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Using Powerpoint in Medical Presentations: A User's Guide

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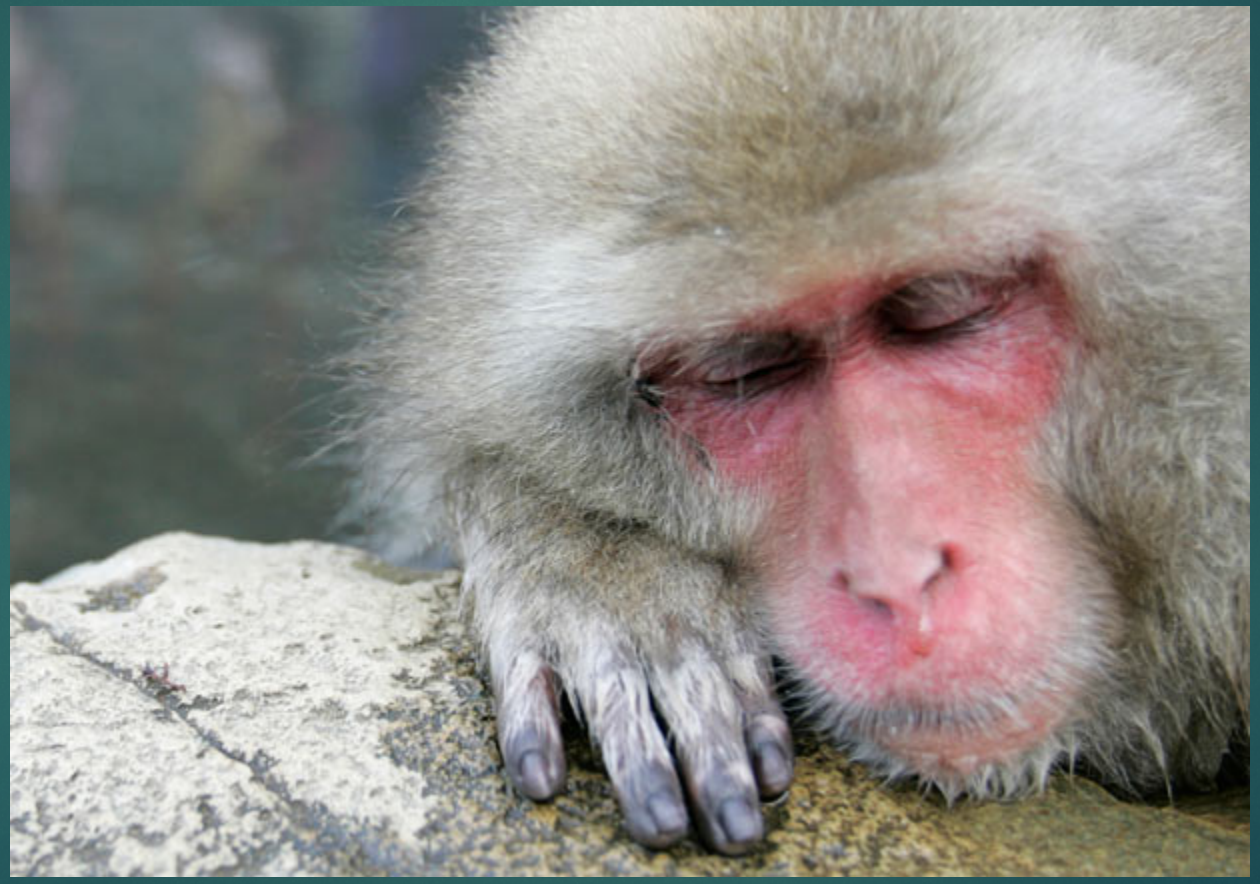
Using Powerpoint in Medical Presentations: A User's Guide

STEVEN HATCH MD, MSC

PEER/LIBERIA RESEARCH TRAINING

DECEMBER 2019

Do not put your audience to sleep



FIRST RULE

- PowerPoint presentations are to *educate* your audience
- *Don't* use it to demonstrate to everyone how much *you* know about the topic

Corollary!

- Boil down the issues to a few take-home points
- Don’t throw up every little point you can pack in!
- And *don’t* read your own work as if your audience is incapable of reading!

Second Rule

- One slide can sometimes have only one point, especially when it’s important!

Third Rule

- People read at ~275 words per minute
- People can ***listen*** at ~150 wpm
- So don't fill your slides with text! They'll stop listening and *read*. Make them ***listen***—this is a presentation! And if you're reading all this right now and not listening to me, I'm proving my point! There's too many words here!

Now Let’s Begin

Example: Portal Hypertension

AASLD PRACTICE GUIDELINES

Prevention and Management of Gastroesophageal Varices and Variceal Hemorrhage in Cirrhosis

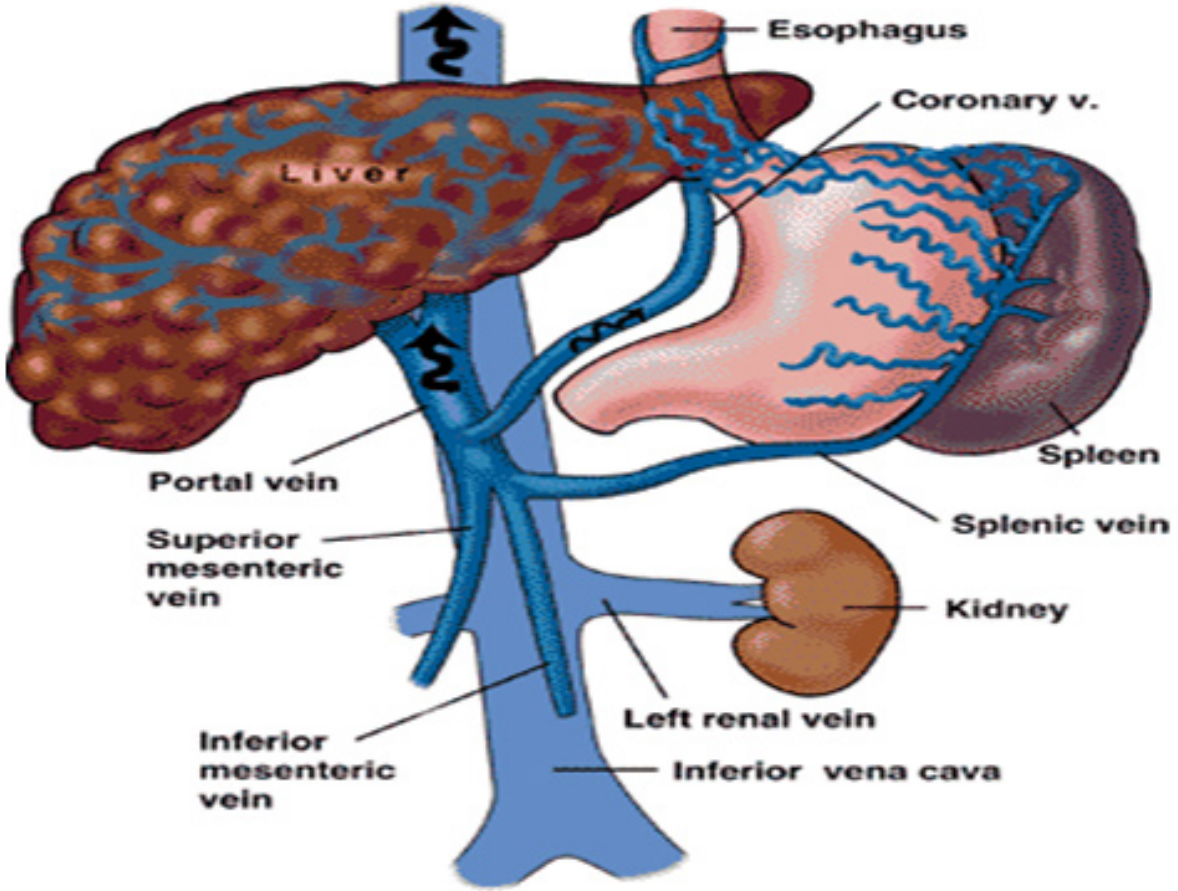
Guadalupe Garcia-Tsao,[1] Arun J. Sanyal,[2] Norman D. Grace,[3] William Carey,[4] and the Practice Guidelines Committee of the American Association for the Study of Liver Diseases, the Practice Parameters Committee of the American College of Gastroenterology

Hepatology 2007; 46(3):922-938

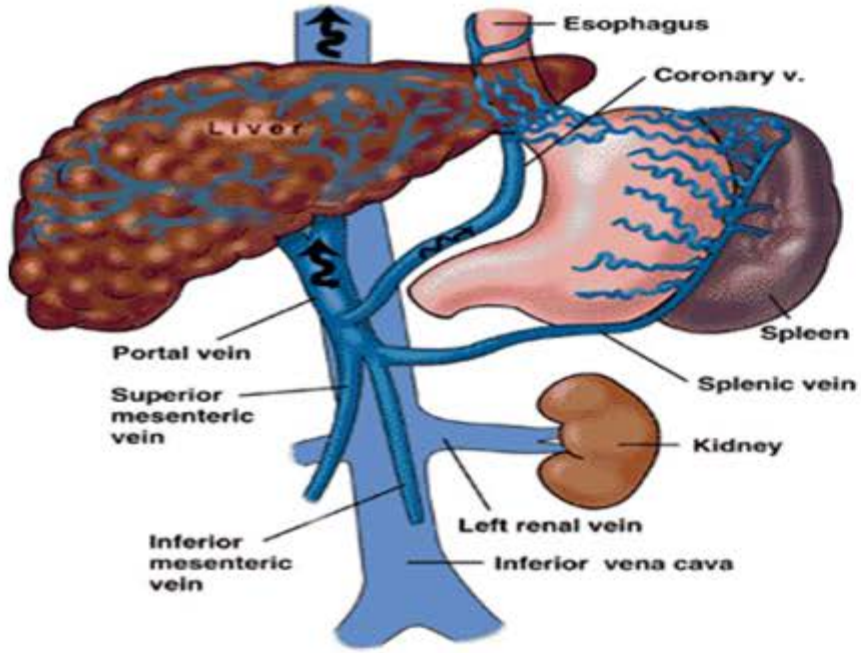
Portal Hypertension

- Complication of end-stage cirrhosis
- Portal pressures increase as consequence of increased resistance to flow mostly due to an architectural distortion of the liver secondary to fibrous tissue and regenerative nodules
- Also decreased production of endogenous nitric oxide, which augments intrahepatic vasoconstriction (~20-30% of effect)
- Leads to formation of porto-systemic collaterals
- Gastroesophageal varices occur in ~50% of pts with cirrhosis

Portal Hypertension



Portal Hypertension



Portal pressures increase as consequence of increased resistance to flow mostly due to an architectural distortion of the liver secondary to fibrous tissue and regenerative nodules; Also decreased production of endogenous nitric oxide, which augments intrahepatic vasoconstriction (~20-30% of effect)
Blah blah blah

Introduction to Your Topic: How to Set the Table

Example: JNC8

JAMA, Feb 5, 2014

What does this slide tell you?

AAFP

2014 Hypertension Guideline Stands to Simplify Treatment, Says Expert

AAFP to Begin Rigorous Process of Reviewing for Possible Endorsement

Despite Controversy, JNC 8 Guideline Provides Much-needed Standards for Hypertension Management | Page 2

By Frank J. Domino, MD | January 01, 2014

JAMA should "retract the JNC-8 guidelines," says David K. Cundiff, MD, "because they are demonstrably not evidence-based and are likely to harm patients medically and financially."

Controversial new rules raise cutoff for healthy blood pressure

Guidelines were not sponsored by a specialty group

Doc Guide

New Blood Pressure Guidelines Means Millions Will No Longer Need Need Medications

Blood Pressure Times (March 2014)

"I'm annoyed," said an angry nephrologist upon reading JNC8.

Hmmm?

AAFP

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Doc Guide

New Blood Pressure Guidelines Means Millions Will No Longer Need Need Medications

Blood Pressure Times (March 2014)

"Fuck this shit," said a pissed-off nephrologist upon reading JNC8.

How to present Tables

Example: Mammography

What's the deal with every year versus every-other-year in mammogram recs?

Table Example #1: Screening Mammography

CLINICAL GUIDELINES | Annals of Internal Medicine

Effects of Mammography Screening Under Different Screening Schedules: Model Estimates of Potential Benefits and Harms

Jeanne S. Mandelblatt, MD, MPH; Kathleen A. Cronin, PhD; Stephanie Bailey, PhD; Donald A. Berry, PhD; Harry J. de Koning, MD, PhD; Gerrit Draisma, PhD; Hui Huang, MS; Sandra J. Lee, DSc; Mark Munsell, MS; Sylvia K. Plevritis, PhD; Peter Ravdin, MD, PhD; Clyde B. Schechter, MD, MA; Bronislava Sigal, PhD; Michael A. Stoto, PhD; Natasha K. Stout, PhD; Nicolien T. van Ravesteyn, MSc; John Venier, MS; Marvin Zelen, PhD; and Eric J. Feuer, PhD; for the Breast Cancer Working Group of the Cancer Intervention and Surveillance Modeling Network (CISNET)*

Ann Int Med 2009; 151:738-747

Table 4. **Benefits and Harms Comparison of Different Starting and Stopping Ages Using the Exemplar Model***

Strategy	Average Screenings per 1000 Women	Potential Benefits (vs. No Screening)			Potential Harms (vs. No Screening)†	
		Percentage of Mortality Reduction	Cancer Deaths Averted per 1000 Women	Life-Years Gained per 1000 Women	False-Positive Results per 1000 Women	Unnecessary Biopsies per 1000 Women
Comparison of different starting ages						
Biennial screening						
40–69 y	13 865	16‡	6.1	120‡	1250	88
45–69 y	11 771	17‡	6.2	116‡	1050	74
50–69 y	8944	15	5.4	99	780	55
55–69 y	6941	13	4.9	80	590	41
60–69 y	4246	9	3.4	52	340	24
Annual screening						
40–69 y	27 583	22‡	8.3	164‡	2250	158
45–69 y	22 623	22‡	8.0	152‡	1800	126
50–69 y	17 759	20‡	7.3	132‡	1350	95
55–69 y	13 003	16‡	6.1	102‡	950	67
60–69 y	8406	12‡	4.6	69‡	600	42
Comparison of different stopping ages						
Biennial						
50–69 y	8944	15	5.4	99	780	55
50–74 y	11 109	20	7.5	121	940	66
50–79 y	12 347	25	9.4	130	1020	71
50–84 y	13 836	26	9.6	138	1130	79
Annual						
50–69 y	17 759	20‡	7.3	132‡	1350	95
50–74 y	21 357	26‡	9.5	156‡	1570	110
50–79 y	24 439	30	11.1	170	1740	122
50–84 y	26 913	33	12.2	178	1880	132

* Results are from model S (Stanford University). Model S was chosen as an exemplar model to summarize the balance of benefits and harms associated with screening 1000 women under a particular screening strategy.

† Overdiagnosis is another significant harm associated with screening. However, given the uncertainty in the knowledge base about ductal carcinoma in situ and small invasive tumors, we felt that the absolute estimates are not reliable. In general, overdiagnosis increases with age across all age groups but increases more sharply for women who are screened in their 70s and 80s.

‡ Strategy is dominated by other strategies; the strategy that dominates may not be in this table.

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50–79 y	24 439	30	11.1	170	1740	122
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For every 1000 women:

Annual—~10 lives saved, 110 unnecessary biopsies

Biennial—~8 lives saved, 66 unnecessary biopsies

* Results are from model S (Stanford University). Model S was chosen as an exemplar model to summarize the balance of benefits and harms associated with screening 1000 women under a particular screening strategy.

† Overdiagnosis is another significant harm associated with screening. However, given the uncertainty in the knowledge base about ductal carcinoma in situ and small invasive tumors, we felt that the absolute estimates are not reliable. In general, overdiagnosis increases with age across all age groups but increases more sharply for women who are screened in their 70s and 80s.

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Table Example #2: Ebola

The NEW ENGLAND JOURNAL of MEDICINE

BRIEF REPORT

A Case of Severe Ebola Virus Infection Complicated by Gram-Negative Septicemia

Benno Kreuels, M.D., Dominic Wichmann, M.D., Petra Emmerich, Ph.D., Jonas Schmidt-Chanasit, M.D., Geraldine de Heer, M.D., Stefan Kluge, M.D., Abdourahmane Sow, M.D., Thomas Renné, M.D., Ph.D., Stephan Günther, M.D., Ansgar W. Lohse, M.D., Marylyn M. Addo, M.D., Ph.D., and Stefan Schmiedel, M.D.

N Engl J Med 2014; 371:2394-2401

Table 1: All the Stuff That Happened to This Dude, in Numerical Format

Table 1. Clinical Variables, Fluid Management, and Laboratory Values during the Course of Illness.*

Variable	Day of Illness												Day of Illness					
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Clinical variables†																		
Temperature (°C)	38.4	39.3	38.8	40.0	40.0	39.8	38.8	38.8	38.5	38.8	39.0	38.6	37.8	37.8	38.0	38.2	37.8	37.6
Respiratory rate (breaths/min)	ND	ND	ND	ND	40	40	39	35	35	40	31	40	32	27	36	30	24	24
Oxygen saturation (%)	97	93	95	88	89	90	92	93	<85	88	<85	<85	<85	97	<85	96	97	96
Heart rate (beats/min)	96	92	80	140	170	160	140	150	144	155	140	150	140	135	120	130	125	120
Oxygen (liters/min)	—	—	—	—	1	5	6	6	8	8	6	5	3	2	3	3	—	—
Noninvasive ventilation (hr)	—	—	—	—	—	—	—	—	4	—	2	10	2	—	4	4	—	—
Fluid measurements (ml)																		
Intravenous fluids‡	7850	13,175	11,675	9200	7510	13,734	7574	4418	3818	3613	4064	6116	4316	2836	5520	3410	1264	1000
Oral fluids§	—	—	—	—	—	—	—	80	180	480	880	780	860	1420	1780	1920	2445	1585
Diarrhea¶	4400	8400	6850	4030	2230	950	500	—	300	100	—	900	800	300	700	—	—	—
Vomiting‖	—	—	1200	1550	—	—	100	200	—	—	—	—	—	—		—	—	—
Urine	1330	1050	400	ND	ND	1760	4940	6870	6770	5870	6800	5690	5480	5500	6600	4480	4450	3550
Balance	2120	3725	3225	3620	5280	11,024	2034	−2572	−3072	−1877	−1856	306	−1104	−1544	0	−850	−741	−965
Laboratory values																		
Hemoglobin (g/dl)	18.0	15.8	15.4	16.0	14.1	13.4	13.2	11.1	12.1	8.8	7.1	8.2	7.7	7.8	8.2	7.7	7.5	8.0
Hematocrit (%)	55.2	48.4	42.9	49.4	43.3	44.1	39.4	33.6	31.5	24.9	24.2	27.1	27.2	24.9	25.1	25.5	25.0	27.2
White cells ($\times 10^{-3}/mm^3$)	6.8	6.4	7.3	14.1	21.8	28.7	19.7	13.0	18.2	14.2	6.5	9.2	11.7	8.3	12.5	9.7	8.1	8.8
Platelets ($\times 10^{-3}/mm^3$)	103	116	152	135	101	81	83	46	50	77	63	119	123	153	230	267	243	261
D-dimer (mg/liter)	33	38	38	37	35	28	24	11	9	4	5	9	27	13	9	8	5	2
AST (U/liter)	1054	942	924	950	834	592	321	205	183	157	152	224	143	219	270	154	268	181
CRP (mg/liter)	11	13	23	43	59	123	127	65	79	60	39	37	34	33	34	30	35	37
Lactate (mmol/liter)	1.8	2.7	1.5	2.8	6.5	9.3	1.7	1.1	1.0	0.9	0.6	0.4	0.4	0.6	0.5	0.4	0.8	0.6
Creatinine (mg/dl)**	1.9	1.3	1.0	1.0	1.1	1.2	1.0	1.3	1.5	1.5	1.2	1.0	0.9	0.7	0.7	0.7	0.7	0.7
Sodium (mmol/liter)	135	135	138	141	144	147	144	148	154	159	155	148	148	144	143	141	136	133
Potassium (mmol/liter)	3.4	3.5	3.5	3.6	3.3	3.9	4.4	3.9	4.6	3.8	3.9	5.0	4.3	3.8	4.1	4.4	3.9	3.7
Chloride (mmol/liter)	102	103	109	110	116	119	117	118	120	122	125	116	115	112	111	108	105	100
pH	7.45	7.38	7.45	7.44	7.45	7.37	7.47	7.43	7.40	7.50	7.51	7.22	7.23	7.48	7.42	7.26	7.51	7.46
Bicarbonate (mmol/liter)	20.5	24.1	22.9	21.9	15.5	14.2	24.7	27.6	29.4	32.4	28.8	29.1	29.8	28.5	27.2	29.8	28.0	28.9

* Data are for the period starting with the patient's arrival in Hamburg, Germany, and ending on the day before transfer of the patient to the infectious disease ward. AST denotes aspartate aminotransferase, CRP C-reactive protein, and ND not determined.

† Temperature was measured tympanically until the insertion of a urinary catheter on day 15. The maximum respiratory rate, minimum oxygen saturation (as measured with the use of pulse oximetry), and maximum heart rate were assessed by means of continuous measurement on a medical monitor. The inspired oxygen concentration was not measured, but the patient was receiving oxygen with the use of a nasal cannula. Data on noninvasive ventilation are the number of hours of noninvasive ventilation delivered by means of the Evita 2 dura (Dräger) in 24 hours.

‡ Intravenous fluids included 5% glucose solution, Sterofundin ISO (B. Braun Medical Supplies), and intravenous nutrition.

§ Oral fluids included water, tea, and oral nutrition (low-fiber standard formula providing 1 kcal per milliliter).

¶ A fecal collector was inserted on day 16.

‖ A nasogastric tube was inserted on day 16.

** To convert values for creatinine to micromoles per liter, multiply by 88.4.

The NEW ENGLAND JOURNAL of MEDICINE

BRIEF REPORT

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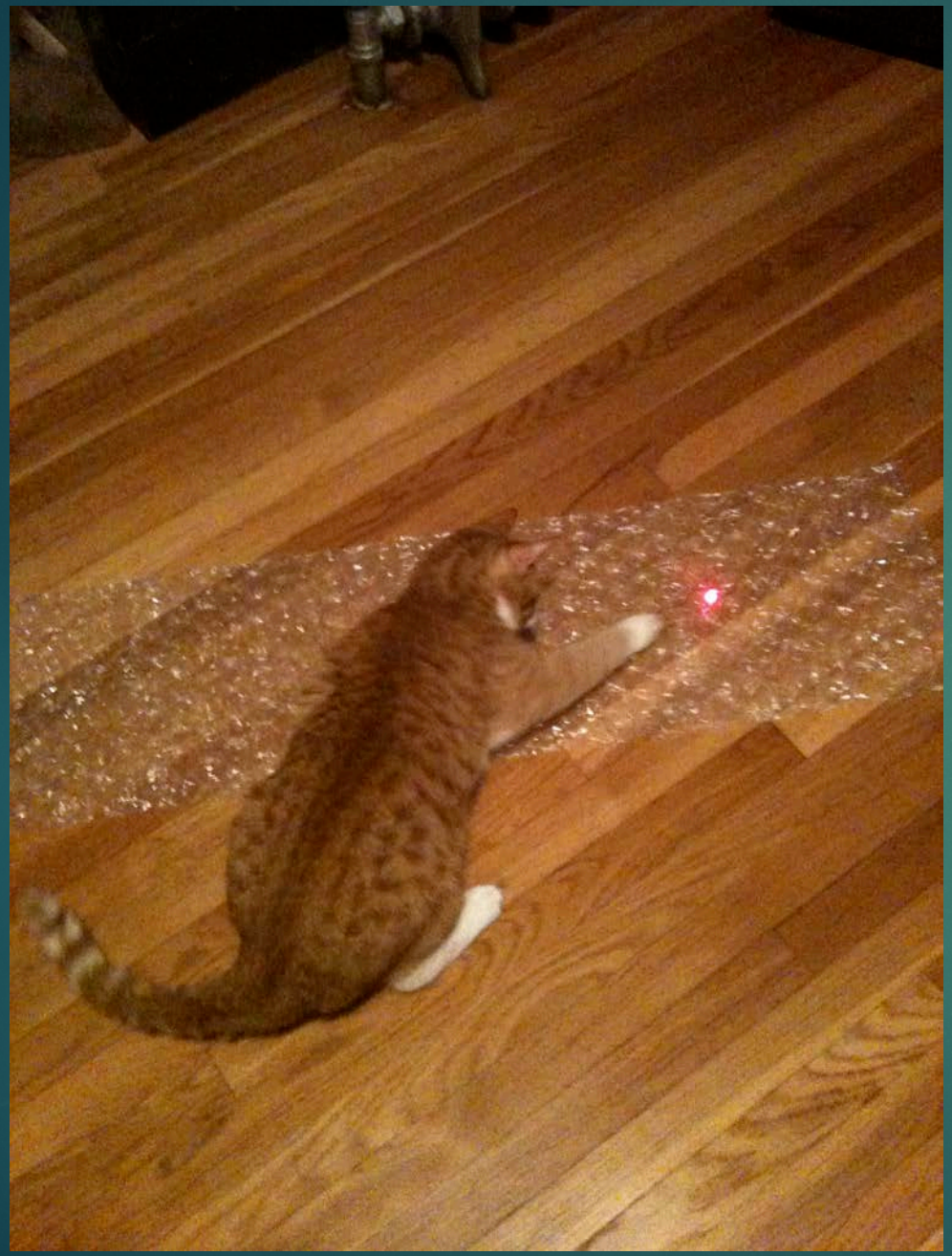
Oral fluids§	—	—	—	—	—	—	—	80
Diarrhea¶	4400	8400	6850	4030	2230	950	500	—
Vomiting‖	—	—	1200	1550	—	—	100	200



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Diarrhea¶	4400	8400	6850	4030	2230	950	500	—
Vomiting‖	—	—	1200	1550	—	—	100	200

Focus on one item in your Table
Example: Portal HTN Round 2

AASLD PRACTICE GUIDELINES

Prevention and Management of Gastroesophageal Varices and Variceal Hemorrhage in Cirrhosis

Guadalupe Garcia-Tsao,[1] Arun J. Sanyal,[2] Norman D. Grace,[3] William Carey,[4] and the Practice Guidelines Committee of the American Association for the Study of Liver Diseases, the Practice Parameters Committee of the American College of Gastroenterology

Hepatology 2007; 46(3):922-938

Table 2. Child-Pugh Classification of the Severity of Cirrhosis

	Points*		
	1	2	3
Encephalopathy	None	Grade 1-2 (or precipitant-induced)	Grade 3-4 (chronic)
Ascites	None	Mild/Moderate (diuretic-responsive)	Tense (diuretic-refractory)
Bilirubin (mg/dL)	<2	2-3	>3
Albumin (g/dL)	>3.5	2.3-3.5	<2.8
PT (sec prolonged) or INR	<4	4-6	>6
	<1.7	1.7-2.3	>2.3

*5-6 points: Child A; 7-9 points: Child B; 10-15 points: Child C.

Example: what is this patient's Child-Pugh score?

- 56 yo M with coffee-ground emesis
- "I drink a little"; 2-3 glasses vodka qd
- Jaundiced, ascites, caput medusa
- Bili 2.8
- Albumin 3.0
- INR 1.8
- Not encephalopathic

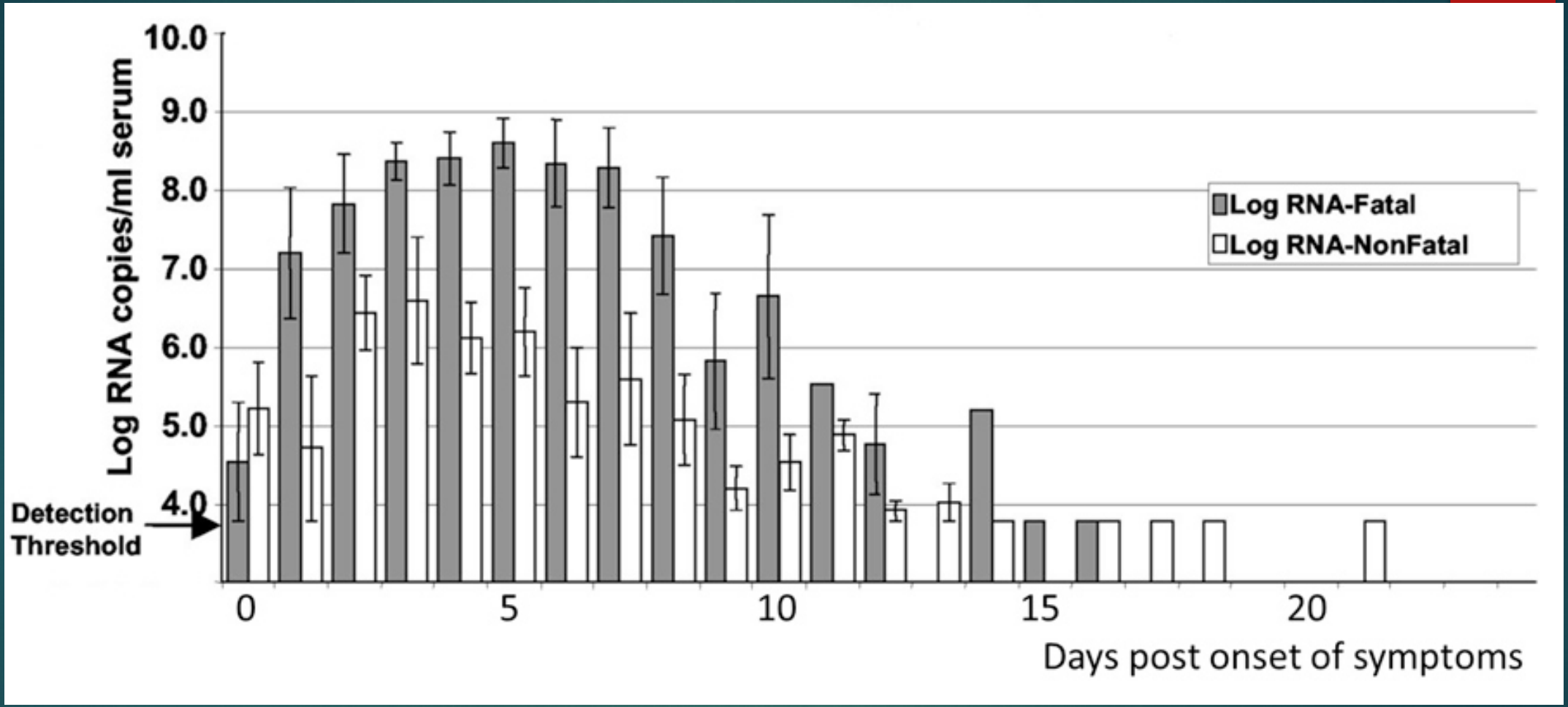
http://www.mdcalc.com/child-pugh-score-for-cirrhosis-mortality/

Figures: Get your audience interested!

Example: Ebola, Round 2

The boring version

High viral load predicts mortality (Gulu, 2000-1)



Towner JS et al. **Rapid diagnosis of Ebola hemorrhagic fever by reverse transcription-PCR in an outbreak setting and assessment of patient viral load as a predictor of outcome.** J. Virol. 2004, 78(8):4330

The less boring version

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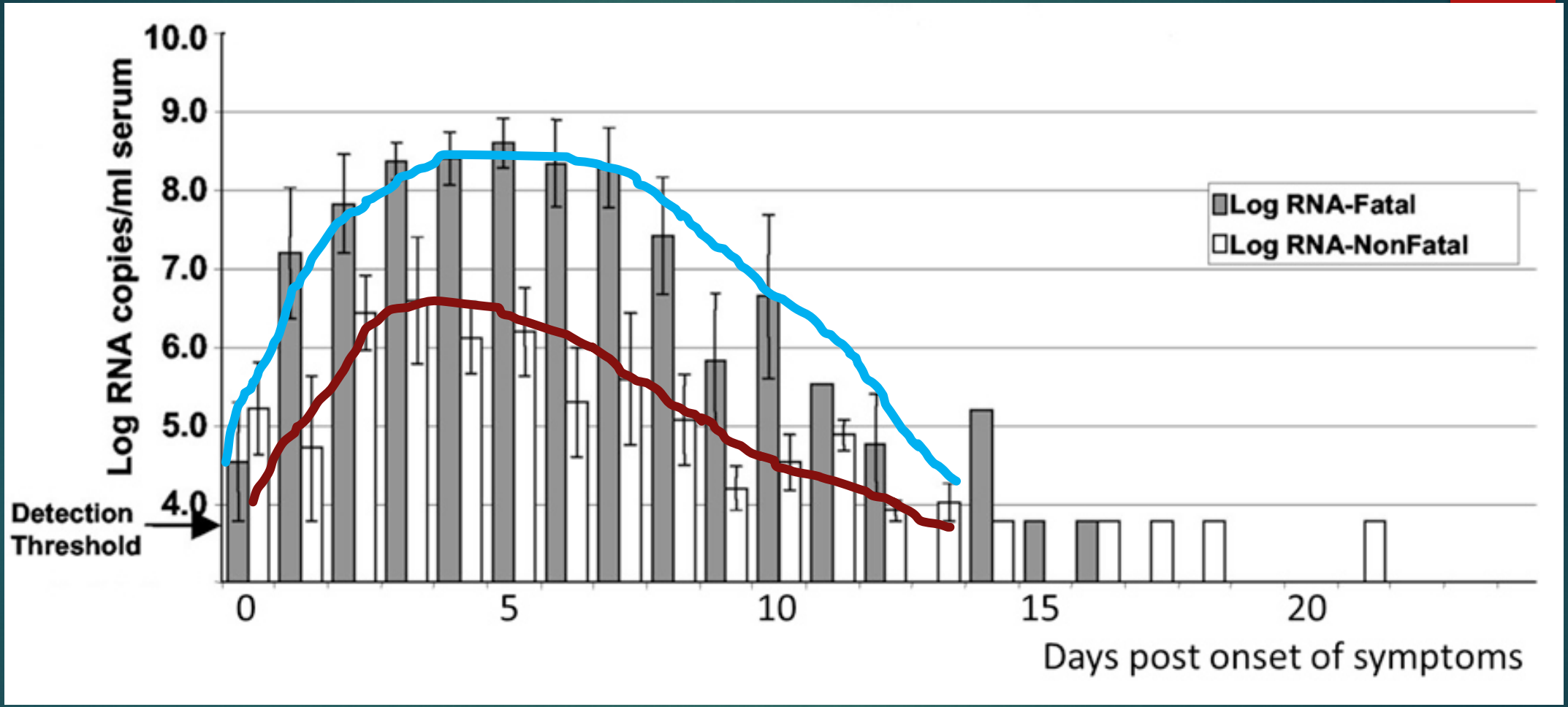

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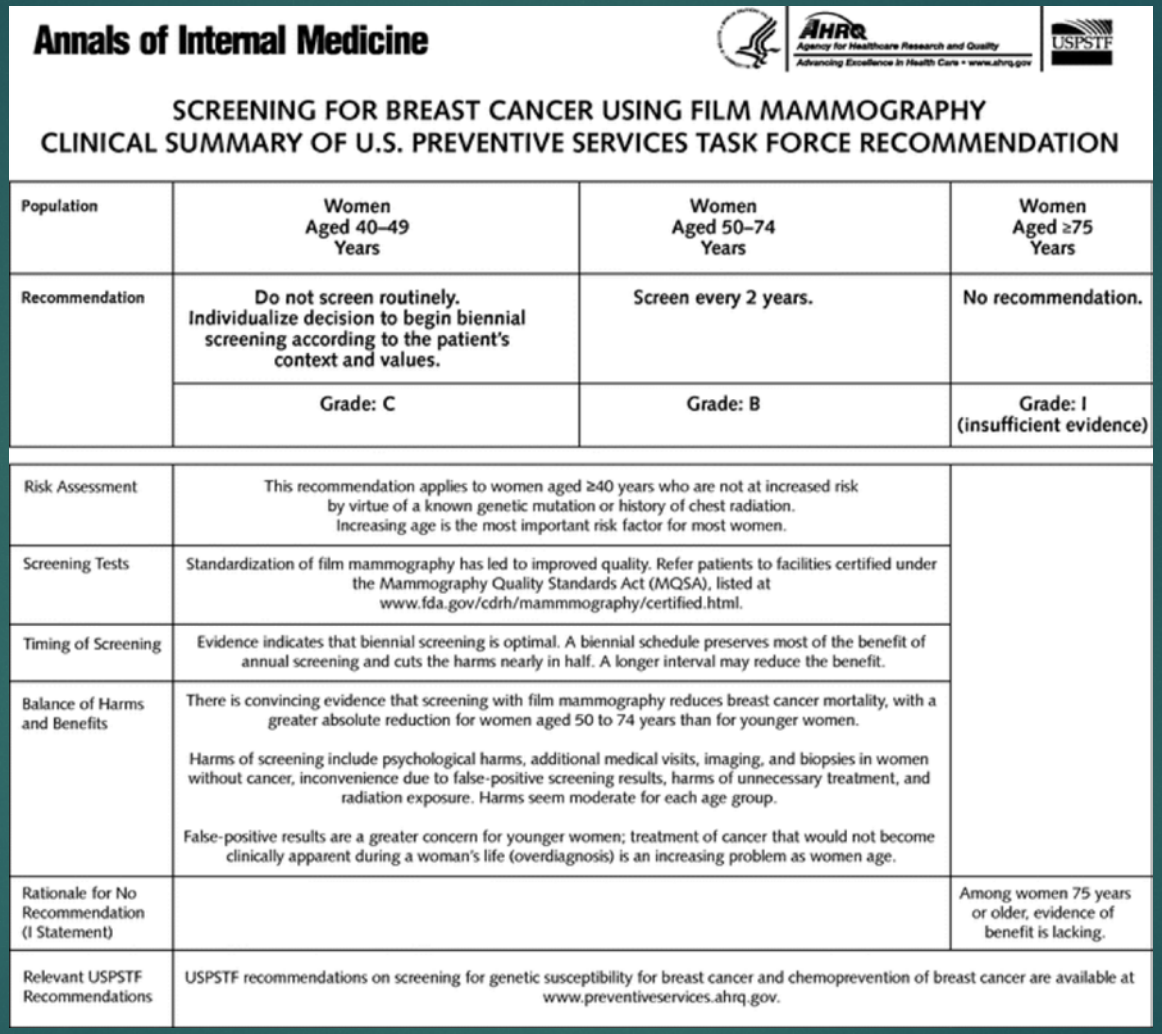
Example: Screening Mammography, Round 2

The boring versions

Annals of Internal Medicine
Established in 1927 by the American College of Physicians



Annals of Internal Medicine

AHRQ Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

USPSTF

SCREENING FOR BREAST CANCER USING FILM MAMMOGRAPHY
CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

Population	Women Aged 40–49 Years	Women Aged 50–74 Years	Women Aged ≥75 Years
Recommendation	Do not screen routinely. Individualize decision to begin biennial screening according to the patient's context and values.	Screen every 2 years.	No recommendation.
	Grade: C	Grade: B	Grade: I (insufficient evidence)
Risk Assessment	This recommendation applies to women aged ≥40 years who are not at increased risk by virtue of a known genetic mutation or history of chest radiation. Increasing age is the most important risk factor for most women.		
Screening Tests	Standardization of film mammography has led to improved quality. Refer patients to facilities certified under the Mammography Quality Standards Act (MQSA), listed at www.fda.gov/cdrh/mammmography/certified.html.		
Timing of Screening	Evidence indicates that biennial screening is optimal. A biennial schedule preserves most of the benefit of annual screening and cuts the harms nearly in half. A longer interval may reduce the benefit.		
Balance of Harms and Benefits	There is convincing evidence that screening with film mammography reduces breast cancer mortality, with a greater absolute reduction for women aged 50 to 74 years than for younger women. Harms of screening include psychological harms, additional medical visits, imaging, and biopsies in women without cancer, inconvenience due to false-positive screening results, harms of unnecessary treatment, and radiation exposure. Harms seem moderate for each age group. False-positive results are a greater concern for younger women; treatment of cancer that would not become clinically apparent during a woman's life (overdiagnosis) is an increasing problem as women age.		
Rationale for No Recommendation (I Statement)			Among women 75 years or older, evidence of benefit is lacking.
Relevant USPSTF Recommendations	USPSTF recommendations on screening for genetic susceptibility for breast cancer and chemoprevention of breast cancer are available at www.preventiveservices.ahrq.gov.		

Figure Legend:

Screening for breast cancer using film mammography: clinical summary of USPSTF recommendation.

For a summary of the evidence systematically reviewed in making these recommendations, the full recommendation statement, and supporting documents, please go to www.preventiveservices.ahrq.gov.

For biennial screening mammography in women aged 40 to 49 years, there is moderate certainty that the net benefit is small. Although the USPSTF recognizes that the benefit of screening seems equivalent for women aged 40 to 49 years and 50 to 59 years, the incidence of breast cancer and the consequences differ. The USPSTF emphasizes the adverse consequences for most women—who will not develop breast cancer—and therefore use the number needed to screen to save 1 life as its metric. By this metric, the USPSTF concludes that there is moderate evidence that the net benefit is small for women aged 40 to 49 years.

The less boring version

Accuracy of Screening Tests

Mammography, CBE, and BSE are recognized approaches for breast cancer screening. Since the 2002 USPSTF recommendation statement, digital (as opposed to film-based) mammography has been increasingly used, and MRI is being used with greater frequency for screening women at increased risk for breast cancer. The sensitivity of mammography screening is 77% to 95%, whereas specificity is 94% to 97% (16). Multiple factors, including age, time since last examination, breast tissue density, equipment, and the skill of the interpreting radiologist can affect sensitivity and specificity (17). A single, large comparison study of film and digital mammography (18) demonstrated similar diagnostic accuracy for the 2 methods, although digital mammography was better at detecting lesions in women who were younger than 50 years or premenopausal or had radiographically dense breasts. Studies of MRI in

Age 40-49:

Incidence ~50,000 cases/yr

Total Population: 22,000,000

Sensitivity: 77-95%

Specificity: 94-97%

The even *less* boring version


Women without breast cancer
False Positive→
Women with breast cancer
Total number of positive tests:
False positive
True positive

So, some basic take-home points

- Tell ***stories*** around your data: people remember stories!

Some basic take-home points

- When possible, gear each slide around ***one*** teaching point

So, some basic take-home points

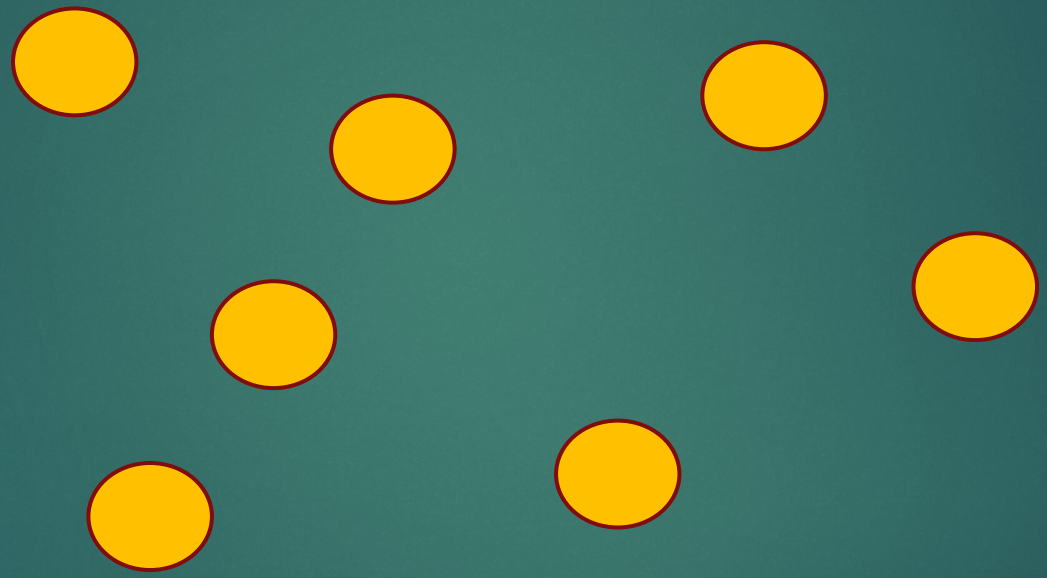
- Use pictures to drive your point home

Don't do these things!

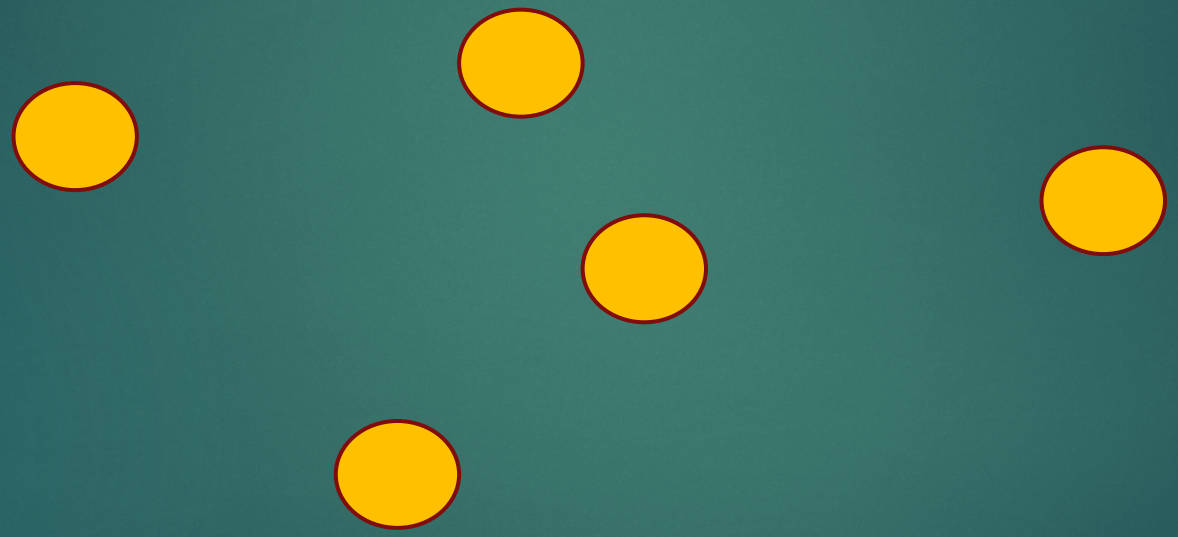
- **Don't** throw up way too much data
- **Don't** put up Tables & Figures exactly as they appear—modify them, make them come alive!
- Keep your data simple
- **Don't** use overwhelming amounts of text, and
- **Don't** proceed to read from your slides
- (Like this slide! It's got too much text!)

Final Thoughts

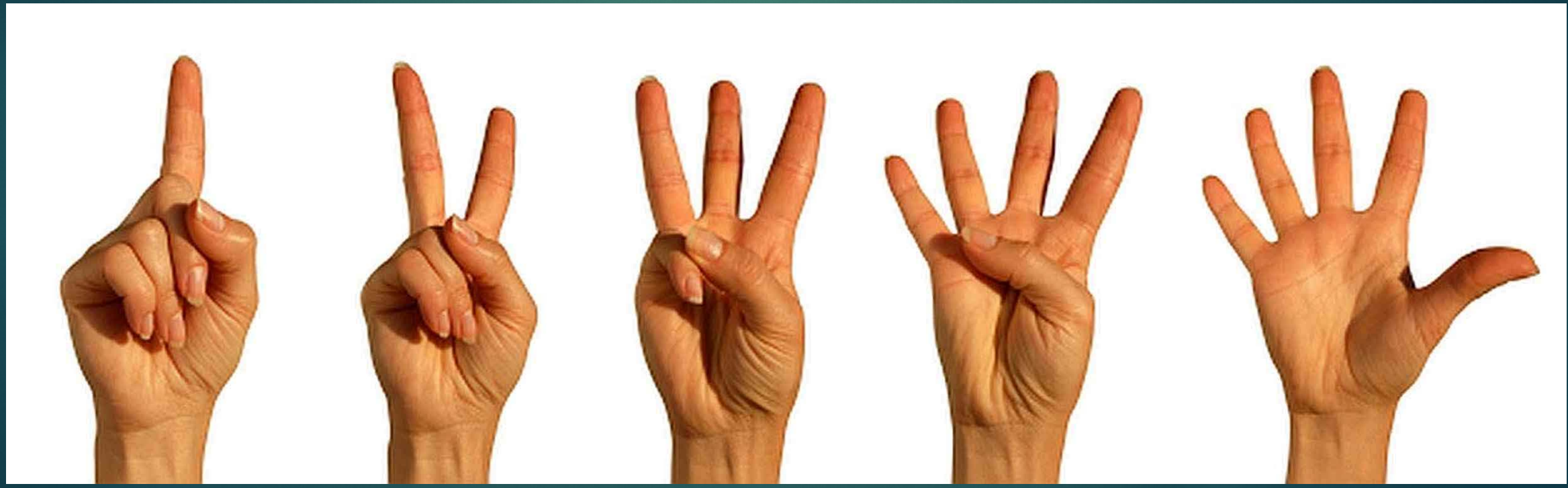
How many thingies?



How many thingies, Round 2?



The point? We're good at soaking in about *five* visual pieces of data; never use more than five "thingies"



And Sometimes, for Special Effect, Do This

Because Sometimes You Want Your Audience to Focus On *You* and Not Just the Slides!


Ciao!