Contact precautions: Friend or foe?

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Questions to be addressed

- Do contact precautions cause harm?
  - Do they result in reduced frequency of visits?
  - Do they cause anxiety?
  - Do they cause depression?
  - Do they lead to adverse events?
- Additional questions:
  - Do they impact eligibility/placement in home care and continuing care?
  - Do patients have the right to refuse screening (or should they)?

There is a tremendous benefit of contact precautions

How much of transmission is patient-to-patient?

- Studies have estimated that up to 37% of nosocomial infections in ICUs are directly attributable to transmission of resistant organisms across patients
- Gloves and gowns may prevent up to 1/3 of infections

Grundmann H et al., Crit Care Med 2005:946 | Weist K et al., ICHE 2002:127

Benefits: healthcare worker hands are contaminated prior to entry

- Contact precautions (use of gloves) prevent this potential transmission to patients
- One study showed 11% Staph aureus, 6% Acinetobacter, 2% Enterococcus[1]
- Our group showed MRSA 2%, Acinetobacter 2%[2]

[1]Munoz-Price LS et al., AJIC 2012:e245 [2]Morgan DJ et al., ICHE 2010:716

Clothing is frequently contaminated

- Lab coats are frequently contaminated[1]
  - Among 149 grand rounds attendees, 23% were contaminated with *S aureus*, of which 18% were MRSA
- Scrubs are frequently contaminated[2]
  - MRSA contamination of 50%
  - Gram-negative contamination of 13%

[1]Treakle AM et al. AJIC 2009:101 [2]Bearman GM et al. ICHE 2012:268

Contact precautions: gloves and gowns are protective

Organism	Glove or Gown Contamination rate post patient contact	Gown Contamination post patient contact
VRE	11%	5%
MRSA	16%	5%
KPC	14%	3%
MDR *P. aeruginosa*	14%	3%
MDR *A. baumannii*	33%	13%

Snyder et al ICHE 2008; Morgan et al ICHE 2010/CCM 2012; Rock et al ICHE 2014

Experts like the CDC recommend it

- CDC in their MDRO guidelines recommend Contact Precautions
  - "Successful control of MDROs has been documented in the United States and abroad using a variety of combined interventions. These include improvements in hand hygiene, use of Contact Precautions until patients are culture-negative for a target MDRO, active surveillance cultures (ASC), education, enhanced environmental cleaning, and improvements in communication about patients with MDROs within and between healthcare facilities."

Siegel JD et al., AJIC 2007:S65

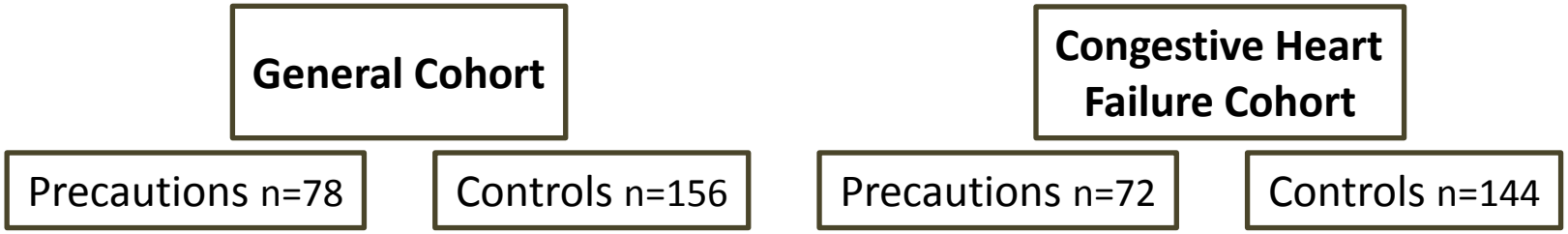
Potential cons of contact precautions

- Decreased frequency of healthcare worker visits
- Adverse events
- Anxiety
- Depression

Contact Precautions do lead to less healthcare worker visits

	Design	Effect
Kirkland & Weinstein 1999	Cohort	2.1 vs. 4.2 hourly contacts with HCWs
Saint et al 2003	Cohort	35% vs. 73% patients examined by attending physicians
Evans et al 2003	Matched cohort	5.3 vs. 10.9 contacts HCWs 22% less contact time overall
Morgan et al 2013	Cohort	2.78 vs. 4.37 visits/hour 17.7% less contact time 23.6% fewer visitors
Harris et al 2013	**Randomized controlled trial**	4.28 vs. 5.24 visits/hour

Major paper that suggested increase in adverse events: Stelfox et al.



Outcomes:		
Length of Stay*	**31 vs. 12 days**	**8 vs. 6 days**
any Adverse Event*	**17% vs. 7%**	**47% vs. 25%**
Preventable AE*	**12% vs. 3%**	**29% vs. 4%**
Death	27% vs. 18%	21% vs. 15%

Stelfox et al. JAMA 2003

Major paper that suggested increase in adverse events: Stelfox et al.

Difference in Adverse Events due to:

—falls

— pressure ulcers

— fluid & electrolyte disorders

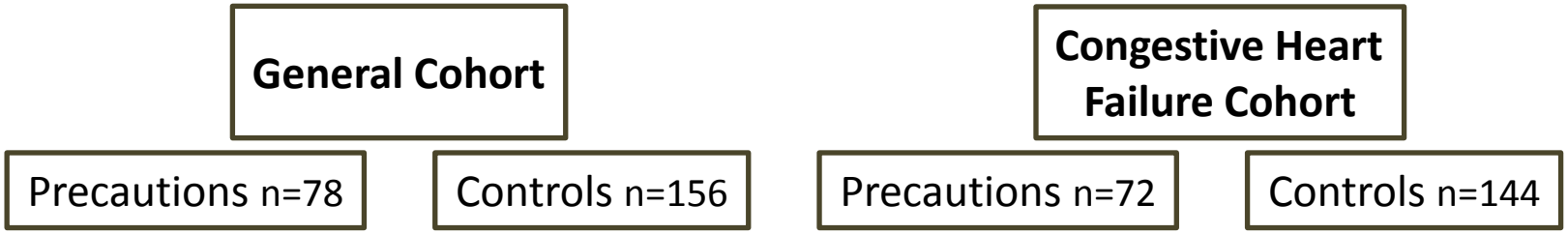
Preventable AE*	**12% vs. 3%**	**29% vs. 4%**
Death	27% vs. 18%	21% vs. 15%

Rate Ratio (RR) any AE 2.2

Rate Ratio (RR) preventable AE 7.0

Stelfox et al. JAMA 2003

Major paper that suggested increase in adverse events: Stelfox et al.

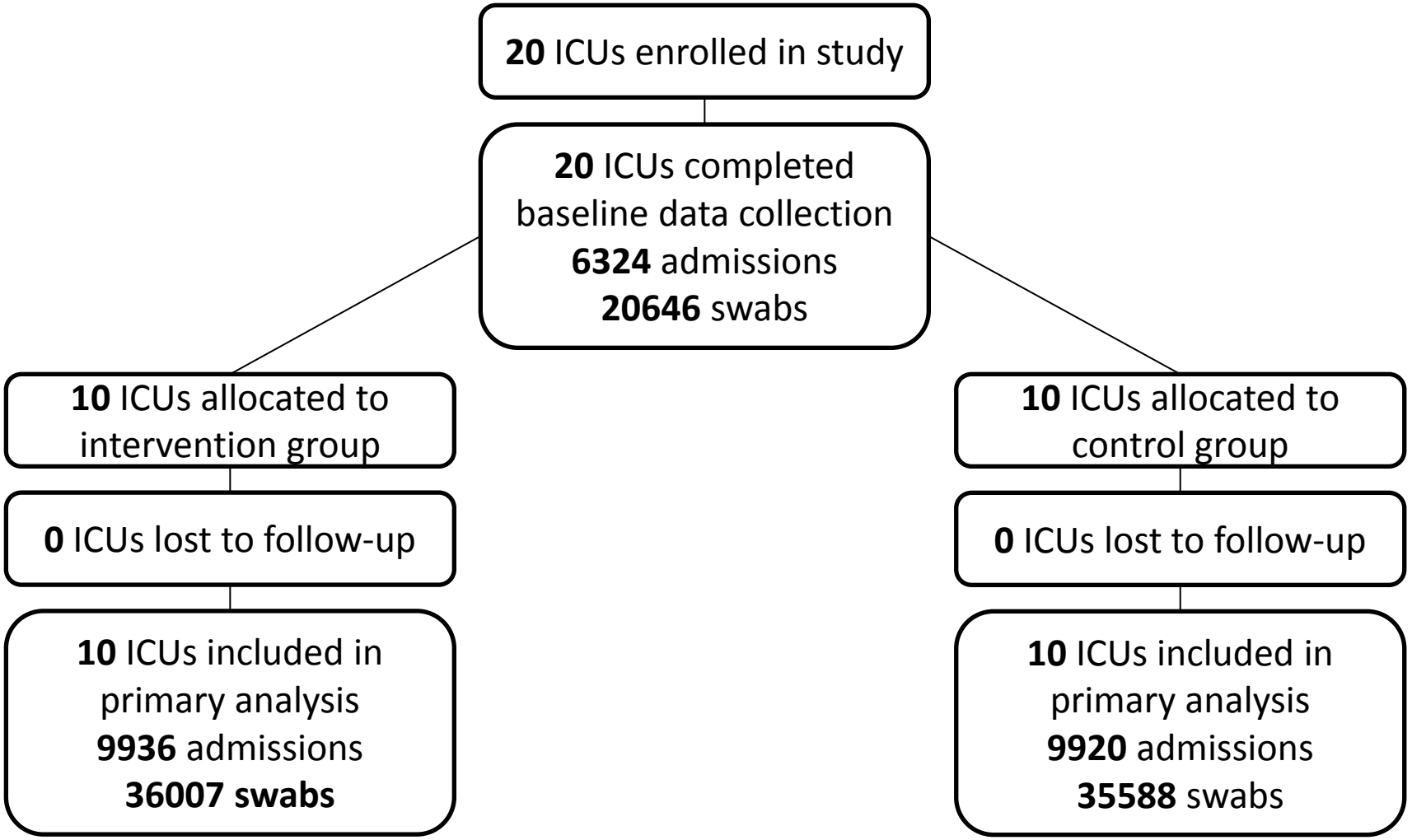


However, study never adequately controlled for severity of illness

Preventable AE*	**12% vs. 3%**	**29% vs. 4%**
Death	27% vs. 18%	21% vs. 15%

Rate Ratio (RR) any AE 2.2
Rate Ratio (RR) <u>preventable</u> AE 7.0

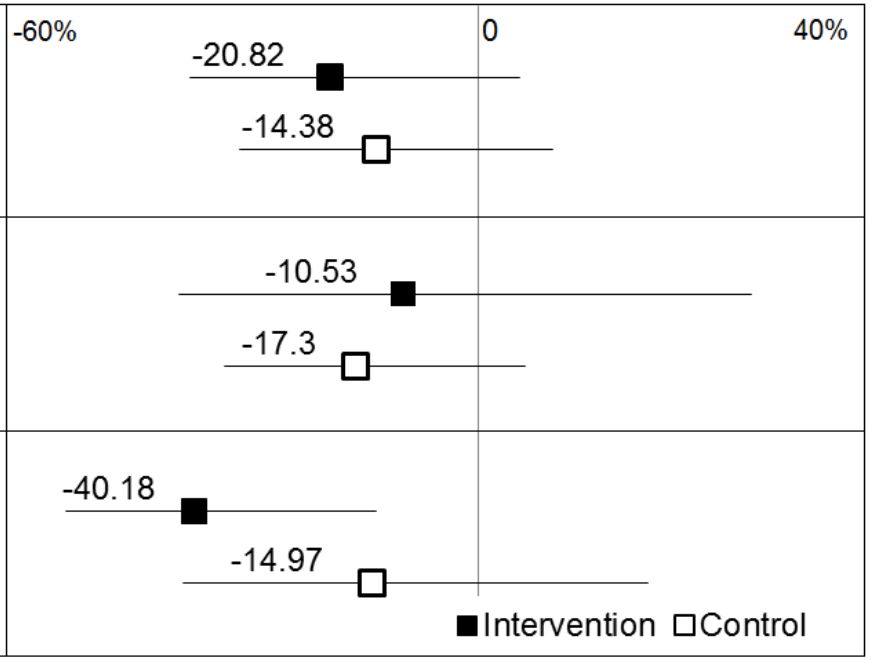
BUGG study overview



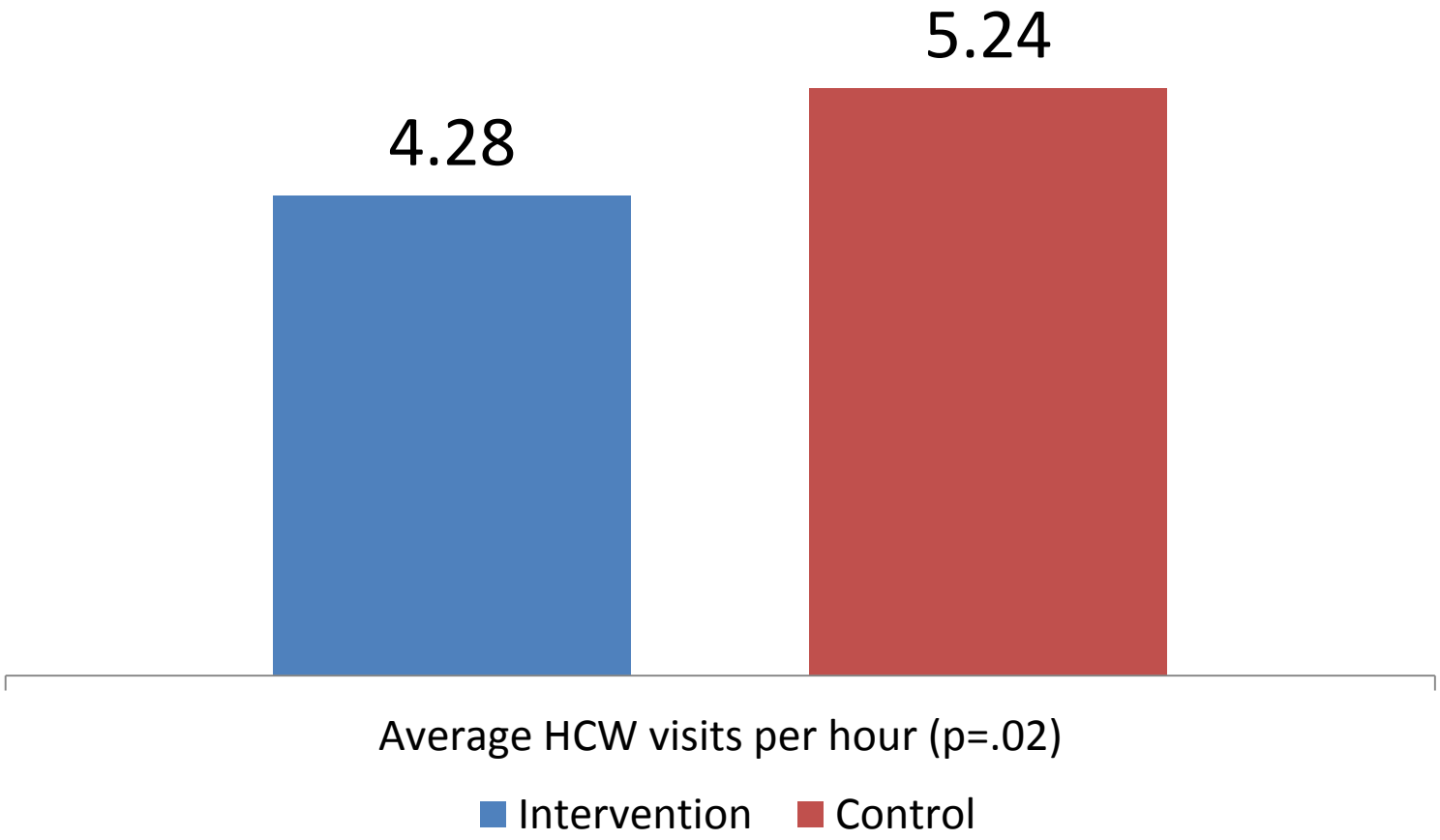
Harris et al., JAMA 2013

BUGG study: decreased MRSA, no effect on VRE

	Mean acquisition rate					
	INTERVENTION		CONTROL			
	Baseline	Study	Baseline	Study	P-value	% relative change in rate from baseline to study period
VRE or MRSA	21.35	16.91	19.02	16.29	0.57	-20.82, -14.38
VRE	15.18	13.59	14.37	11.88	0.70	-10.53, -17.3
MRSA	10.03	6.00	6.98	5.94	0.046	-40.18, -14.97



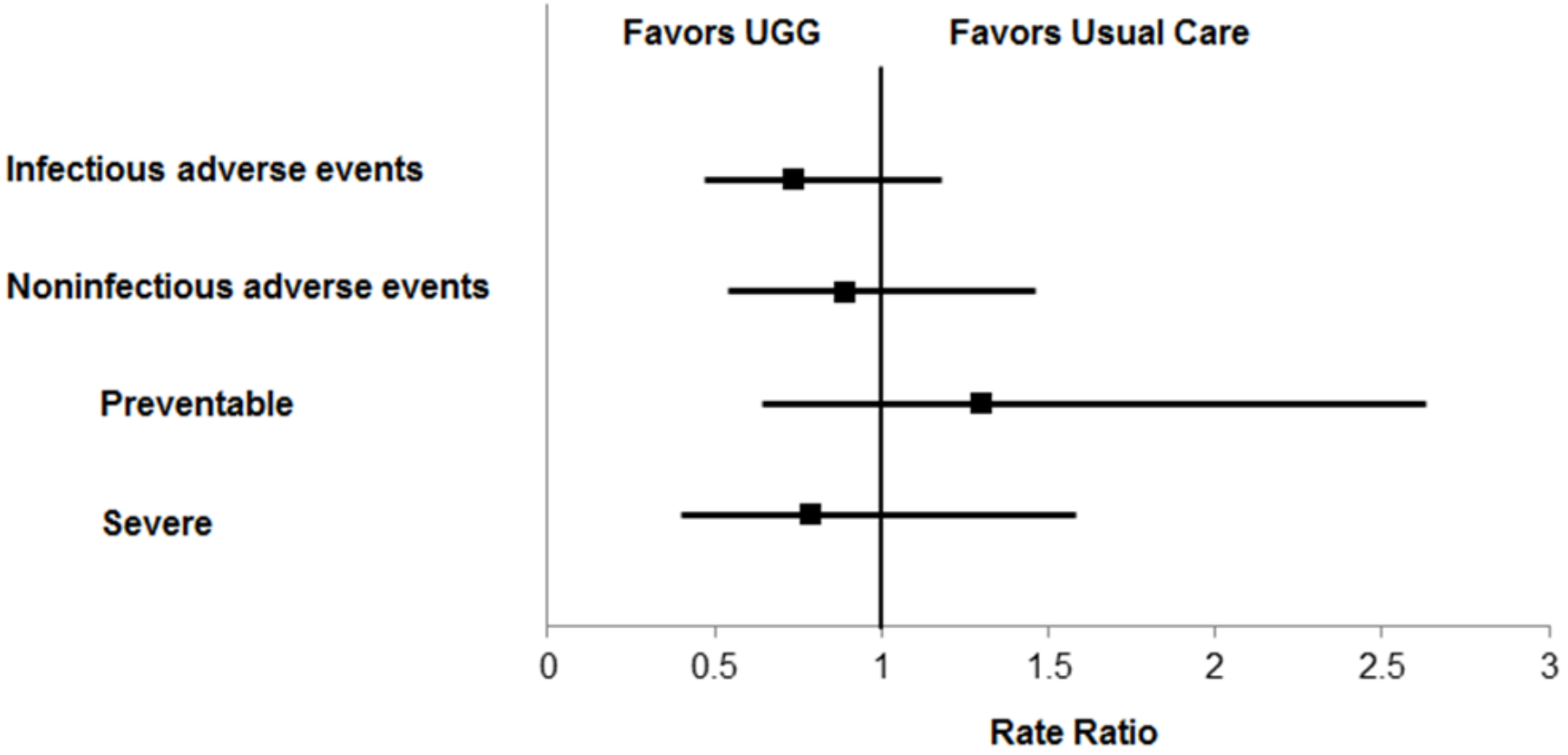
BUGG study: decreased HCW visits with gown and gloving



BUGG study: trend towards decreased adverse events

- ICU adverse events lower in the intervention arm but this difference is not statistically significant (p=.24)
  - 58.7 events per 1000 patient days universal glove and gown
  - 74.4 events per 1000 patient days control

Figure. Adjusted rate of adverse events among 900 patients in universal glove and gown (UGG) use ICUs compared with 900 patients in usual care ICUs by subtype of adverse event.



[a]boxes represent estimate and lines represent 95% confidence intervals

Early cross-sectional studies suggested increased depression and anxiety

	Setting	Design	Effect
Kennedy & Hamilton 1997	Spinal Cord rehab unit	16 cases/ 16 controls	85% believed CP limited rehab, More Anger 12.3 vs. 16.5 depression scores (NS)
Gammon 1998	Wards, 3 hospitals	20 cases/ 20 controls	30% higher depression and anxiety scores
Tarzi et al 2001	Rehab unit	20 cases/ 20 controls	33% vs. 77% depression 8.6 vs. 15 anxiety scores
Wassenberg et al. 2010	Tertiary Hospital	42 cases/ 84 controls	Small, nonsignificant difference in depression/anxiety at admission
Day et al. 2011	Veterans Hospital	20 cases/ 83 controls	Small, nonsignificant difference in depression/anxiety at admission
Day et al. 2011	Tertiary Hospital	Cohort of 28,564	40% more diagnoses of depression No difference in diagnosis of anxiety

Cross-Sectional Studies of Psychological Effects

	Setting	Design	Effect
Kennedy & Hamilton 1997	Spinal Cord rehab unit	16 cases/ 16 controls	85% believed CP limited rehab, More Anger
		20 controls	8.6 vs. 15 anxiety scores
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All are studies of prevalence….do not show causality

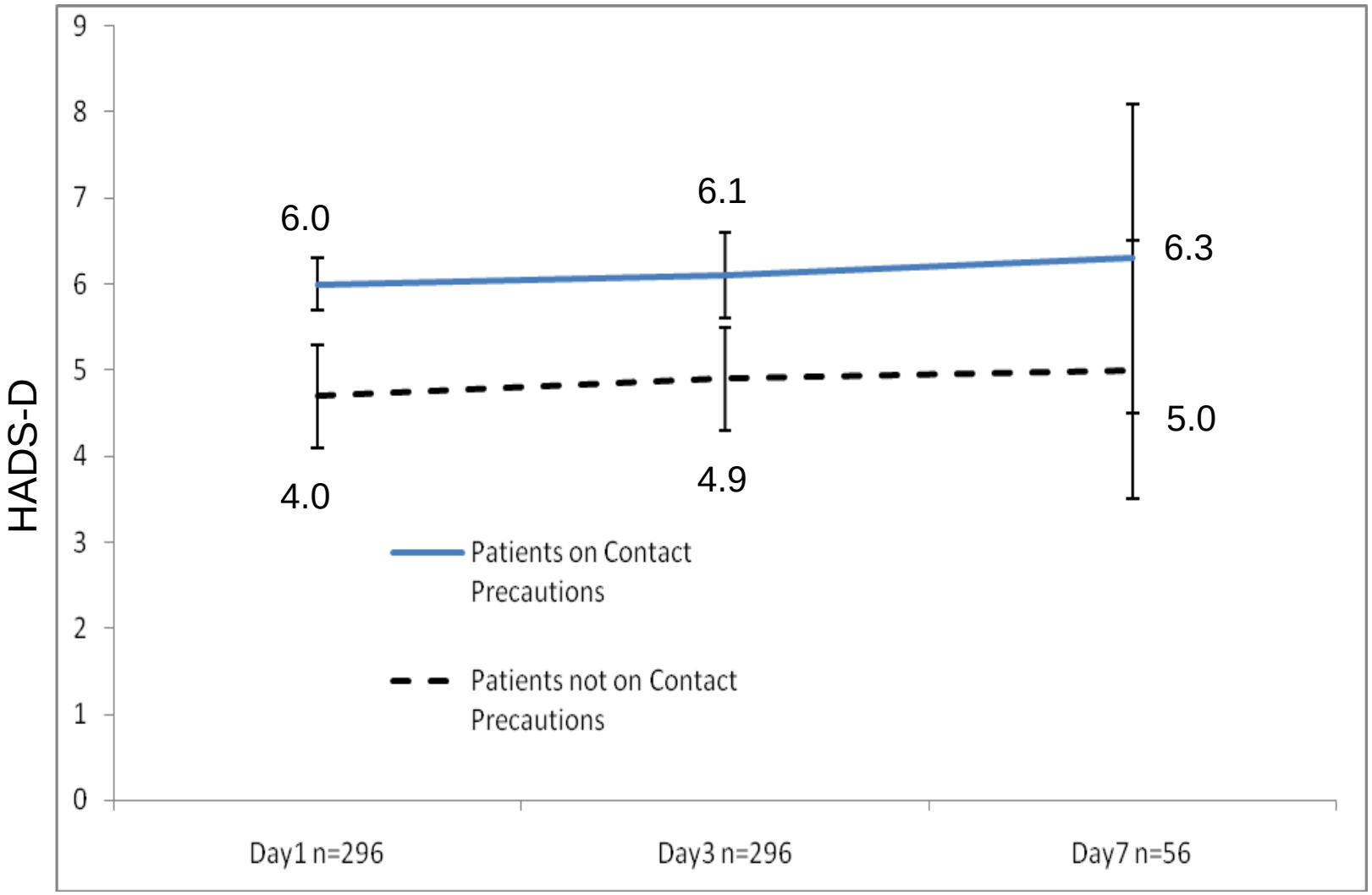
(Contact Precautions = sicker patients)

Depression, Anxiety and Emotional States in Contact Precautions: Cohort study

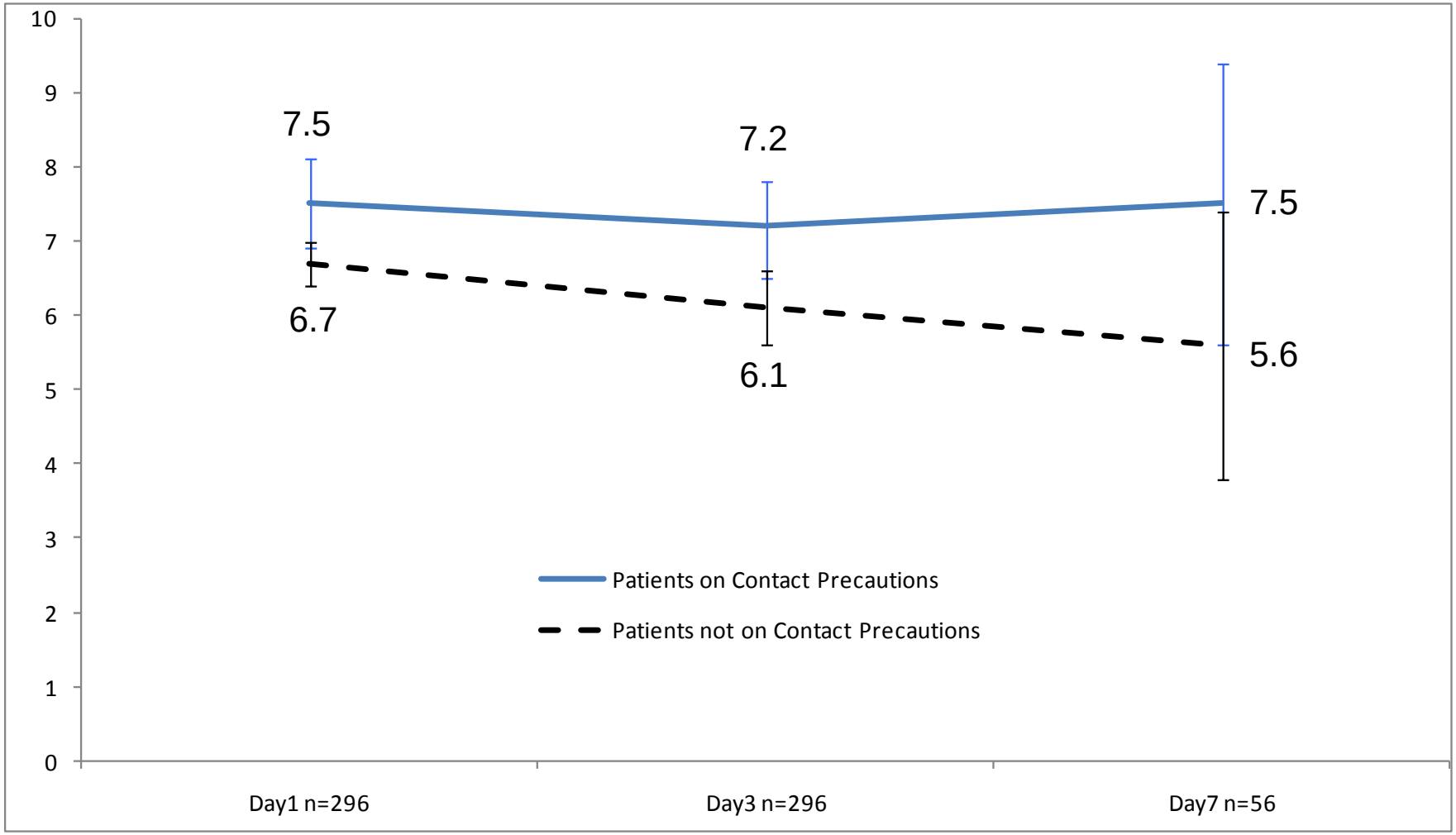
- Prospective Cohort Study
- Patients exposed to contact precautions matched to unexposed by hospital ward and month
- 148 cases vs. 148 controls
- Hospital Anxiety and Depression Scale
- (HADS)

Day et al., Infection Control and Hospital Epidemiology 2013

Depressive Symptoms Stable with CP



Anxiety symptoms stable with CP



Summary of Psychological effects of Contact Precautions

- Patients on Contact Precautions tend to have more depression and anxiety on admission
- Exposure to Contact Precautions does not appear to cause more depression, anxiety or emotional changes

Additional questions

- Contact precautions should not affect the flow of patients to long-term care facilities
  - However, in the late 1990s they did

Additional question: Should patients be allowed to refuse active surveillance

- I think they should be allowed to refuse active surveillance although it is a minimal risk procedure with really no side effects
- I don’t think patients should be allowed to refuse the use of contact precautions
  - Public health good outweighs any potential individual negative

Conclusions

- My personal opinion based on my group's work and review of the literature.
  - Patients should have the right to refuse active surveillance culturing.
  - The adverse events associated with contact precautions have been dramatically overstated.
  - Contact precautions do not cause increased anxiety or depression.
  - Contact precautions do not lead to an increase in adverse events.
  - Contact precautions do lead to a decrease in healthcare worker visits whose effect at this point in time is not certain.

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