:58	(192)
5-19	6:59	113	7-12	7:47	126
5-20	6:54	114	7-13	6:58	125
5-21	7:00	113	7-14	7:02	136
5-22	7.14	122	7-15	6:50	130
5-23	7:14	106	7-16	6:52	121
5-24	8:15	104	7-17	7:02	126
5-25	6:55	128	7-18	8:21	127
5-26	6.55	107	7-19	7:39	139
5-27	6:58	120	7-20	7:06	109
5-28	6:41	118	7-21	6:59	126
5-29	6:50	111	7-22	6:57	123
5-30	10:43	106	7-23	6:56	(40)
5-31	9:48	113	7-24	7:14	130
6-1	7:56	116	7-25	8:13	136
6-2	6:51	114			
6-3	7:01	106			
6-4	7:03	129			
6-5	6:59	115			
6-6	6:21	110			
6-7	9:13	118			
6-8	6:50	113			
6-9	7:01	112			
6-10	6:52	111			
6-11	6:56	103			
6-12	6:52	92			
6-13	7:31	125			
6-14	8:38	106			
6-15	6:48	102			
6-16	6:57	119			
6-17	6:56	110			

KS 9/15

Handout

Blood Sugar Log for the Week of _____

	Breakfast			Lunch			Dinner			Bedtime			During the Night		
	blood sugar before	insulin	blood sugar after	blood sugar before	insulin	blood sugar after	blood sugar before	insulin	blood sugar after	blood sugar before	insulin	blood sugar after	blood sugar before	insulin	blood sugar after
Monday															
Tuesday															
Wednesday															
Thursday															
Friday															
Saturday															
Sunday															

Weekly blood sugar notes

Handout

Date	Time	Blood Glucose	Other Information

Handout

Blood Glucose Log

Date	Before Breakfast	2 hours after breakfast	Before lunch	2 hours after lunch	Before dinner	2 hour after dinner	Bedtime
							

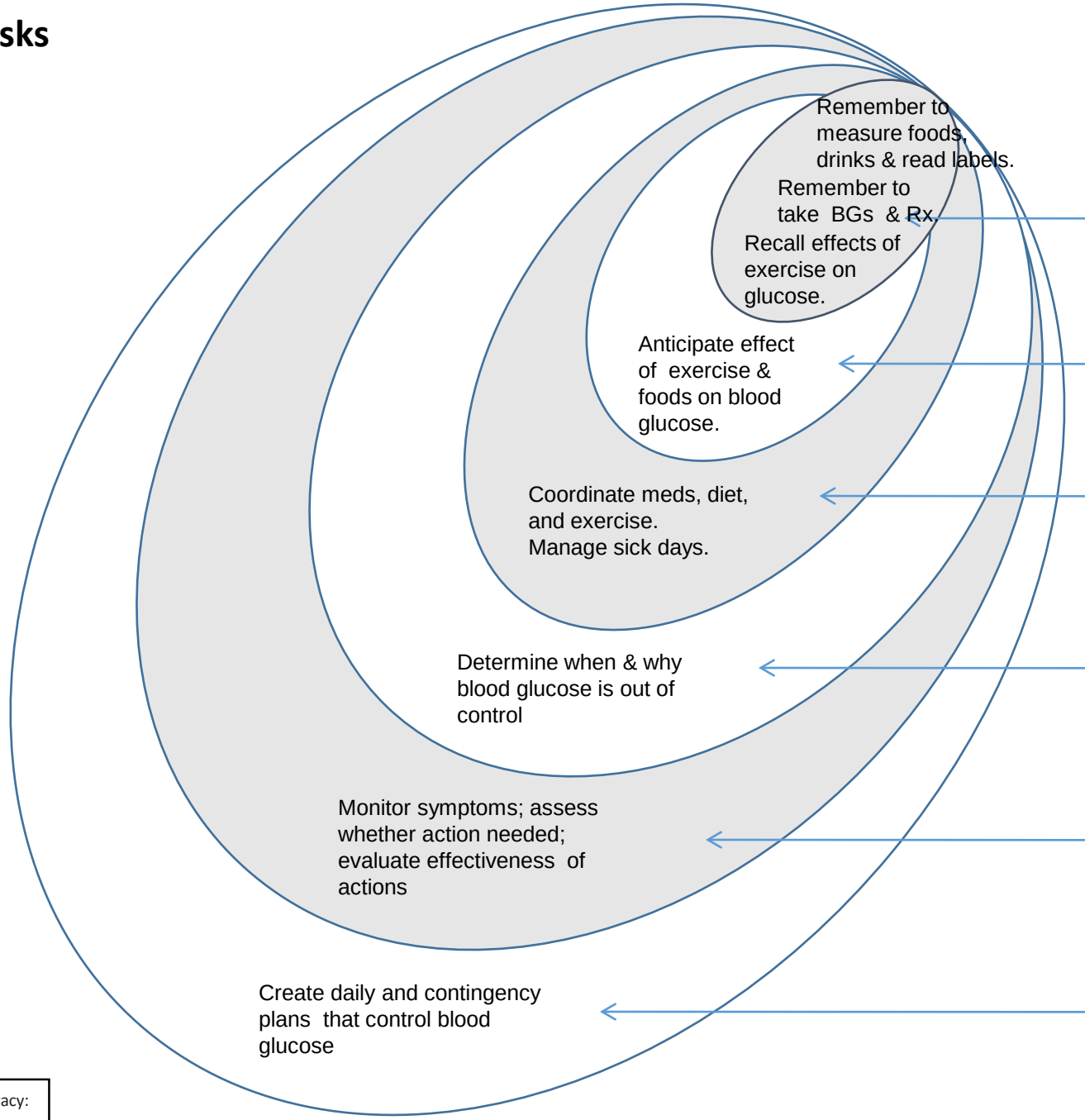
Handout

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time (breakfast)							
Blood Sugar							
Medicine							
Time (lunch)							
Blood Sugar							
Medicine							
Time (dinner)							
Blood Sugar							
Medicine							
Time (bed)							
Blood Sugar							
Medicine							

Paired Testing

	Before breakfast	2 hours after breakfast	Before lunch	2 hours after lunch	Before dinner	2 hours after dinner
Monday	X	X				
Tuesday			X	X		
Wednesday					X	X
Thursday	X	X				
Friday			X	X		
Saturday					X	X
Sunday	X	X				

Monitoring Tasks



Bloom's taxonomy of educational objectives (cognitive domain)*

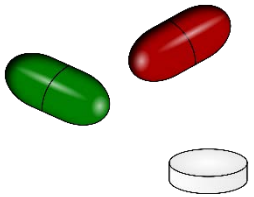
Simplest tasks

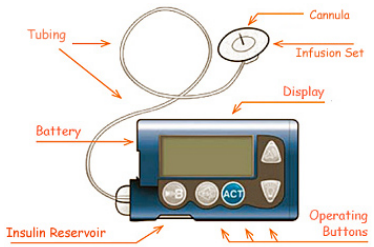
1. **Remember**
   recognize, recall, Identify, retrieve
2. **Understand**
   paraphrase, summarize, compare, predict, infer
3. **Apply**
   execute familiar task,, apply procedure to unfamiliar task
4. **Analyze**
   distinguish, focus, select, integrate, coordinate
5. **Evaluate**
   check, monitor, detect inconsistencies, judge effectiveness
6. **Create**
   hypothesize, plan, invent, devise, design

Most complex tasks

*Revised 2001: Anderson, L. W., & Krathwohl,D. R. *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* NY: Addison Wesley Longman.

Taking Medication





Syringes

Insulins

Oral agents

Pens

Non-insulin injectables

Insulin Pumps

Non-diabetes Rxs

Taking Medication:

Assessing Barriers to Adherence

RECALL

Task #1—Underline sentence saying how often to give the medicine

- One piece of info
- Simple match
- But lots of irrelevant info

Caution!
Can train people to do this task, but not all possible tasks like it

Pediatric Dosage Chart

Recommend

ALCOHOL-FREE
ASPIRIN-FREE
Tempra®
ACETAMINOPHEN

A Caring Sponsor of
Ronald McDonald House®
Ronald McDonald House is a program of
Ronald McDonald Children's Charities®

Pediatric Dosage Chart Drops, Syrup, & Chewables

Age	Approximate Weight Range*	Dosage			
		Drops	Syrup	Chewables 80 mg	Chewables 160 mg
† Under 3 mo	Under 13 lb	½ dropper	¼ tsp	—	—
† 3 to 9 mo	13-20 lb	1 dropper	½ tsp	—	—
† 10 to 24 mo	21-26 lb	1½ droppers	¾ tsp	—	—
2 to 3 yr	27-35 lb	2 droppers	1 tsp	2 tablets	—
4 to 5 yr	36-43 lb	3 droppers	1½ tsp	3 tablets	1½ tablets
6 to 8 yr	44-62 lb	—	2 tsp	4 tablets	2 tablets
9 to 10 yr	63-79 lb	—	2½ tsp	5 tablets	2½ tablets
11 yr	80-89 lb	—	3 tsp	6 tablets	3 tablets
12 yr and older	90 lb & over	—	3-4 tsp	6-8 tablets	3-4 tablets

† Consult with physician before administering to children under the age of 2 years.

Dosage may be given every 4 hours as needed but not more than 5 times daily.

How Supplied:
Drops: Each 0.8 ml dropper contains 80 mg (1.23 grains) acetaminophen.
Syrup: Each 5 ml teaspoon contains 160 mg (2.46 grains) acetaminophen.
Chewables: Regular tablets contain 80 mg (1.23 grains) acetaminophen each. Double strength tablets contain 160 mg (2.46 grains) acetaminophen each.

* If child is significantly under- or overweight, dosage may need to be adjusted accordingly.
The weight categories in this chart are designed to approximate effective dose ranges of 10-15 milligrams per kilogram.
(Current Pediatric Diagnosis and Treatment. 8th ed. CH Kempe and HK Silver, ed. Lange Medical Publications: 1984, p. 1079)
LA-1451-2-88 © 1988, Bristol-Myers U.S. Pharmaceutical and Nutritional Group • Evansville, Indiana 47721 U.S.A.

RECALL

"Do Not Crush, Chew or Cut"

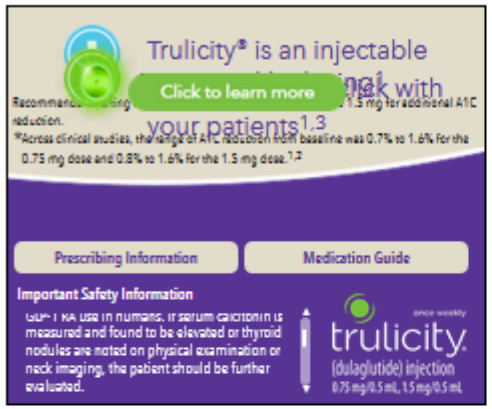
From the Institute for Safe Medication Practices (ISMP): When a patient is prescribed a timed release medication such as Glucotrol XL or Glucophage XR, clinicians need to ensure that the patients understand that they should not crush, chew or cut these pills. The medications must be swallowed whole.

In one case an elderly patient was prescribed Glucotrol XL to treat elevated blood sugars. This is a specially formulated medication that releases an entire day's supply of the medication slowly over a 24-hour period. The pill was too large for the woman to swallow, so she chewed it. She soon complained of feeling dizzy, weak, listless, and lethargic. Chewing the drug caused it to be released all at once, causing dangerously low blood glucose levels, which could have been fatal....

In some cases pills are coated so the medication won't be released in the stomach where it may cause irritation. In other cases, special coatings or other properties slow the delivery of the medication into the body so that the drug is delivered over a period of time. This is more convenient than having to take a drug several times a day, but if these pills are crushed or chewed, the way they are supposed to work will be destroyed and the medication may go into the body too fast. If that happens, then a large amount of the drug will be released all at once, which could cause side effects or serious harm.

Diabetes Disaster Averted series:
http://www.diabetesincontrol.com/articles/practicum

February 23rd, 2016



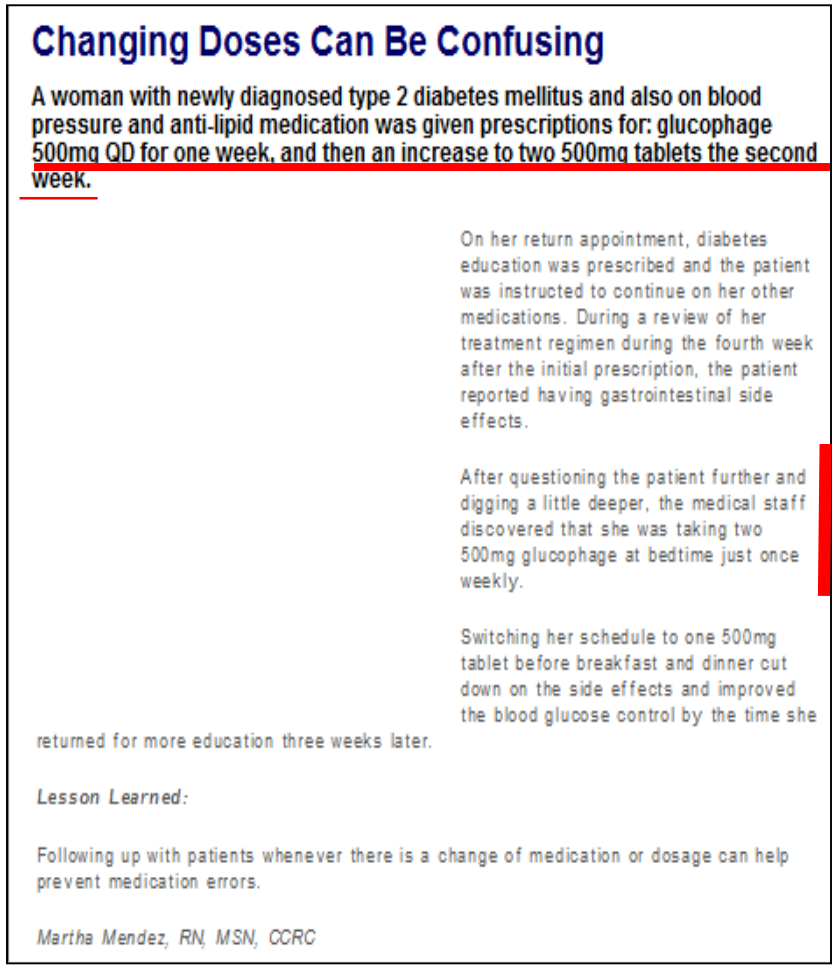
Woman, 67 years of age, newly diagnosed with type 2 diabetes with an A1C of 7.8%. Met with PCP who prescribed metformin ER and referred patient for diabetes education. Patient made some dietary and physical activity changes at first, but upon return visit her A1C was 8.5%. She reported she did not take the metformin. "I can't swallow big pills. The bottle said not to crush or break the tablets. They were just too big to swallow. So then I just gave up on everything." The PCP showed her other forms of metformin, some pills were smaller and even offered her a liquid version, as well as several SGLT-2s. She thought she could swallow one of the SGLT-2s she was shown. That particular medication was prescribed. She returned in a month with an A1C of 7.2% and a weight loss of 5 pounds. She was back to making some dietary and physical activity improvements as well as taking her medicine every day.

Lessons Learned:

- When discussing medications with patients, ask them how they do with swallowing pills.
- If patients tell you they can't swallow pills at all or can't swallow big pills, look for alternatives.
- Have samples of medicines available to show those patients who have difficulty swallowing pills. They can usually tell you by first sight if it's something they can swallow or not.
- A medication that is not taken has no chance to work.
- Remember shared decision making. Allow the patient to decide whether or not he or she thinks they can or will take their medicine.

Diabetes Disaster Averted series:
http://www.diabetesincontrol.com/articles/practicum

Changing doses can be confusing



Changing Doses Can Be Confusing

A woman with newly diagnosed type 2 diabetes mellitus and also on blood pressure and anti-lipid medication was given prescriptions for: glucophage 500mg QD for one week, and then an increase to two 500mg tablets the second week.

On her return appointment, diabetes education was prescribed and the patient was instructed to continue on her other medications. During a review of her treatment regimen during the fourth week after the initial prescription, the patient reported having gastrointestinal side effects.

After questioning the patient further and digging a little deeper, the medical staff discovered that she was taking two 500mg glucophage at bedtime just once weekly.

Switching her schedule to one 500mg tablet before breakfast and dinner cut down on the side effects and improved the blood glucose control by the time she returned for more education three weeks later.

Lesson Learned:

Following up with patients whenever there is a change of medication or dosage can help prevent medication errors.

Martha Mendez, RN, MSN, CCRC

Complexity of task/opportunity for error:

Patient must recognize that this is an **addition** to the Rx schedule.
Inference was assumed.
Patient had "literal thinking".

DSME:

Remember to clarify "Addition"
Explicit instructions about what to remember.
Do not assume that patient can infer new Rx schedule.
Confirm instructions.

Source of error:

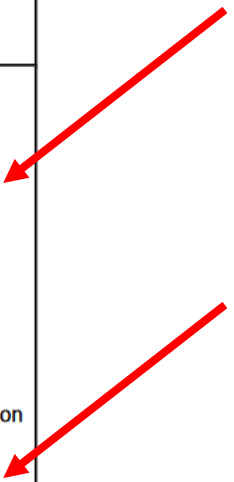
Person error (cognitive mistakes)
Task demands (cognitive burden

Diabetes Disaster Averted series:
http://www.diabetesincontrol.com/articles/practicum

https://www.lipid.org/sites/default/files/adherence_toolkit.pdf

Types of Non-Adherence	Examples
Primary ▪ Medication is purposefully never filled or taken	▪ Never filling a prescription ▪ Makes no attempt to exercise or eat healthy

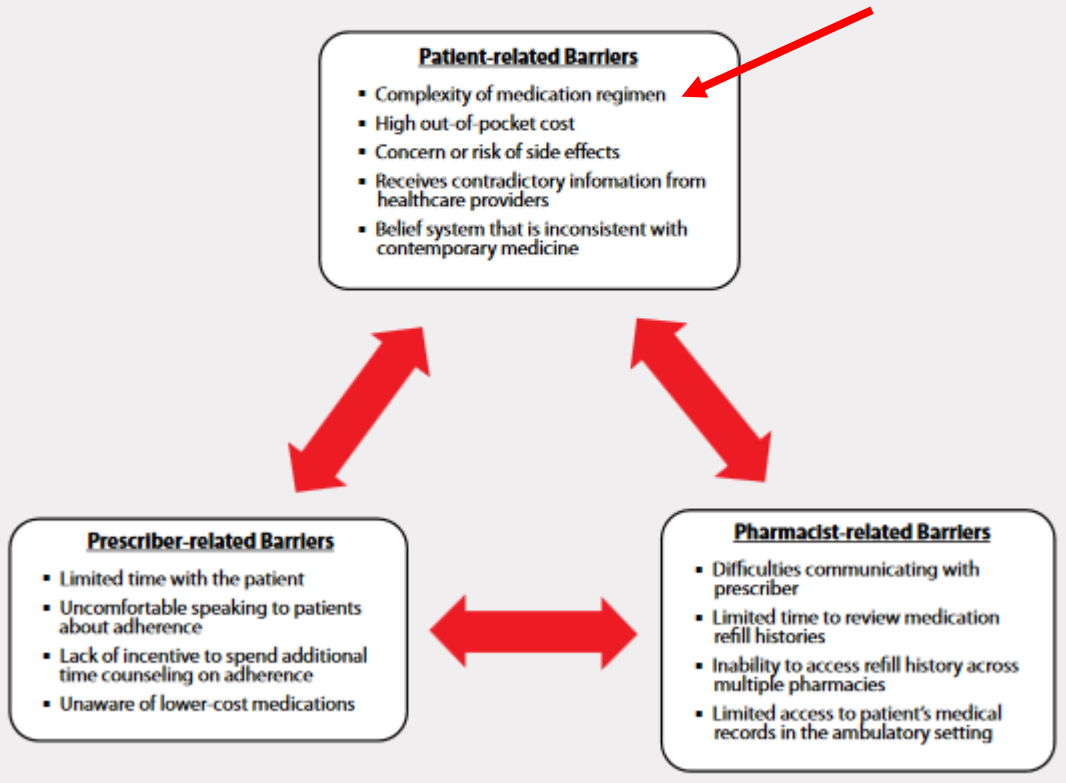
Secondary (or Persistence)
▪ Medication is not taken properly or continued as prescribed
	▪ Unintentional
	  ▪ Forgetfulness
	  ▪ Do not understand directions due to poor health literacy
	  ▪ Medication side effects
	  ▪ Un(or under)-insured
	▪ Intentional
	  ▪ Patient decides to stop taking the medication on their own
	  ▪ Lack of information regarding medication risks and benefit
	▪ Lack of motivation to follow recommended treatment plan



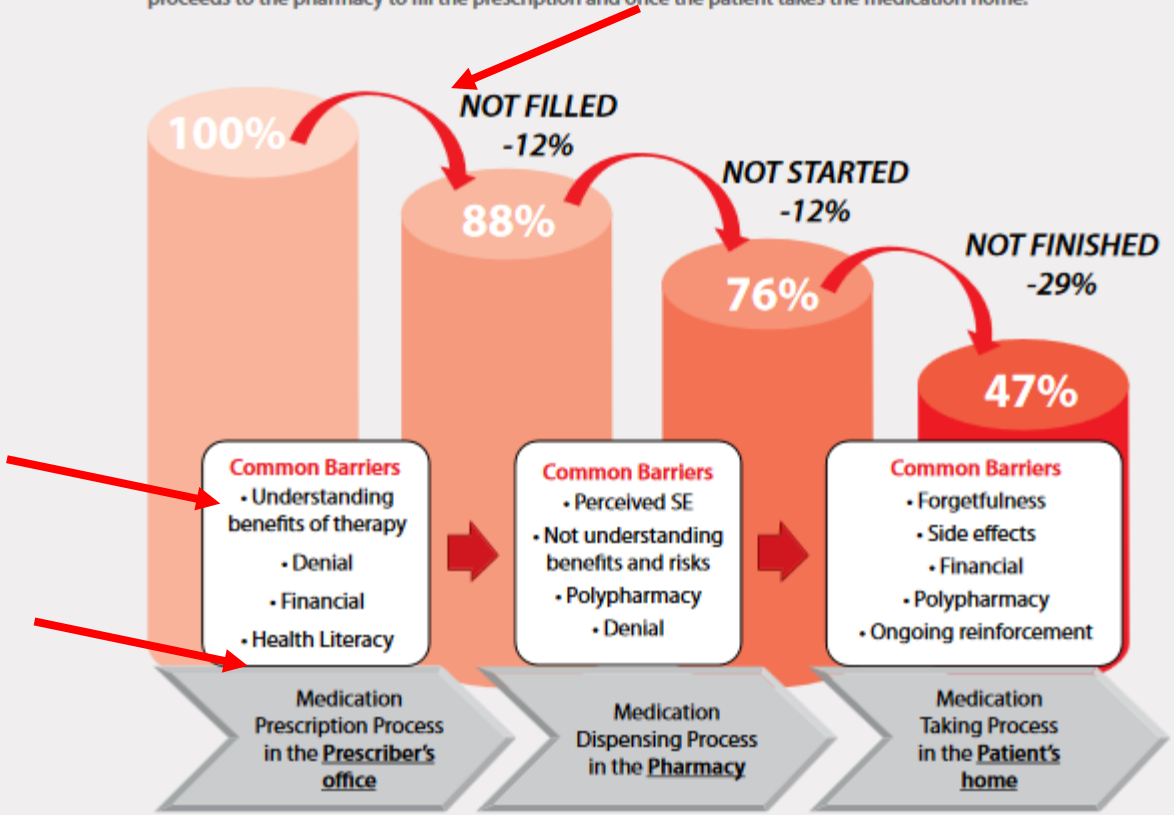
Handout

Section 2. Barriers to Medication Adherence

Patients face a multitude of barriers to taking their medication. Poor medication adherence is often viewed as the patient's problem but it is also important to recognize the role we, as health care professionals, play in supporting poor medication-taking behaviors. Poor medication adherence can be frustrating for both the health care professional, and the patient. Furthermore, evidence supports the notion that adherence decreases as the number of barriers for the patient **and** provider increases.[13]



The consequence of not recognizing and addressing these barriers is too great to ignore. The breakdown of medication adherence begins in the prescriber's office and the likelihood of adherence diminishes as the patient proceeds to the pharmacy to fill the prescription and once the patient takes the medication home.



Reference: Adapted from Oyekan E. The B-SMART Medication Adherence Checklist. A Tool to make it easier for Physicians and Providers to do the right thing when addressing America's other drug problem – Medication Non Adherence. Website: Department of Managed Health Care. http://dmhc.ca.gov/library/reports/news/rci/oyekan.pdf. Accessed August 20, 2013.

Physical counting of pills in the dispensed packaging	Inexpensive	Actual medication taking not recorded
Prescription Claims Data *Provides refill frequency over a specified period*	Non-invasive Inexpensive	Limited to patients who use one pharmacy Actual medication taking not recorded
Electronic Pill Bottle *Records occurrence and time bottle was opened*	Noninvasive Provides information on patterns of medication taking	Expensive Not practical for most patients Does not ensure medication was taken
Subjective		
Brief Medication Questionnaire *Self-reporting tool used to identify patients at risk of non-adherence*[37]	Accurate Validated in wide range of disease states	Patient provides false information
Brief Illness Perception Questionnaire *Assesses cognitive and emotional representations of illness* Available at: http://www.uib.no/ipq/	Good test-retest reliability Inexpensive	Time consuming Patient provides false information
Medication Adherence Rating Scale *Determines patient willingness and ability to take oral medications daily* Available at: http://www.virtualmedicalcentre.com/tools Also available on iTunes	Brief, easy to use Inexpensive More sensitive	Only identifies one barrier (forgetfulness) Patient provides false information
Morisky Medication Adherence Scale *Measures medication-taking behavior* Available at: http://www.acpinternist.org/archives/2009/02/adherence.pdf	Brief, easy to use Inexpensive	Patient provides false information
Medication Adherence Individual Review Screening Tool – MedAdhIR-ST *Tool to identify and assess adherence among elderly patients*[38] Available on iTunes	Brief, easy to use Free	Only validated in the elderly population

You indicated that you are taking medication for your (identify health concern, such as "high blood pressure"). Individuals have identified several issues regarding their medication-taking behavior and we are interested in your experiences. There is no right or wrong answer. Please answer each question based on your personal experience with your [health concern] medication. Interviewers may self identify regarding difficulties they may experience concerning medication-taking behavior.

	(Please circle the correct number)	
	No=0	**Yes=1**
1. Do you sometimes forget to take your [health concern] pills?		
2. People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your [health concern] medicine?		
3. Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it?		
4. When you travel or leave home, do you sometimes forget to bring along your [health concern] medication?		
5. Did you take your [health concern] medicine yesterday?		
6. When you feel like your [health concern] is under control, do you sometimes stop taking your medicine?		
7. Taking medication everyday is a real inconvenience for some people. Do you ever feel hassled about sticking to your blood pressure treatment plan?		

8. How often do you have difficulty remembering to take all your medications? **(Please circle the correct number)**

   Never/Rarely……**0**

   Once in a while……**1**

   Sometimes……**2**

   Usually……**3**

   All the time……**4**

Source: Morisky DE, Ang A, Krousel-Wood M, Ward H. Predictive Validity of a Medication Adherence Measure for Hypertension Control. *Journal of Clinical Hypertension* 2008; 10(5):348-354.

For additional information, contact: Donald E. Morisky, Sc.D., M.S.P.H., Sc.M., e-mail: dmorisky@ucla.edu; phone: (310) 825-8508

Section 6. Interventions to Improve Adherence

According to several studies, interventions to improve medication adherence should be simple. The mnemonic, **"SIMPLE"**, categorizes efforts to improve adherence.[23,24]

S	**Simplify the regimen**	▪ Adjust timing, frequency, and dosage ▪ Utilize once-daily medications whenever possible ▪ Encourage the use of adherence aids (e.g., pillboxes, cell phone alarms) ▪ Consider each patient's activities of daily living (e.g., swing shift workers)
I	**Impart knowledge**	▪ Patient-provider shared decision making ▪ Provide clear instructions and expectations for all prescriptions ▪ Involve relatives or caregivers when discussing medications ▪ Recommend electronic education formats (e.g., video, websites)
M	**Modify patient beliefs and human behavior**	▪ Ask patient about their needs and what might help them adhere to therapy ▪ Ensure patient understands consequences of non-adherence ▪ Addressed perceived barriers of taking the medication ▪ Provide rewards for adherence (e.g., praise, coupons, fewer clinic visits)
P	**Provide communication and trust**	▪ Practice to improve interviewing skills ▪ Embrace active listening and provide emotional support ▪ Elicit patient's input when discussing treatment options ▪ Allow adequate time for the interaction and encourage patient to ask questions
L	**Leave the bias**	▪ Foster a greater understanding of health literacy and how it affects patients ▪ Ensure communication style is patient-centered ▪ Take extra time to understand and overcome cultural barriers ▪ Tailor education to the patient's level of understanding
E	**Evaluating adherence**	▪ Ask patients simply and directly about adherence ▪ Engage patients about adherence at every encounter ▪ Measure drug levels or efficacy parameters, when applicable ▪ Review medication containers, noting last fill date and remaining medicine

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1681370/?report=printable

Handout

Using insulin: Version 1

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

Insulin is a hormone that helps your body use the sugar (glucose) you get from the food you eat. Insulin levels rise and fall in response to the level of glucose in your blood. Insulin's main job is to help glucose get from your blood into the cells of your body, where it is used as fuel to keep the cells working normally.

The pancreas is the organ in your body that produces insulin throughout the day.

- When you have type 1 diabetes, you do not produce insulin
- When you have type 2 diabetes, you either do not produce enough insulin or your body's cells do not respond to the insulin properly, called insulin resistance

When you need to take insulin, there are different types. In some cases, you may use a mixture of different types, such as short-acting and long-acting insulins.

People with type 1 diabetes must use insulin injections to keep their blood sugar at a normal or close to normal level.

People with type 2 diabetes often need to add insulin to control their blood sugar when oral medications or non-insulin injectable medications (exenatide and liraglutide) are not enough.

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

The number of insulin injections you take may vary from once a day to using different types of insulin at different times of the day. When you first start taking insulin, your healthcare provider will decide on the type, the amount, and frequency of the injections of insulin you need. This will be based on your lifestyle, blood sugar level, and any other diabetic medications you may be taking. Monitoring your diet along with your blood sugar levels will
be important in deciding if any changes are needed in your insulin dose.

Remember that insulin injections will lower your blood sugar level whether you have eaten or not. Very low blood sugar, known as hypoglycemia, can cause serious problems. Eating regular meals is very important when taking insulin.

Most people have no problem getting used to taking insulin injections. They feel better when their blood sugar is well controlled.

All people with diabetes need to help control their blood sugar by

- Eating a healthy diet
- Doing moderate exercise
- Losing weight or maintaining a normal weight

Handout

Using insulin: Version 2

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

Insulin helps your body get energy from the food you eat. If you do not have enough insulin, or the insulin you have is not working right, you have diabetes and need to take medicine.

- People with type 1 diabetes do not make any insulin and MUST inject insulin.
- People with type 2 diabetes do not make enough insulin or need help using the insulin they have. They need to use pills, insulin shots or both.

The only way to get insulin into your body is with a shot. Many people with diabetes use insulin shots.

There are many kinds of insulin, some work fast, others do not.

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

You may need one shot of insulin a day, or you may need more. Your healthcare provider will explain what kind of insulin, the amount, and when you need it.

Your weight, diet and other medicines are important when deciding how much insulin you will need.

It is important to eat regular meals when you take insulin. Insulin shots help your blood sugar levels stay normal. If you take too much insulin or have not eaten, your blood sugar can drop too low. This is called "hypoglycemia."

Most people get used to using shots to take their insulin.

When you have diabetes it is important to:

- Eat a healthy diet
- Exercise
- Keep your weight down

These **Starting Insulin** fact sheets will help you learn more about insulin.

“Low literacy”

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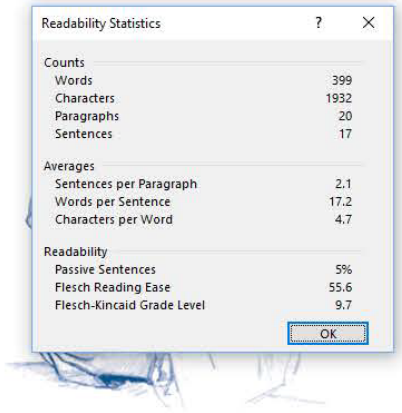

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“Very low” literacy

Starting Insulin – a patient guide

Using insulin to treat your diabetes: *What it means for you*

Readability Statistics

Counts	
Words	267
Characters	1205
Paragraphs	19
Sentences	17
Averages	
Sentences per Paragraph	1.8
Words per Sentence	12.3
Characters per Word	4.3
Readability	
Passive Sentences	0%
Flesch Reading Ease	71.8
Flesch-Kincaid Grade Level	6.3

OK

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Handout

Using syringes: Version 1

Starting Insulin – a patient guide

INSULIN SYRINGES AND PENS

Insulin is injected in the fat just under the skin, using:

- Syringes
- Insulin pens
- Insulin pumps

The most common way to inject insulin is with a ***syringe***.

- A syringe is a hollow plastic tube with a plunger inside and a short skinny needle attached.
- Insulin is injected into the fatty tissue just under the skin. This is called a subcutaneous tissue, or "sub-Q" injection.

Syringes come in different sizes.

- Each line on a 100-unit syringe marks 2 units of insulin.
- Each line on a 50-unit or 30-unit syringe marks 1 unit of insulin.
- Use a syringe large enough to hold the whole dose of insulin.

Starting Insulin – a patient guide

INSULIN SYRINGES AND PENS

- Use a 30-unit syringe if you take 30 units of insulin or less.
- Use a 50-unit syringe if you take 50 units of insulin or less.
- Use a syringe that shows 1/2-unit marks if you need 1/2 a unit of insulin.
- Be sure that you can clearly see the markings on your syringe.
- No prescription is needed for insulin syringes.
- If you have poor eyesight or arthritis in your hands, talk to your healthcare provider about using another method, such as an insulin pen.
- Your healthcare provider can show you the different sizes of syringes and help you choose what works best for you.

Needles are described by length and thickness ("gauge").

- The standard needle is 1/2-inch long.
- Needles also come in 5/16-inch and 3/16-inch lengths.
- The 3/16-inch length is often used for children.
- The thinner the needle, the higher its gauge. For example, a 31-gauge needle is thinner than a 28-gauge needle.

Insulin pens look like writing pens, except that there is a thin, short needle at the end.

- Some insulin pens can be refilled, while other pens are thrown away when empty.
- Pre-filled insulin pens come with either one type of insulin or a mixture of two types of insulin.
- Insulin pens with pre-mixes work if they match your prescription.
- You may need one insulin pen for each type of insulin if pre-mix does not match your prescription.

Insulin pumps are used by people who have type 1 diabetes. People with type 2 diabetes rarely use an insulin pump. Insulin pumps give a continuous dose of insulin. Talk to your healthcare provider if you think an insulin pump might be right for you.

Handout

Using syringes: Version 2

Starting Insulin – a patient guide

INSULIN SYRINGES AND PENS

There are no insulin pills. You must use a shot, a special kind of pen, or an insulin pump to get insulin into the body.

Using a shot is the most common way to get insulin into your body. The shot is given using a syringe.

The needle is smaller than most needles you may have seen.

The shot is given just under the skin in the fatty part of your arm, leg or belly.

Here is a picture of insulin syringes.

Starting Insulin – a patient guide

INSULIN SYRINGES AND PENS

Syringes come in different sizes.

- If you take 30 units or less, use a 30 unit syringe
- If you take 50 units or less, use a 50 unit syringe
- If you take 100 units of less, use a 100 unit syringe
- Make sure you can see the markings on your syringe.

A prescription is not needed to buy the syringes.

Your healthcare provider can help you decide which is the best syringe for you.

Insulin pens look like a writing pen, but there is a small needled on the end. Some pens can be refilled; others are thrown away when empty.

Insulin pumps are most often used for people with type 1 diabetes. They give small amounts of insulin throughout the day. A pump is not usually used in people with type 2 diabetes.

Your healthcare provider will teach you about ways to take insulin.

“Low literacy”

Starting Insulin – a patient guide

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Readability Statistics

Counts	
Words	416
Characters	1872
Paragraphs	35
Sentences	30
Averages	
Sentences per Paragraph	1.1
Words per Sentence	12.3
Characters per Word	4.2
Readability	
Passive Sentences	23%
Flesch Reading Ease	69.3
Flesch-Kincaid Grade Level	6.6

OK

Starting Insulin – a patient guide

INSULIN SYRINGES AND PENS

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“Very low” literacy

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The needle is smaller than most needles you may have seen.

The shot is given just under the skin in the fatty part of your arm, leg or belly.

Here is a picture of insulin syringes.

Readability Statistics

Counts	
Words	245
Characters	1043
Paragraphs	18
Sentences	17
Averages	
Sentences per Paragraph	1.5
Words per Sentence	11.2
Characters per Word	4.1
Readability	
Passive Sentences	5%
Flesch Reading Ease	77.8
Flesch-Kincaid Grade Level	5.0

OK

Starting Insulin – a patient guide

INSULIN SYRINGES AND PENS

Syringes come in different sizes.

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- If you take 50 units or less, use a 50 unit syringe
- If you take 100 units of less, use a 100 unit syringe
- Make sure you can see the markings on your syringe.

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Your healthcare provider can help you decide which is the best syringe for you.

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Your healthcare provider will teach you about ways to take insulin.

Handout

Needle safety: Version 1

NEEDLE SAFETY

People with diabetes use sharp objects to check blood sugar and inject insulin. These sharp items should be thrown away safely.

You should:

- Always put the syringes and lancets – the piece that pricks your skin to check your blood sugar – in a heavy plastic or metal box with a tight lid or you can get a red "sharps" container at the pharmacy.
- Keep the container in a safe place in your house, away from children. On top of the refrigerator is a good place.
- When the container is filled, tighten the lid and tape it with heavy-duty tape before throwing it out.
- Some cities may allow you to put the container in the trash.
- Check with your local health department or clinic to find out how to get rid of your syringes and lancets.

Starting Insulin – a patient guide

NEEDLE SAFETY

Do not:

- Use a container that will allow the needle to punch through the side.
- Use a glass jar.
- Use a container that might go into the recycling.
- Put used syringes or lancets into the garbage or trash unless they are in a special container.

Syringes should be used only once:

- Needles are made for single use.
- Reused syringes are not sterile.

NEVER share used syringes with anyone else. You can pass diseases or spread infection by sharing needles.

Handout

Needle safety: Version 2

NEEDLE SAFETY

People with diabetes use sharp instruments to check blood sugar and inject insulin. It is important that you safely dispose of insulin needles and lancets, the sharp tools that pierce the skin for blood sugar checks.

Syringes and lancets must be handled carefully and treated as "medical waste."

- Right after injecting your insulin, put the syringe into your syringe disposal container.
- A syringe disposal container is a heavy-duty plastic or metal box that closes firmly or a heavy-duty plastic bottle with a screw top. A special "sharps container" may be provided by your pharmacy or clinic.
- Store the container in a safe place in your house, away from children. On top of the refrigerator is a good place.
- When the container is filled, tighten the lid and reinforce it with heavy-duty tape before disposing of it.
- Some areas may allow you to put the sealed container in the trash. You may want to use a drop box, supervised collection site, mail-back program, or syringe exchange program.
- Check with your local health department or clinic to find out how to dispose of medical waste in your area.

Starting Insulin – a patient guide

NEEDLE SAFETY

Do not do any of the following.

- Use a container that will allow the needle to punch through the side.
- Use a container made of glass.
- Use a container that could end up in the recycling bin.
- Put a used syringe or lancet directly into household garbage or a trashcan.

Syringes should be used only once.

- Newer thinner needles are made for single use.
- Reused syringes are not sterile.

Always check with your healthcare provider before deciding to reuse syringes to see if this practice is safe for you.

NEVER loan a used syringe to anyone else or share syringes. You can pass diseases or spread infection by sharing needles.

“Very low” literacy

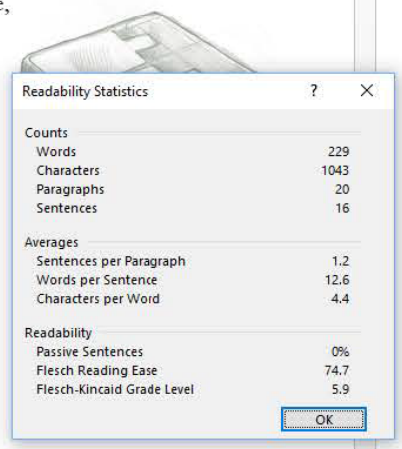
Starting Insulin – a patient guide

NEEDLE SAFETY

People with diabetes use sharp objects to check blood sugar and inject insulin. These sharp items should be thrown away safely.

You should:

- Always put the syringes and lancets – the piece that pricks your skin to check your blood sugar – in a heavy plastic or metal box with a tight lid or you can get a red “sharps” container at the pharmacy.
- Keep the container in a safe place in your house, away from children. On top of the refrigerator is a good place.
- When the container is filled, tighten the lid and tape it with heavy-duty tape before throwing it out.
- Some cities may allow you to put the container in the trash.
- Check with your local health department or clinic to find out how to get rid of your syringes and lancets.



Starting Insulin – a patient guide

NEEDLE SAFETY

Do not:

- Use a container that will allow the needle to punch through the side.
- Use a glass jar.
- Use a container that might go into the recycling.
- Put used syringes or lancets into the garbage or trash unless they are in a special container.

Syringes should be used only once:

- Needles are made for single use.
- Reused syringes are not sterile.

NEVER share used syringes with anyone else. You can pass diseases or spread infection by sharing needles.

“Low literacy”

Starting Insulin – a patient guide

NEEDLE SAFETY

People with diabetes use sharp instruments to check blood sugar and inject insulin. It is important that you safely dispose of insulin needles and lancets, the sharp tools that pierce the skin for blood sugar checks.

Syringes and lancets must be handled carefully and treated as “medical waste.”

- Right after injecting your insulin, put the syringe into your syringe disposal container.
- A syringe disposal container is a heavy-duty plastic or metal box that closes firmly or a heavy-duty plastic bottle with a screw top. A special “sharps container” may be provided by your pharmacy or clinic.
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Starting Insulin – a patient guide

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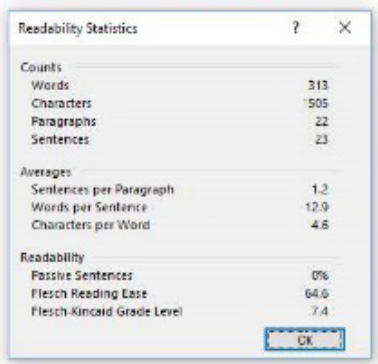


Misuse of New Insulin Strengths

June 21st, 2016

We certainly have important education to accomplish with patients and health professionals regarding the new higher concentration insulin products that are available only in a pen, including U-300 TOUJEO (insulin glargine), U-200 TRESIBA (insulin degludec), and U-200 HUMALOG (insulin lispro). U-500 insulin is also available in a pen (HUMULIN), although vials remain on the market. Patients may not understand proper dosing and dose measurement with these higher concentrations of insulin products.

A patient who was previously using LANTUS (insulin glargine) U-100 was switched to Toujeo U-300. He was given pen needles to use with Toujeo, but at home, he decided to use the insulin pen cartridge as a vial. He drew up a dose with a leftover U-100 syringe, filling it to the 1000 unit mark, the same daily Lantus dose he had been taking. This resulted in a dose of 300 units of Toujeo, which led to hypoglycemia requiring hospital admission.

Handout

Calculating Your Insulin Doses

Continue your long-acting insulin: 11 units daily. Your goal is to wake up with blood sugars between 100-150 as much as possible. Cover food with 1:20 ratios at breakfast and lunch and 1:13 at dinner. Correct blood sugars higher than 120 (as long as it’s been at least 3 hours since the last fast-acting insulin dose) with blood sugar minus 120 and divide by 60.

Problem Solving

Diabetes Disaster Averted #51: Careful Listening Saves Lives

A few years ago, I was working as a Nurse Practitioner in an endocrinology practice. One of my longstanding elderly patients, age 82, called me to report that the paramedics had to come to her house because she passed out....

I scheduled her for an appointment the next day, and took her history. She'd had diabetes for about 15 years, and was taking a long acting insulin at bedtime and rapid acting insulin before her meals. I reviewed her activities of the day (meal times, insulin doses and times, and activity level). She reported that she had her dinner, and then next thing she knew she was passed out at the dinner table. I performed a complete physical exam, which was normal. I was ready to order a battery of lab tests, and considering testing her for gastroparesis since it appeared that she'd had a severe hypoglycemic reaction so soon after eating.

I reviewed her recent episode with her again, stating "so you ate your dinner, and then you passed out..." at which point she interrupted with "no, I did not eat my dinner, I HAD it, it was right in front of me on the table, and then I passed out...." The conclusion was that she had a severe hypoglycemic reaction because she delayed her dinner.

***Lesson learned:** Obtain a complete history from the patient, choosing words carefully, and make sure you and your patient are speaking the same language and have the same meaning! The lesson learned from this case saved a lot of time and money from unnecessary testing and work up.*

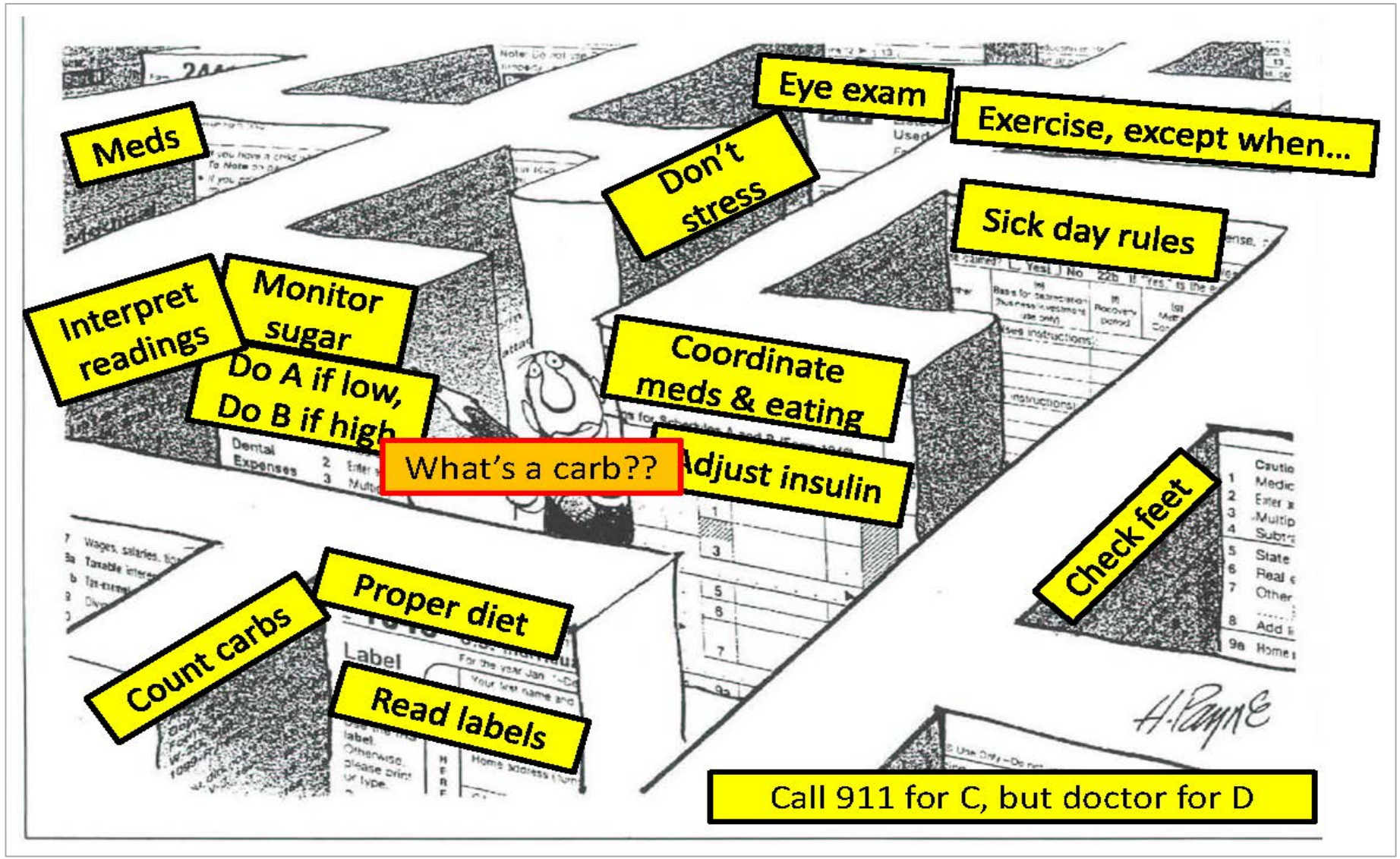
Louise DeRiso, MSN, CRNP, CCRC

Coordinator, Vascular Clinical & Translational Research Center

University of Pittsburgh

She did not accurately remember ("eat dinner") the DM ed,
She did not understand ("eat vs *had* meal"),
Could not apply instructions appropriately,
Could not analyze her situation
Could not evaluate what she did wrong

Diabetes Disaster Averted series:
http://www.diabetesincontrol.com/articles/practicum



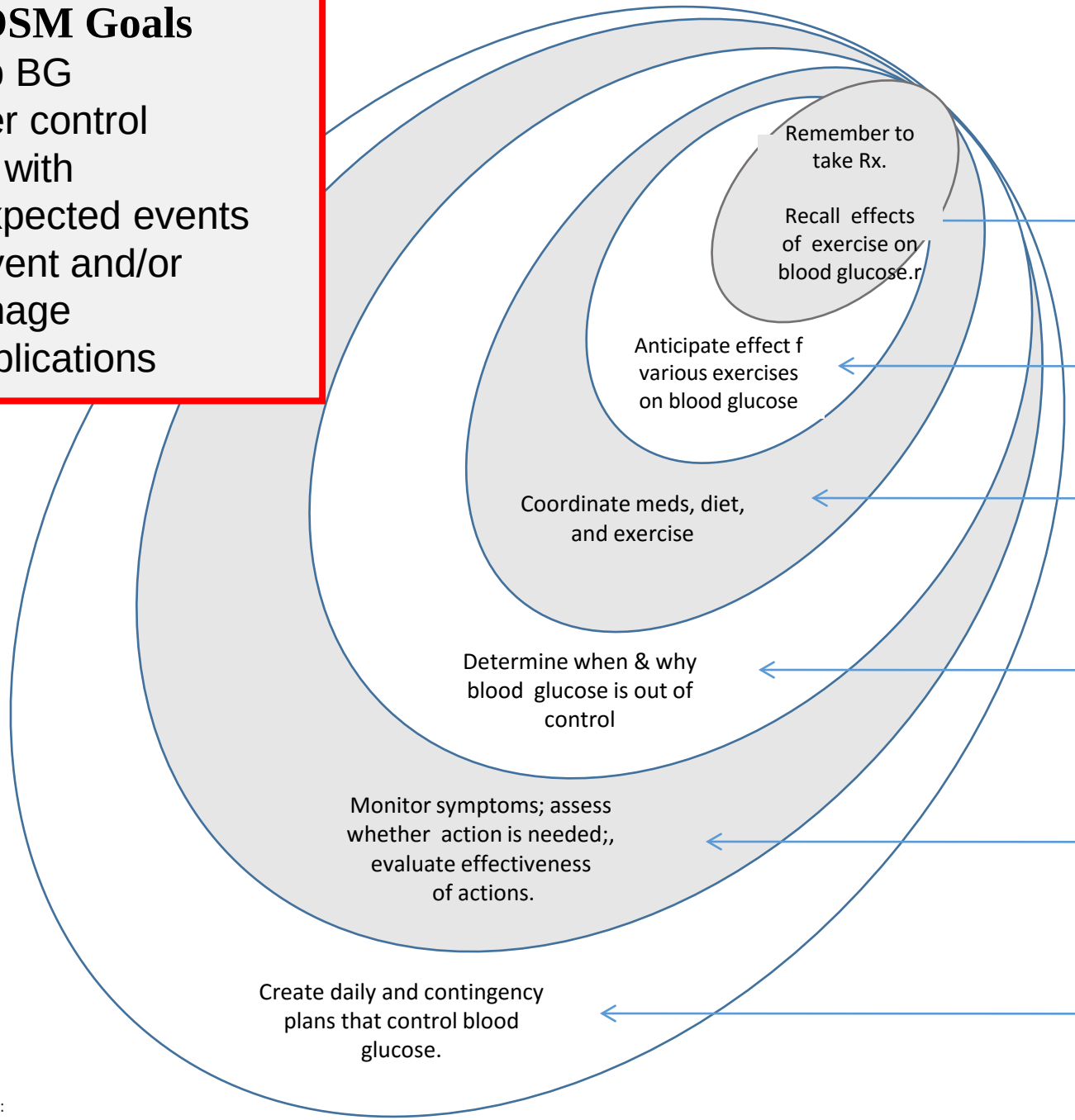
Good glucose control requires good judgment

- **IT IS NOT** mechanically following a recipe
- **IT IS** keeping a complex metabolic system under control in often unpredictable circumstances (like accident prevention process)
  - Coordinate a regimen having multiple interacting elements
  - Adjust parts as needed to maintain good control of system buffeted by many other factors
  - Anticipate lag time between (in)action and system response
  - Monitor advance "hidden" indicators (blood glucose) to prevent system veering badly out of control
  - Decide appropriate type and timing of corrective action if system veering off-track
  - Monitor/control other shocks to system (infection, emotional stress)
  - Coordinate regimen with other daily activities
  - Plan ahead (meals, meds, etc.)
    - For the expected
    - For the unexpected and unpredictable
  - Prioritize conflicting demands on time and behavior

RECALL

DSM Goals

- Keep BG under control
- Deal with unexpected events
- Prevent and/or manage complications



Bloom's taxonomy of educational objectives (cognitive domain)

Simplest tasks

1. Remember
   recognize, recall, Identify, retrieve
2. Understand
   paraphrase, summarize, compare, predict, infer,
3. Apply
   execute familiar task,, apply procedure to unfamiliar task
4. Analyze
   distinguish, focus, select, integrate, coordinate
5. Evaluate
   check, monitor, detect inconsistencies, judge effectiveness
6. Create
   hypothesize, plan, invent, devise, design

Most complex tasks

Handout

Without readability

Blood Sugar Too High or Too Low?

Keeping your blood sugar in control helps you stay healthy and feel good.

"Hypoglycemia" is when your blood sugar is too low.
"Hypo" means "low" and "glycemia" means "sugar." Hypoglycemia can happen when you:

- Do not eat enough
- Skip a meal
- Exercise without eating
- Eat later than normal
- Drink alcohol
- Take too much medicine
- Get sick

This can make you feel dizzy, shaky, weak and cause your heart to beat fast. You might not be able to see well and your fingers may feel numb.

If you test your blood sugar and it is less than 70, then have some fruit juice, milk, crackers or something sweet.

Test your blood sugar again in 15 minutes. If your blood sugar is still low, then contact your healthcare provider.

"Hyperglycemia" is when your blood sugar is too high.
"Hyper" means "high" and "glycemia" means "sugar." Hyperglycemia can happen when you:

- Eat too much food
- Do not exercise
- Forget to take your medicine
- Take the wrong amount of medicine
- Are under stress
- Are sick

This can make you feel tired or thirsty, and can cause blurry vision, hunger, and headaches. Sometimes if your sugar is high for a long time, then you may have to pee a lot. It might take cuts or sores a longer time to heal.

If your blood sugar is high, then you need to think about what you ate, if you ate more than usual, if you took your medicine or the right amount of medicine, or if there was some change in your exercise. If your sugar is high, then your medicine might need to be changed. If your blood sugar is more than 400, then you need to see a healthcare provider right away.

Handout

With readability

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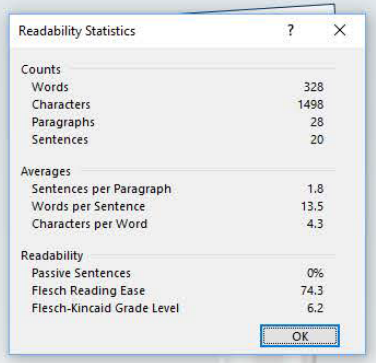

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Handout

Traveling with Diabetes

1. **Plan Ahead**
2. **Talk to your healthcare provider**
3. **Pack everything you need**
4. **Know TSA rules**
5. **Keep everything with you**
6. **Know your time zone**
7. **Know when to take medication**
8. **Get information about how to prevent DVTs**
9. **Protect yourself against dehydration on long plane trips**
10. **Guard against infection; use hand sanitizer**
11. **Plan for activity**
12. **Plan for local foods**
13. **Always have a glucose source**
14. **Be ready for disruptions in schedules, lost luggage, etc.**

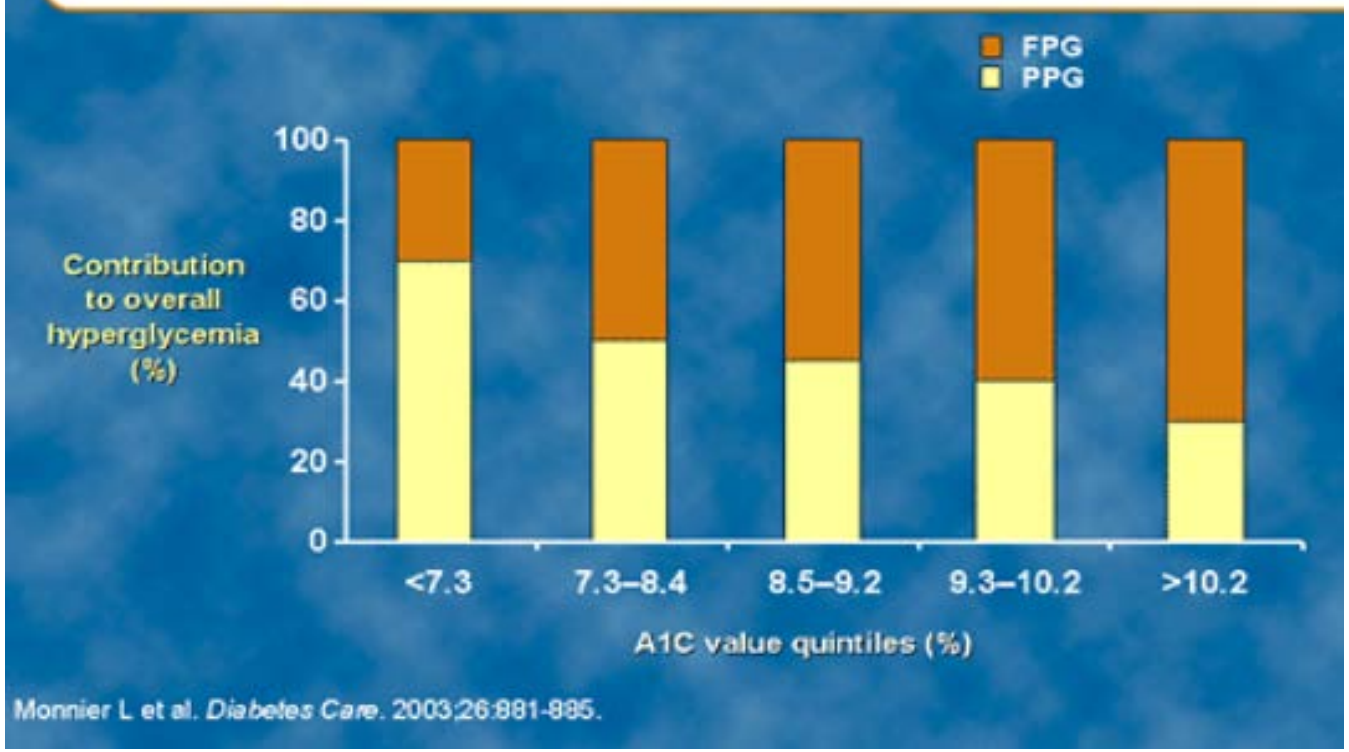
Practical Diabetology May/June 2016
HealthinAging.org

Reducing Risks

A1c (%)	eAG (mg/dL) Estimated Average Glucose
6.0	126
6.5	140
7.0	154
7.5	169
8.0	183
8.5	197
9.0	212
9.5	226
10.0	240

American Diabetes Association: www.diabetes.org/professional/eAG

The Contribution of PPG to Hyperglycemia Increases as A1C Improves



Monnier L et al. *Diabetes Care*. 2003;26:881-885.

Handout

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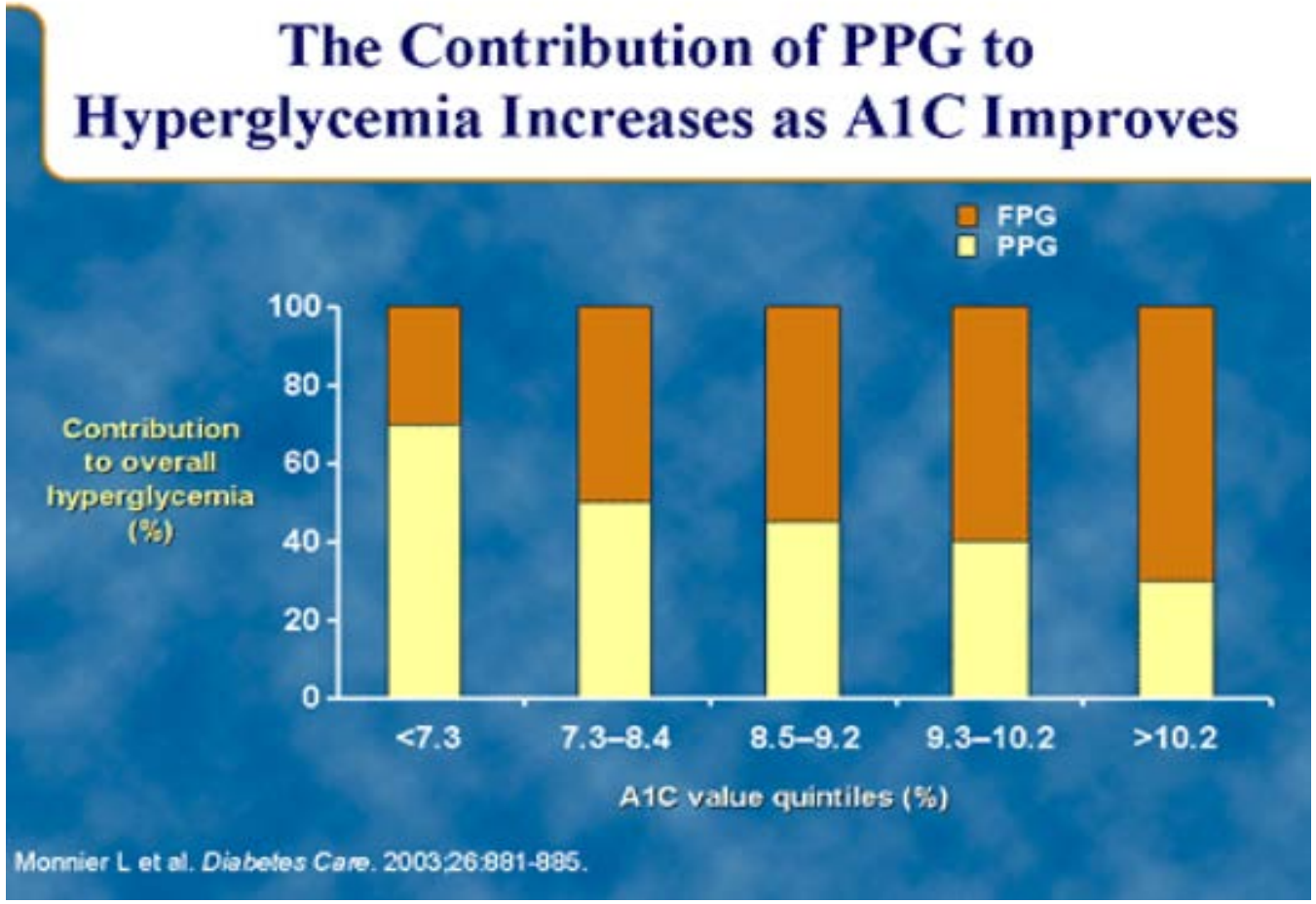


Foot Care

Dr. Najafi, professor of surgery at Baylor College of Medicine, Houston, said that in 2015, approximately one-third of all diabetes-related costs in the United States were spent on diabetic foot ulcers (DFUs). “Unfortunately, many DFUs end up in amputation, which could devastate patients and their families,” he said.

“On the same note, persons within the lowest income brackets are estimated to have 38% higher amputation rate, compared with those in the highest income bracket.

All these highlight an important gap in effective management of DFUs, in particular among poor working-class people.”

Eye Care:

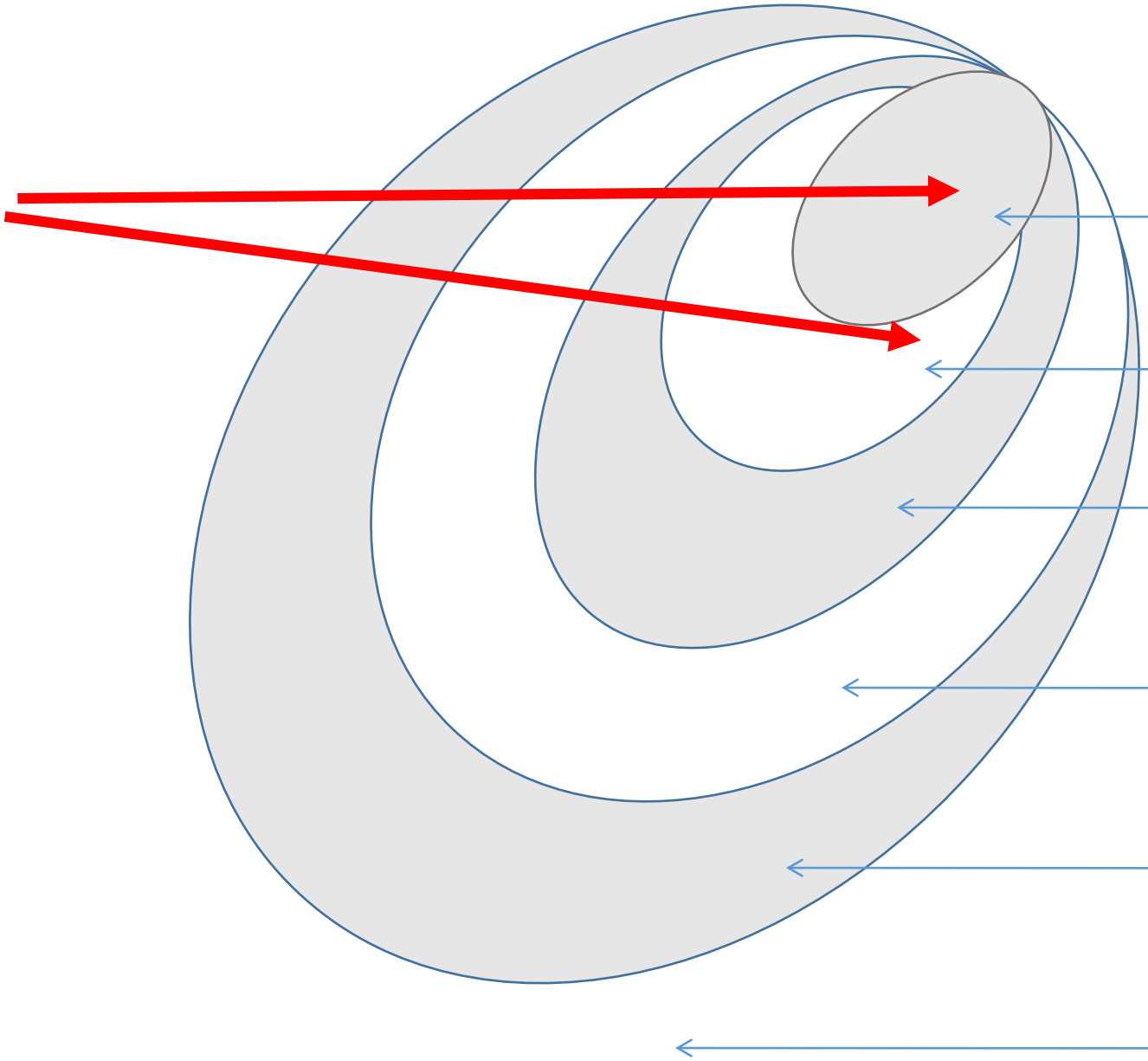
Eye exam

vs

Dilated Retinal Eye Exam

Foot Care

Eye Care



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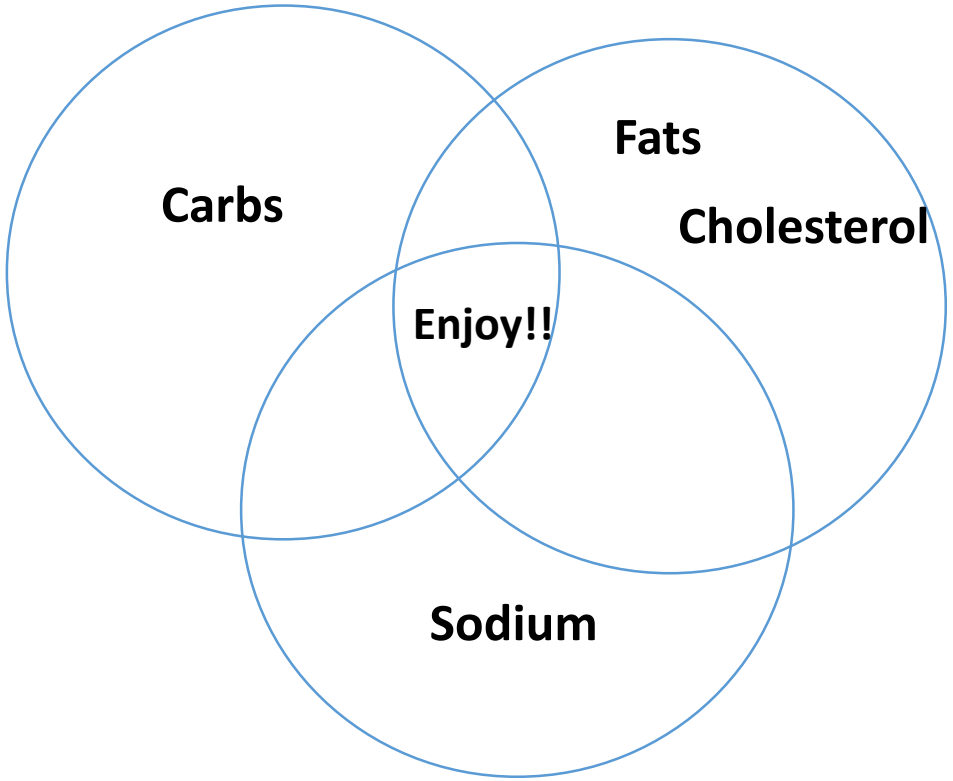
   execute familiar task,, apply procedure to unfamiliar task
4. Analyze
   distinguish, focus, select, integrate, coordinate
5. Evaluate
   check, monitor, detect inconsistencies, judge effectiveness
6. Create
   hypothesize, plan, invent, devise, design

Most complex tasks

CVD Risk Reduction

Dietary Requirements


Carbs
Fats
Cholesterol
Enjoy!!
Sodium

Distracting, non-relevant information makes a task *more* complex.

Eliminating non-relevant information makes a task *less* complex

Healthy Coping

Self-efficacy

Self-efficacy is the belief that one can tackle a task without any assistance.[20] Social-cognitive models of behavior show self-efficacy as a predictor of health behavior change. Self-efficacy predicts the formation of behavioral intentions and the development and implementation of an action plan.[21] One way to determine a patient's self-efficacy is to ask questions pertaining to their level of confidence to perform a specfic task, such as "How confident are you that you can take your medications on a daily basis?" If the patient does not believe they are capable of following a plan of care because they have not reached a level of self-efficacy, they will most likely not adhere.

Regardless of whether these predictors of adherence exist, there are additional "risk factors" that could explain why your patient may be non-adherent. Once suspicion is raised, it is important to take the next step and attempt to measure medication adherence. Although multiple objective and subjective tools exist, there is no single, gold standard.

Characteristics of Patients at HIGH Risk of Non-Adherence

- Not refilling an Rx
- Forgetfulness
- Poor eyesight
- Depression
- Language barrier
- Cultural gaps
- Poor coping skills
- Missing appointments
- Multiple co-morbidities
- Lack of trust in their provider
- No prescription drug coverage
- Inadequate response to therapy or lack of appropriate follow-up
- Does not understand their condition
- Medical condition without symptoms

The Illness Perception Questionnaire

Research using a variety of different assessment techniques suggests patients cluster their ideas about an illness around five coherent themes or components. r make up the patient's perception of their illness. The components provide a framework for patients to make sense of their symptoms, assess health risk, and direct action and coping. Each of these components holds a perception about one aspect of the illness and together they provide the individ ss.

The major cognitive components identified from research are: Identity - which is comprised of the label of the illness and the symptoms the patient views as bel ich may include simple single causes or more complex multiple causal models; Time-line - how long the patient believes the illness will last. These can be categorised into acute, chronic or episodic; Consequences - expected effects and outcome of the illness; an

These components show logical interrelationships. For example a strong belief that the illness can be cured or controlled is typically associated with short perce st, beliefs that an illness will last a long time and has a number of symptoms tends to be associated with more severe consequences perceptions and lower beliefs about cure or control of the disease.

An important question that we have little information on at present is where do illness beliefs come from? It is likely that people build up knowledge and impressions of illness they develo diseases. It is not necessary to have had direct experience with an illness. The source of people's perceptions of illness is diverse and ranges from first hand experiences with a family member who may suffer from an illness, to information from the relatives and friends as well as the medi until they are activated by their own illness or someone close to them.

Patient cognitive models of their illness are, by their nature, private. Patients are often reluctant to discuss their beliefs about their illness in medical consultations because they fear being s cently, assessment of illness perceptions has been by open-ended interviews designed to encourage patients to elaborate their own ideas of the their illness. However, recently a questionnaire has been developed to measure illness perceptions in a variety of illnesses. This questionnaire as e dimensions by asking patients for their own beliefs about their condition. Example of the questions used to assess these components is shown below.

Component	Items
Identity	Rating of a number of symptoms that the patient sees as part of the illness. Examples from the CFS identity scale include; nausea, sore or swollen glands, forgetfulness, dizziness, stiff or sore joints, fatigue after
Cause	A germ or virus caused my illness. Pollution of the environment caused my illness. Stress was a major factor in causing my illness.
Timeline	My illness is likely to be permanent rather than temporary. My illness will last for a long time.
Consequences	My illness has major consequences on my life. My illness is a serious condition.
Cure-Control	There is little that can be done to improve my illness. My treatment will be effective in curing my illness.

Illness perceptions has a wide variety of uses in the health psychology area. Illness perceptions have been used to explain behaviour following heart attacks, responses to cancer scree drome, how patients cope with cancer treatment, and a variety of illnesses such as diabetes and rheumatoid arthritis.

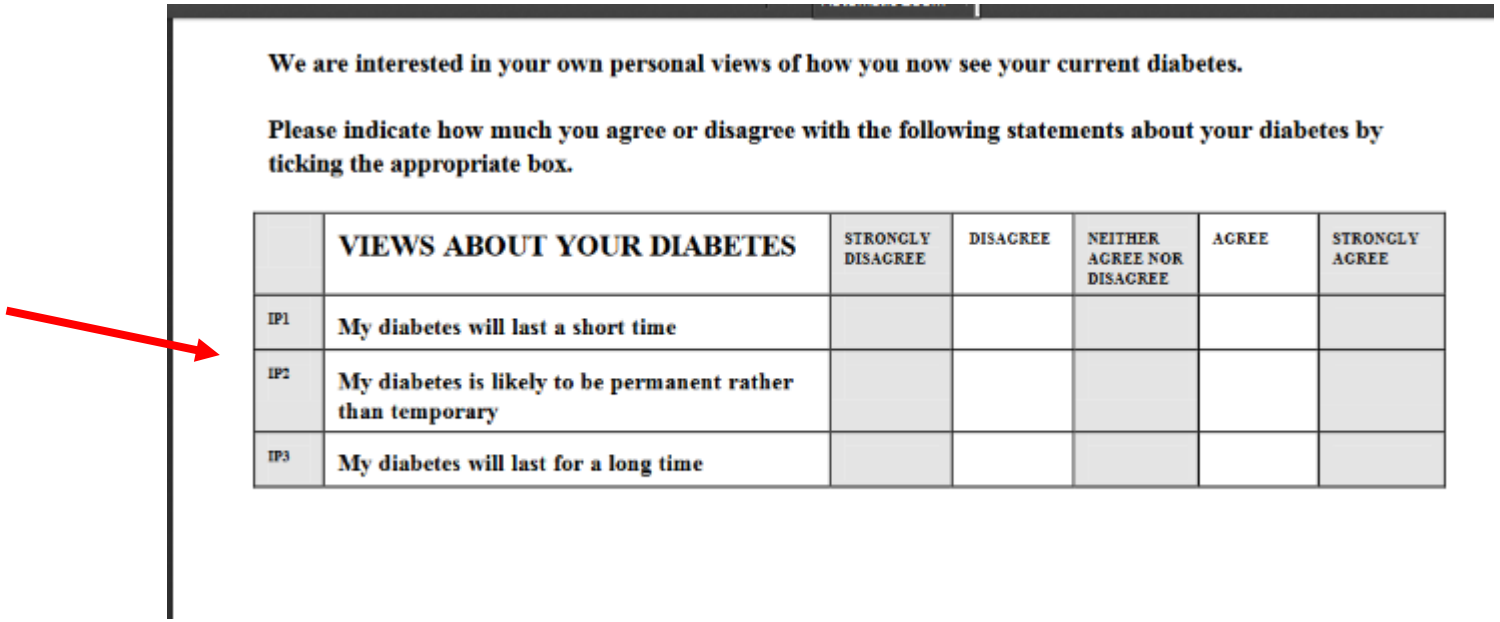
Handout

YOUR VIEWS ABOUT YOUR DIABETES

Listed below are a number of symptoms that you may or may not have experienced since your diabetes. Please indicate by circling *Yes* or *No*, whether you have experienced any of these symptoms since your diabetes, and whether you believe that these symptoms are related to your diabetes.

	I have experienced this symptom *since my diabetes*			This symptom is *related to my diabetes*	
Pain	**Yes**	**No**	_____	**Yes**	**No**
Sore Throat	**Yes**	**No**	_____	**Yes**	**No**
Nausea	**Yes**	**No**	_____	**Yes**	**No**
Breathlessness	**Yes**	**No**	_____	**Yes**	**No**
Weight Loss	**Yes**	**No**	_____	**Yes**	**No**
Fatigue	**Yes**	**No**	_____	**Yes**	**No**
Stiff Joints	**Yes**	**No**	_____	**Yes**	**No**
Sore Eyes	**Yes**	**No**	_____	**Yes**	**No**
Wheeziness	**Yes**	**No**	_____	**Yes**	**No**
Headaches	**Yes**	**No**	_____	**Yes**	**No**
Upset Stomach	**Yes**	**No**	_____	**Yes**	**No**
Sleep Difficulties	**Yes**	**No**	_____	**Yes**	**No**
Dizziness	**Yes**	**No**	_____	**Yes**	**No**
Loss of Strength	**Yes**	**No**	_____	**Yes**	**No**

Handout



We are interested in your own personal views of how you now see your current diabetes.

Please indicate how much you agree or disagree with the following statements about your diabetes by ticking the appropriate box.

	VIEWS ABOUT YOUR DIABETES	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IP1	My diabetes will last a short time					
IP2	My diabetes is likely to be permanent rather than temporary					
IP3	My diabetes will last for a long time					

Handout

	VIEWS ABOUT YOUR DIABETES	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IP4*	This diabetes will pass quickly					
IP5*	I expect to have this diabetes for the rest of my life					
IP6	My diabetes is a serious condition					
IP7	My diabetes has major consequences on my life					
IP8*	My diabetes does not have much effect on my life					
IP9	My diabetes strongly affects the way others see me					
IP10	My diabetes has serious financial consequences					
IP11	My diabetes causes difficulties for those who are close to me					
IP12	There is a lot which I can do to control my symptoms					
IP13	What I do can determine whether my diabetes gets better or worse					
IP14	The course of my diabetes depends on me					
IP15*	Nothing I do will affect my diabetes					
IP16	I have the power to influence my diabetes					
IP17*	My actions will have no affect on the outcome of my diabetes					
IP18*	My diabetes will improve in time					

IPQ-DM

IP19*	There is very little that can be done to improve my diabetes					
IP20	My treatment will be effective in curing my diabetes					
IP21	The negative effects of my diabetes can be prevented (avoided) by my treatment					
IP22	My treatment can control my diabetes					
IP23*	There is nothing which can help my condition					
IP24	The symptoms of my condition are puzzling to me					
[illegible]	My diabetes is a mystery to me					

IP26	I don=t understand my diabetes					
IP27	My diabetes doesn=t make any sense to me					
IP28*	I have a clear picture or understanding of my condition					
IP29	The symptoms of my diabetes change a great deal from day to day					
IP30	My symptoms come and go in cycles					
[illegible]	My diabetes is very unpredictable					
IP32	I go through cycles in which my diabetes gets better and worse.					
IP33	I get depressed when I think about my diabetes					
IP34	When I think about my diabetes I get upset					
IP35	My diabetes makes me feel angry					
IP36*	My diabetes does not worry me					
[illegible]	Having this diabetes makes me feel anxious					
IP38	My diabetes makes me feel afraid					

THE DIABETES DISTRESS SCREENING SCALE

DIRECTIONS: Living with diabetes can sometimes be tough. There may be many problems and hassles concerning diabetes and they can vary greatly in severity. Problems may range from minor hassles to major life difficulties. Listed below are 2 potential problem areas that people with diabetes may experience. Consider the degree to which each of the 2 items may have distressed or bothered you DURING THE PAST MONTH and circle the appropriate number.

Please note that we are asking you to indicate the degree to which each item may be bothering you in your life, NOT whether the item is merely true for you. If you feel that a particular item is not a bother or a problem for you, you would circle "1". If it is very bothersome to you, you might circle "6".

	Not a Problem	A Slight Problem	A Moderate Problem	Somewhat Serious Problem	A Serious Problem	A Very Serious Problem
1. Feeling overwhelmed by the demands of living with diabetes.	1	2	3	4	5	6
2. Feeling that I am often failing with my diabetes routine.	1	2	3	4	5	6

DDSS

	Not a Problem	A Slight Problem	A Moderate Problem	Somewhat Serious Problem	A Serious Problem	A Very Serious Problem
1. Feeling that diabetes is taking up too much of my mental and physical energy every day.	1	2	3	4	5	6
2. Feeling that my doctor doesn't know enough about diabetes and diabetes care.	1	2	3	4	5	6
3. Feeling angry, scared, and/or depressed when I think about living with diabetes.	1	2	3	4	5	6
4. Feeling that my doctor doesn't give me clear enough directions on how to manage my diabetes.	1	2	3	4	5	6
5. Feeling that I am not testing my blood sugars frequently enough.	1	2	3	4	5	6
6. Feeling that I am often failing with my diabetes routine.	1	2	3	4	5	6
7. Feeling that friends or family are not supportive enough of self-care efforts (e.g. planning activities that conflict with my schedule, encouraging me to eat the "wrong" foods).	1	2	3	4	5	6
8. Feeling that diabetes controls my life.	1	2	3	4	5	6

DDSS

	Not a Problem	A Slight Problem	A Moderate Problem	Somewhat Serious Problem	A Serious Problem	A Very Serious Problem
9. Feeling that my doctor doesn't take my concerns seriously enough.	1	2	3	4	5	6
10. Not feeling confident in my day-to-day ability to manage diabetes.	1	2	3	4	5	6
11. Feeling that I will end up with serious long-term complications, no matter what I do.	1	2	3	4	5	6
12. Feeling that I am not sticking closely enough to a good meal plan.	1	2	3	4	5	6
13. Feeling that friends or family don't appreciate how difficult living with diabetes can be.	1	2	3	4	5	6
14. Feeling overwhelmed by the demands of living with diabetes.	1	2	3	4	5	6
15. Feeling that I don't have a doctor who I can see regularly enough about my diabetes.	1	2	3	4	5	6
16. Not feeling motivated to keep up my diabetes self management.	1	2	3	4	5	6
17. Feeling that friends or family don't give me the emotional support that I would like.	1	2	3	4	5	6

DDSS

Assessment tool 5

ASSESSMENT TOOL 5

Checklist for assessing patient's cognitive resources, help, & drains in learning and doing self-care tasks

Check all items that apply to this patient or group.

Cognitive resources available to patient

Own cognitive ability level (under favorable conditions)

Single Item Literacy Screen

"How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?"

	Patient's response (check one)	Literacy level	Extra cognitive help needed	Risk of critical error
	Always	Very low	Strong	Very high
	Often Sometimes	Low	Moderate	High
	Rarely Never	Moderate to high	Minimal	Occasional

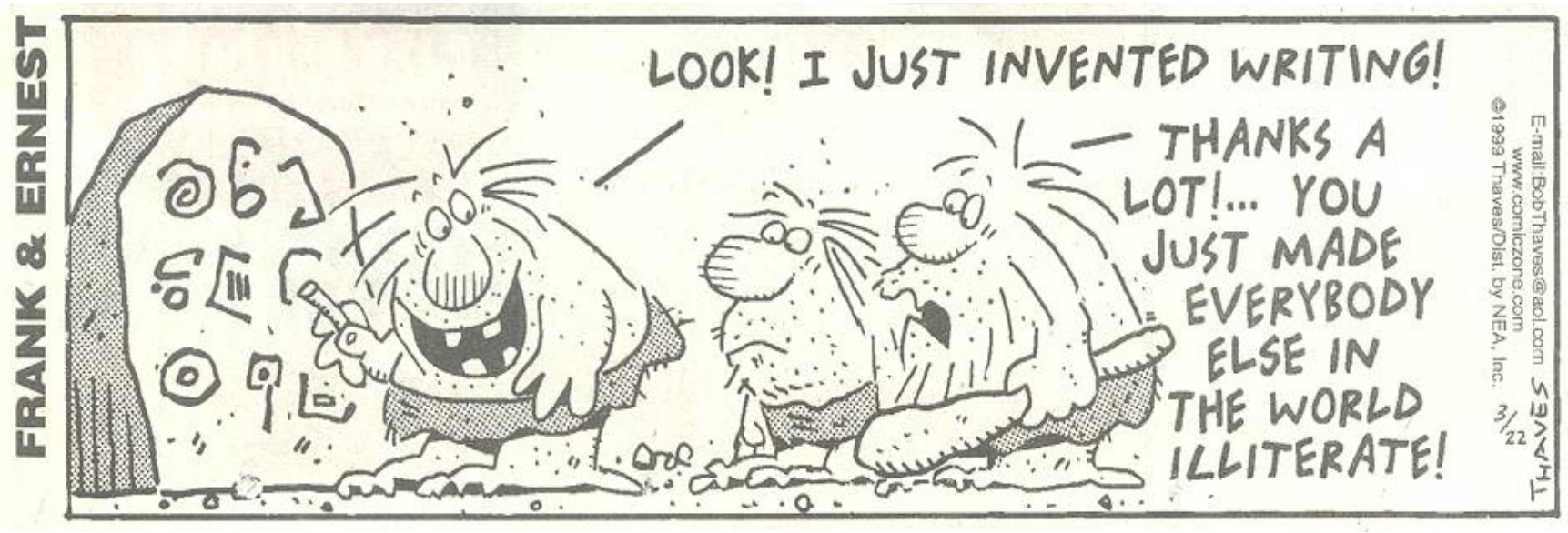
Cognitive help from other people

Family	
	Good
	So-so
	None
	Negative (confuse, burden, discourage, misinform, etc.)
Neighborhood & friends	
	Good
	So-so
	None
	Negative
Support groups	
	Good
	So-so
	None
	Negative
Health care providers	
	Good
	So-so
	None
	Negative

Cognitive drains likely to interfere with patient fully using available cognitive resources

Emotional	
	Anger
	Anxiety
	Depression
	Family conflict
	Fear
	Frustration
	Shame
	Worry
	Other (please specify)
Physical	
	Alcohol & drugs
	Fatigue
	Hunger
	Illness
	Medication
	Pain
	Sleep deprived
	Other (please specify)
Situational	
	Distractions
	Interruptions
	Lack of privacy
	Noise polution
	Temperature too hot or cold
	Time pressure
	Difficult work or family schedule
	Other (please specify)

Smart people busy making life more complex



Goal = make DSM more cognitively accessible.

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Slides available at:
http://www1.udel.edu/educ/gottfredson/AADE16workshop.pptx