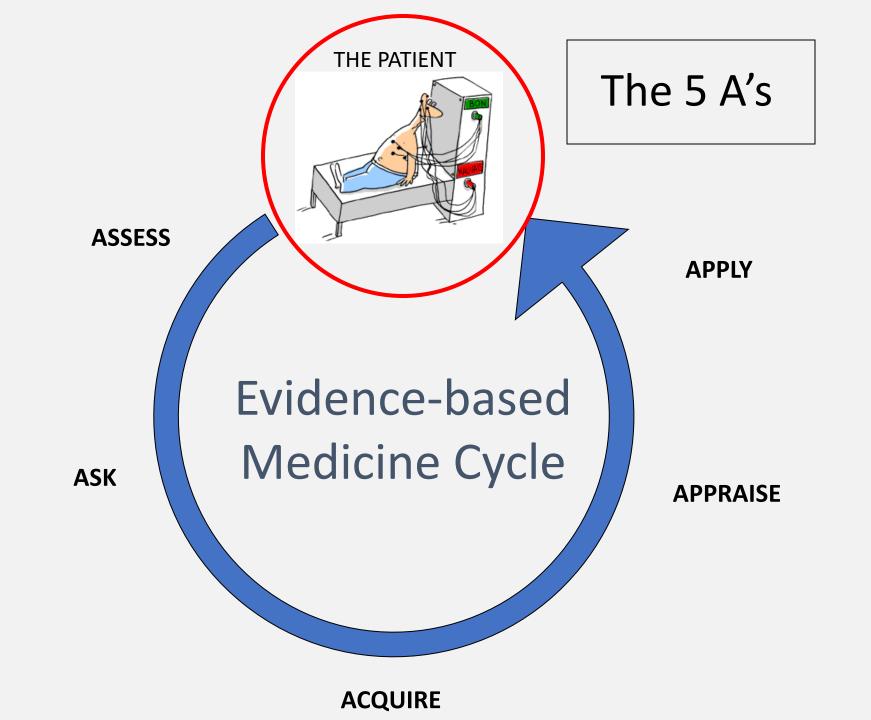Study design review
(Focus on case-control)

Odds vs Risk

Odds Ratio

FUN

KEEP
CALM
AND
USE
PICOTT

Systematic Reviews & Meta-Analyses

Critically-Appraised Topics [Evidence Syntheses]

Critically-Appraised Individual Articles [Article Synopses]
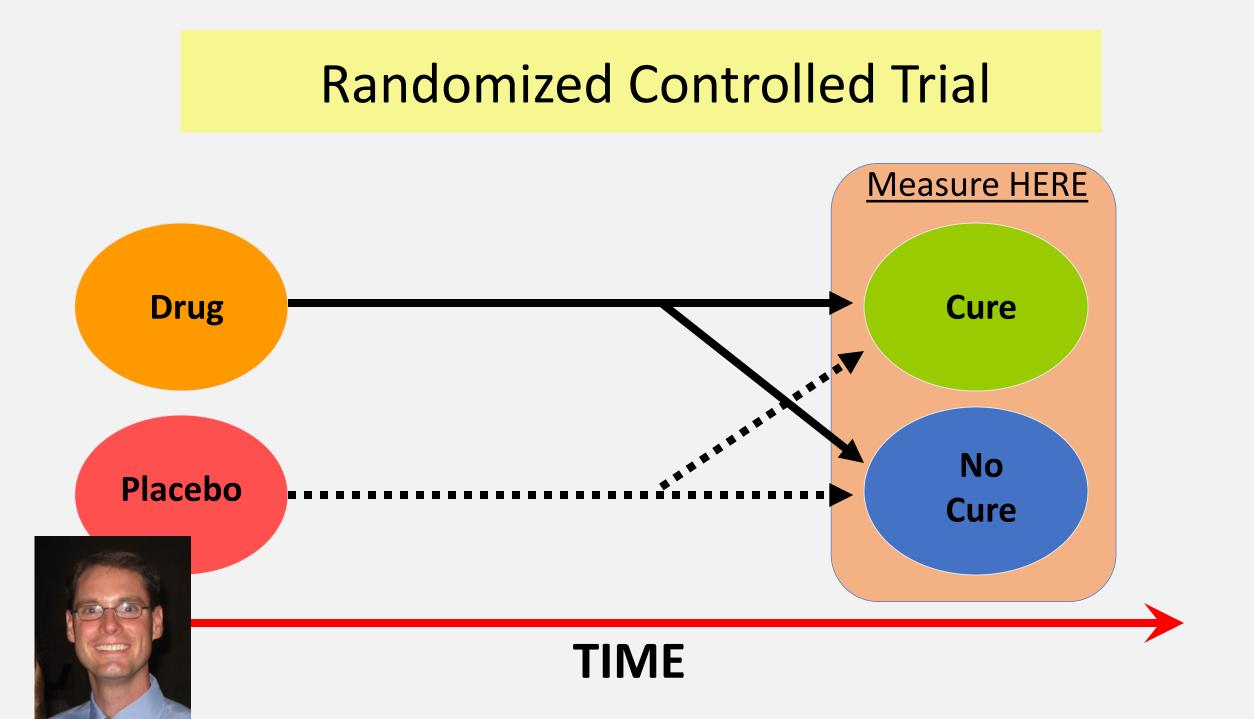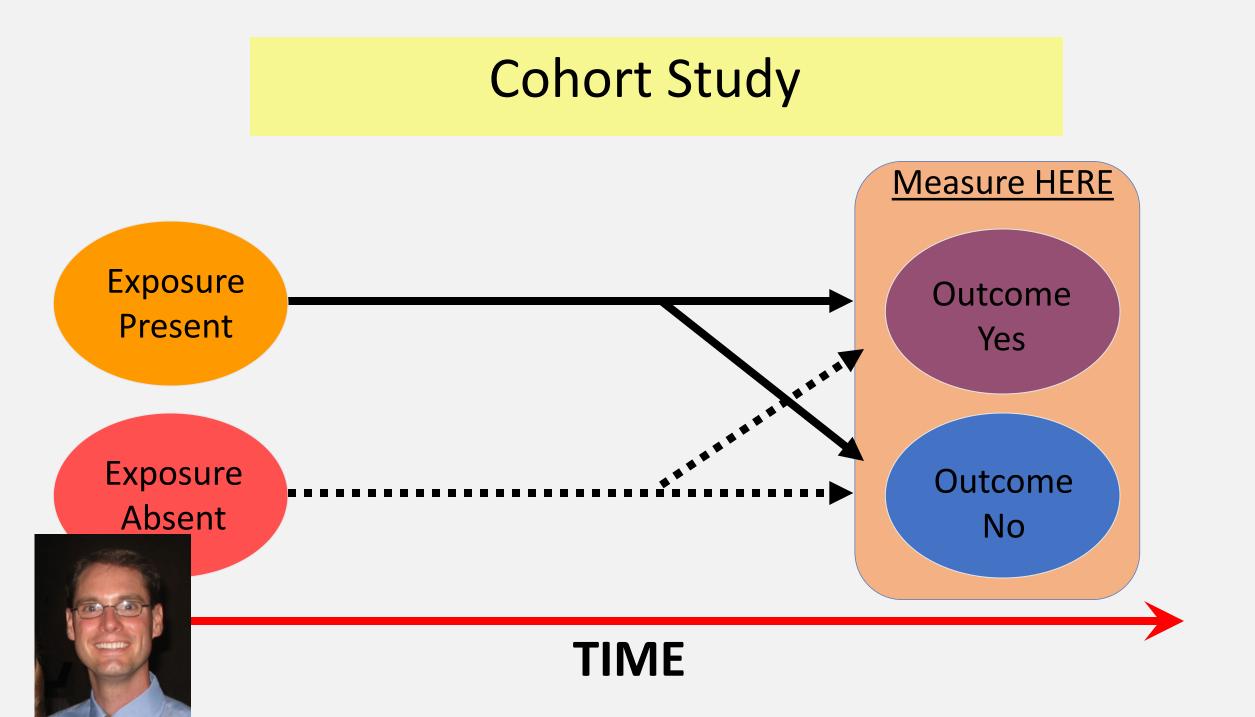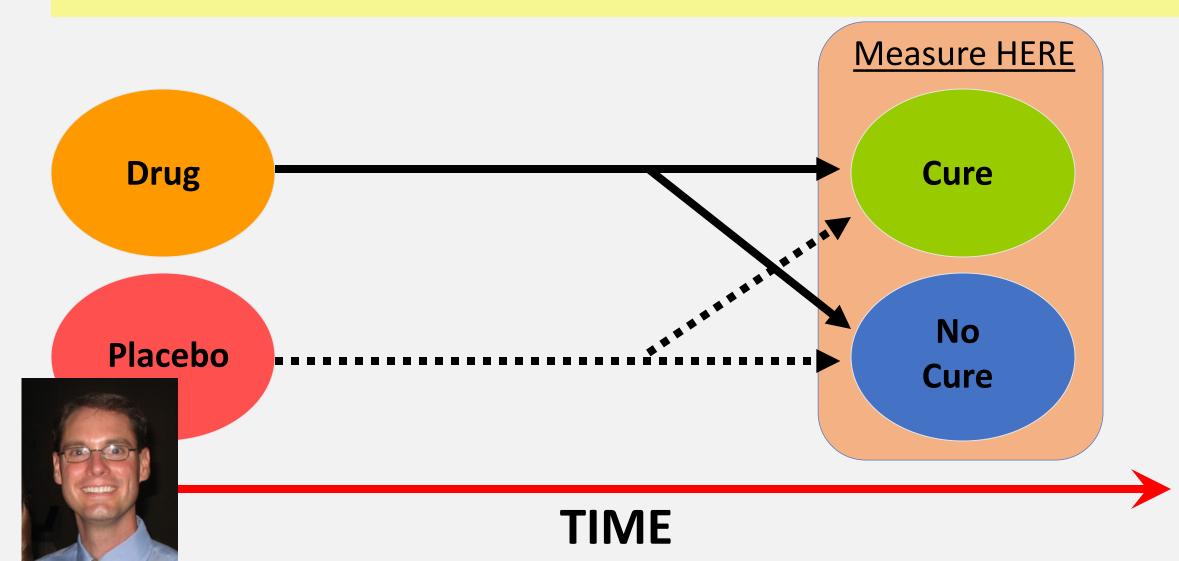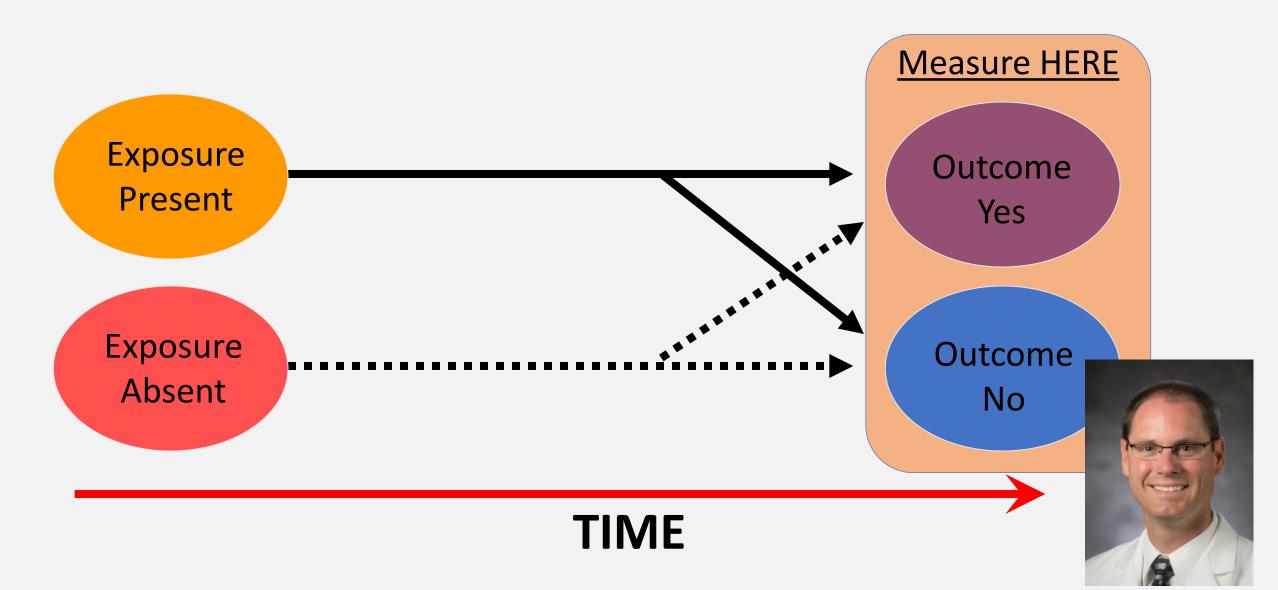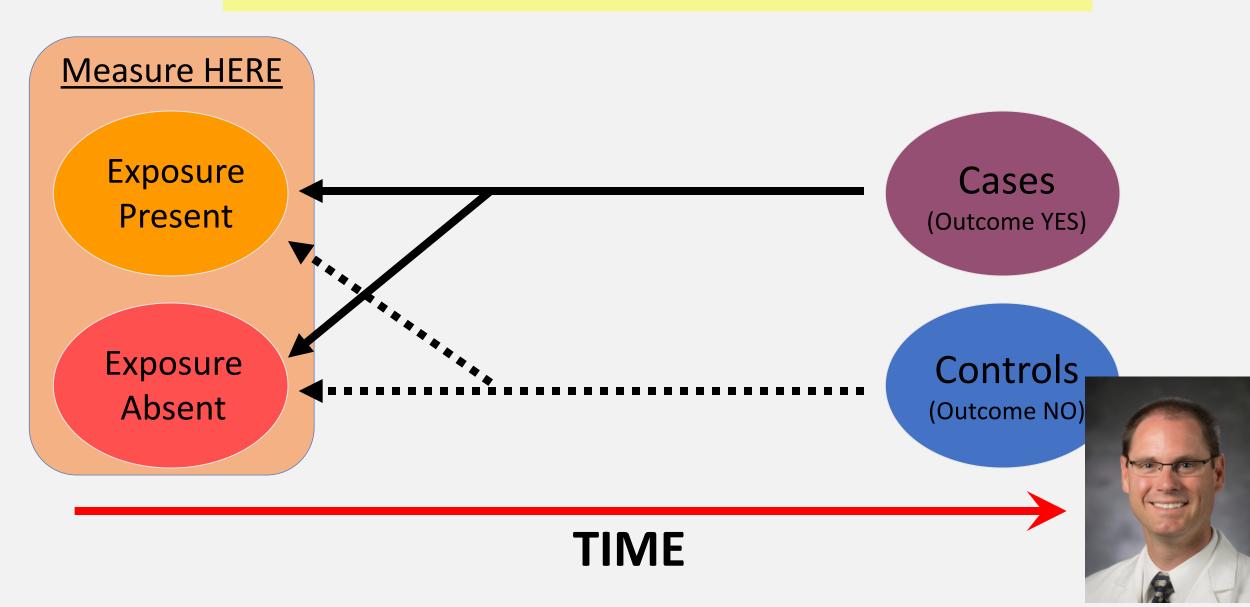
Randomized Controlled Trials (RCTs)
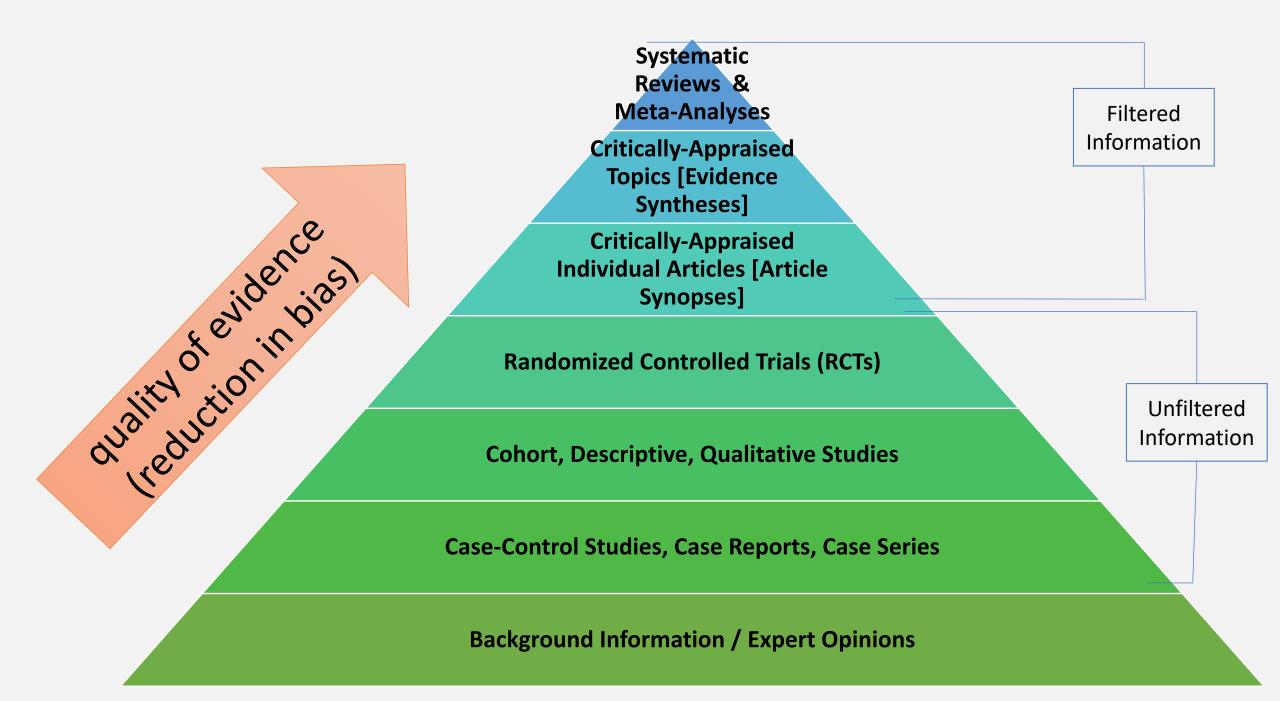
Cohort, Descriptive, Qualitative Studies

Case-Control Studies, Case Reports, Case Series

Background Information / Expert Opinions

quality of evidence (reduction in bias)

Filtered Information

Unfiltered Information
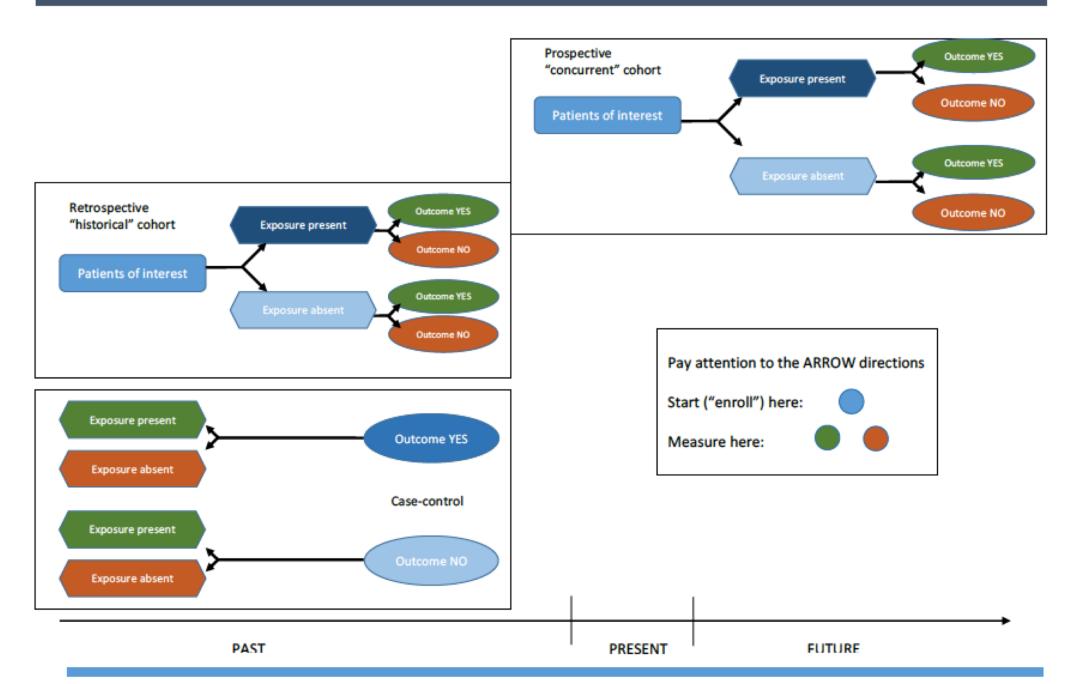
History

Search	Add to builder	Query	Items found	Time
#7	Add	Search (("Asthma"[Mesh]) AND "Animals, Domestic"[Mesh]) AND "Case-Control Studies"[Mesh]	32	12:04:05
#6	Add	Search "Case-Control Studies"[Mesh]	828538	12:03:55
#4	Add	Search "Animals, Domestic"[Mesh]	30777	12:03:43
#2	Add	Search "Asthma"[Mesh]	114953	12:03:26

Your sessions with the medical librarians pay off!

Pets, parental atopy, and asthma in adults

Jouni J. K. Jaakkola, MD, DSc, PhD,[a,b] Niina Jaakkola, MSc,[b] Ritva Piipari, MD,[c] and Maritta S. Jaakkola, MD, DSc[c] *Göteborg, Sweden, and Helsinki, Finland*

Study Architect

Validity criteria for Case-control Studies

1. **Groups similar at the BEGINNING?**
   a. Did the cases and control group have the same risk (chance) for being exposed in the past?
   b. Were cases and controls similar with respect to the indication or circumstances that would lead to exposure (or did matching or statistical adjustment address the imbalance)?
   c. Were the circumstances and methods for determining exposure similar for cases and controls?
   d. Did exposed and control groups begin the study with a similar prognosis? (Table 1?)

2. **Groups remain similar AFTER the study started?**
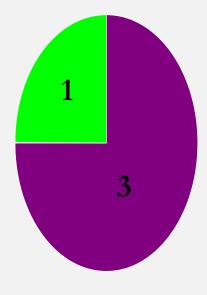   a. Were the circumstances and methods for detecting the outcome similar?

BREAK TIME!

Risk vs. Odds

Risk: the number of times an event of interest occurs relative to the total number of events (e.g. batting average)

Risk = probability

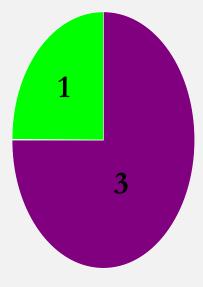Risk doesn't necessarily mean "bad"

How often does an event occur?

Risk of Purple

$$\frac{3}{3+1} = 0.75$$
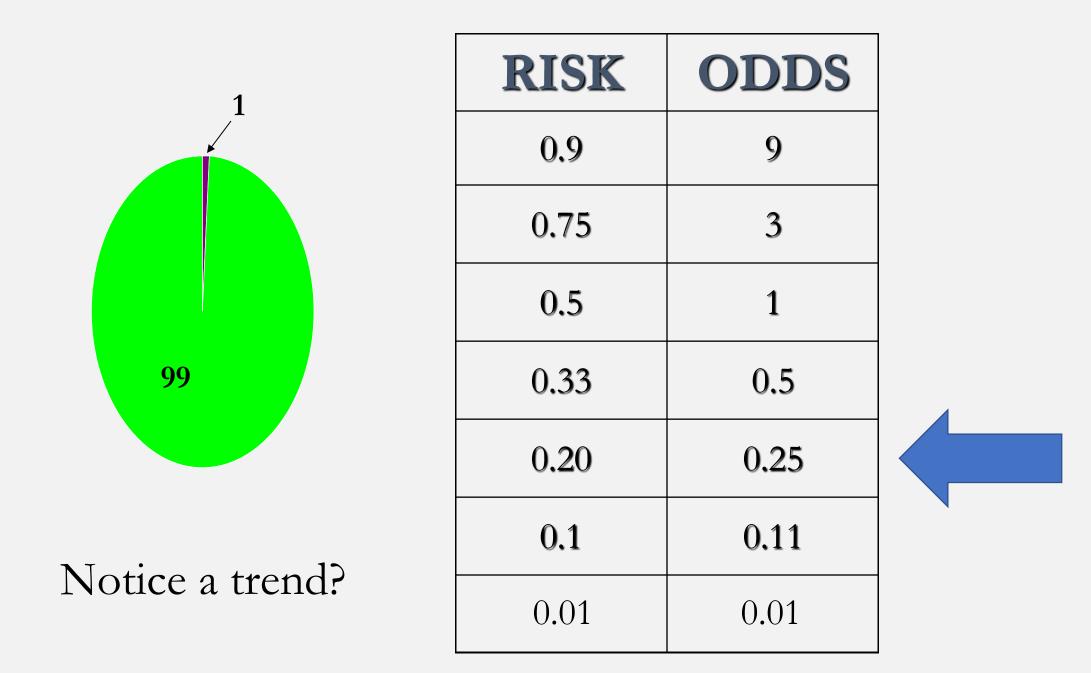
Risk vs. Odds

<u>Risk:</u> the proportion of times an event of interest occurs relative to the total number of events (e.g. batting average)

<u>Odds:</u> the number of times an event of interest occurs relative to the number of times it does not occur (e.g. gambling)

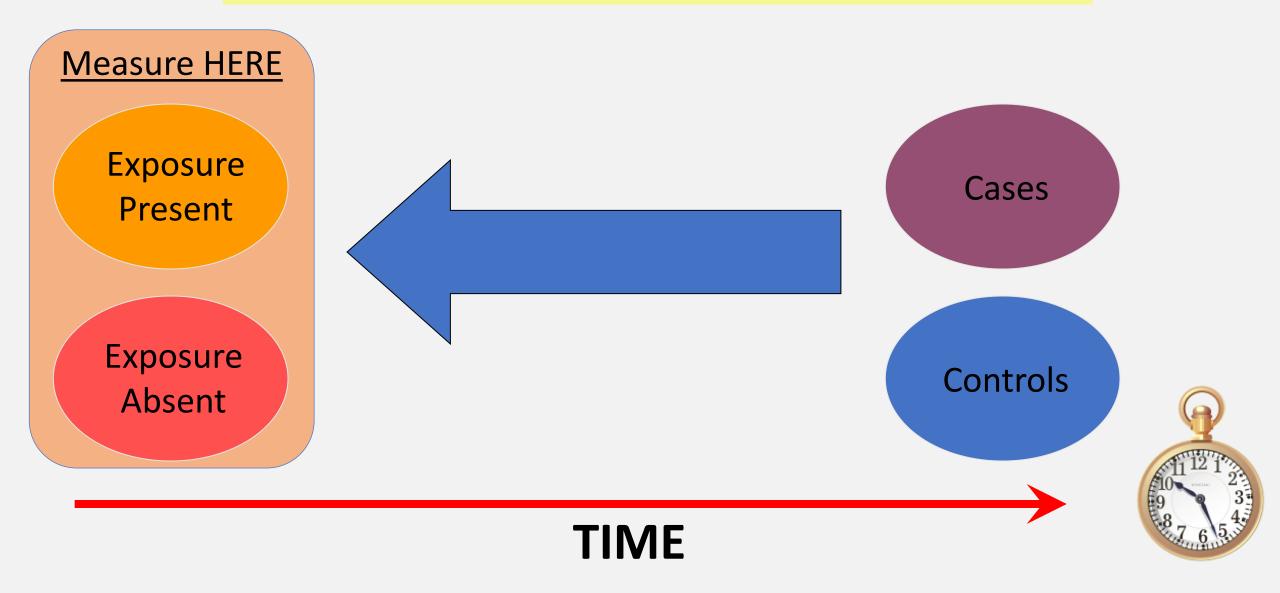How often does an event occur … compared to how often is does not?

<u>Odds of Purple</u>

$$\frac{3}{1} = 3$$

Notice a trend?

RISK	ODDS
0.9	9
0.75	3
0.5	1
0.33	0.5
0.20	0.25
0.1	0.11
0.01	0.01

Odds Ratio

$$\frac{\text{ODDS of exposure when outcome occurs}}{\text{ODDS of exposure when outcome does NOT occur}}$$

Odds Ratio

$$\frac{\text{ODDS of pet(s) in home in people WITH asthma}}{\text{ODDS of pet(s) in home in people WITHOUT asthma}}$$
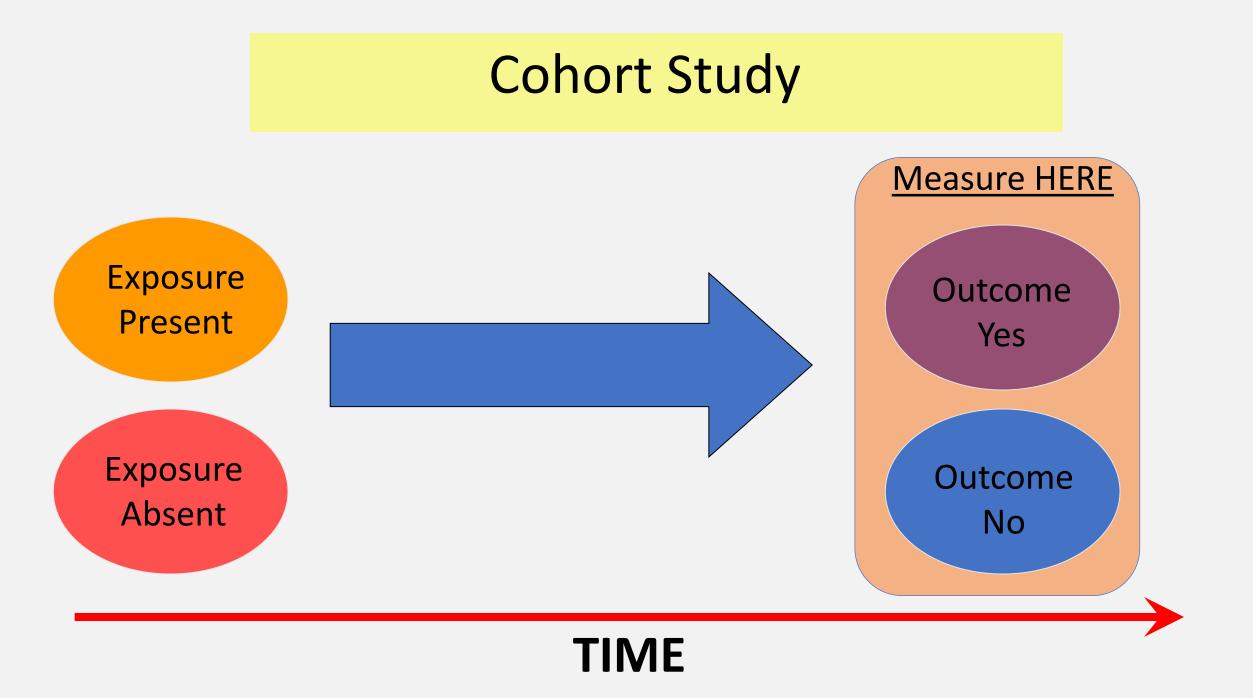
The Angels in Heaven know your Fate

Asthma

+   -

A Outcome present in exposed pt	**B** Outcome absent in exposed pt
C Outcome present in unexposed pt	**D** Outcome absent in unexposed pt

+

-

COHORT STUDY

ODDS

Asthma

	+	-
+	50	200
-	100	1800

CASE-CONTROL STUDY

ODDS

Asthma

	+	-
+	50	200
-	100	1800

What are the Results?

**Page 786
Table II**

TABLE II. Parental atopy and pet keeping by case and control subjects

Characteristics	Case subjects n (%)	Control subjects n (%)
Total	521	932
Parental atopic diseases		
Maternal allergy	85 (16.3)	108 (11.6)
Paternal allergy	47 (9.0)	48 (5.2)
Maternal asthma	66 (12.7)	64 (6.9)
Paternal asthma	62 (11.9)	48 (5.2)
Any	186 (35.7)	204 (21.9)
Pets		
Never	134 (25.7)	269 (28.9)
Currently	222 (42.7)	420 (45.1)
Only >12 mo previously	165 (31.7)	243 (26.1)
Sometimes	387 (74.3)	663 (71.1)
Currently (previous 12 mo)		
No pets	299 (57.4)	512 (54.9)
Cats	108 (20.7)	191 (20.5)
Dogs	124 (23.8)	252 (27.0)
Birds	7 (1.3)	8 (0.9)
Mice, guinea pigs, or rabbits	23 (4.4)	30 (3.2)
Other	12 (2.3)	19 (2.0)
Only >12 mo previously		
No pets	221 (42.4)	662 (71.0)
Cats	90 (17.3)	122 (13.1)
Dogs	111 (21.3)	142 (15.2)
Birds	31 (6.0)	32 (3.4)
Mice, guinea pigs, or rabbits	50 (9.6)	73 (7.8)
Other	18 (3.5)	29 (3.1)

Group 3 — Currently: 222 (42.7) / 420 (45.1)

Group 1 — No pets: 221 (42.4) / 662 (71.0)

Group 2 — Dogs: 111 (21.3) / 142 (15.2)