

## Background

- Urinalysis with reflex to culture protocols have been associated with a decrease in urine cultures performed<sup>1-4</sup> and a decrease in antimicrobial utilization in catheterized patients<sup>2,3</sup>; however, the clinical impact is less clear in patients with a positive urine culture.
- Recent literature suggests that patients with positive urinalyses are more likely to receive antimicrobial therapy, despite having a negative urine cultures, irrespective of reported urinary symptoms.<sup>5</sup>
- Temple University Hospital (TUH) recently implemented a protocol in which providers can only order a urinalysis with reflex to culture instead of a urinalysis and urine culture separately. With this new protocol, a urinalysis will only be sent to culture in the presence of at least 10 WBC/hpf in the microscopy. The impact of this new protocol on antimicrobial prescribing practices is unknown.

## Objective

To compare appropriate antimicrobial use for patients with a positive urine culture before and after implementation of the urinalysis with reflex to culture protocol

## Methods

- This single center, quasi-experimental, retrospective chart review included patients 18 years and older who had a urinalysis and urine culture ordered during their hospitalization at TUH.
- A pre-intervention group included patients admitted from 1/1/2018 to 7/30/2018 and a post-intervention group included patients admitted from 1/1/2019 to 11/30/2019.
- The primary endpoint was the percentage of patients with appropriate management of the positive urine culture before and after implementation of the protocol.
- Appropriate management was defined as receipt of antimicrobials with at least one urinary symptom or no receipt of antimicrobials with no urinary symptoms. Inappropriate management was defined as receipt of antimicrobials with no urinary symptoms or no receipt of antimicrobials with urinary symptoms.
- Duration of therapy and appropriate duration were assessed as secondary endpoints. Duration was reported for all patients and appropriate duration was assessed in appropriate patients only. Symptoms and durations were defined by IDSA Guidelines.<sup>6,7</sup>
- A sample size of 334 cultures was needed to detect a 15% difference in antimicrobial use between the two groups. Categorical variables were reported as frequencies and percentages and continuous variables were reported as medians (ranges) or means and standard deviations.

## Results

Table 1: Patient Characteristics

Variable	Total (n=334)	Pre-Intervention (n=167)	Post-Intervention (n=167)
Age, median (IQR) years	66.0 (53.0-76.0)	68.0 (52.0-76.0)	64.0 (55.0-75.0)
Male, n (%)	118 (35.3)	60 (35.9)	58 (34.7)
Immunocompromised, n (%)	71 (21.3)	38 (22.8)	33 (19.8)
Catheter within 48 hours, n (%)	168 (50.3)	81 (48.5)	87 (52.1)
Urinary symptoms, n (%)*	151 (45.2)	81 (48.5)	70 (41.9)
Dysuria	69 (20.7)	37 (22.2)	32 (19.2)
Urgent or frequent urination	52 (15.6)	33 (19.8)	19 (11.4)
Suprapubic pain or tenderness	64 (19.2)	27 (16.2)	37 (22.2)
Flank pain	46 (13.8)	23 (13.8)	23 (13.8)
Costovertebral angle tenderness	33 (9.9)	16 (9.6)	17 (10.2)
Increased spasticity, autonomic dysreflexia, or sense of unease in patients with spinal cord injury	5 (1.5)	4 (2.4)	1 (0.6)
Antimicrobials, n (%)	286 (85.6)	142 (85.0)	144 (86.2)

\*Patients could have > 1 urinary symptoms

Figure 1: Appropriate Management

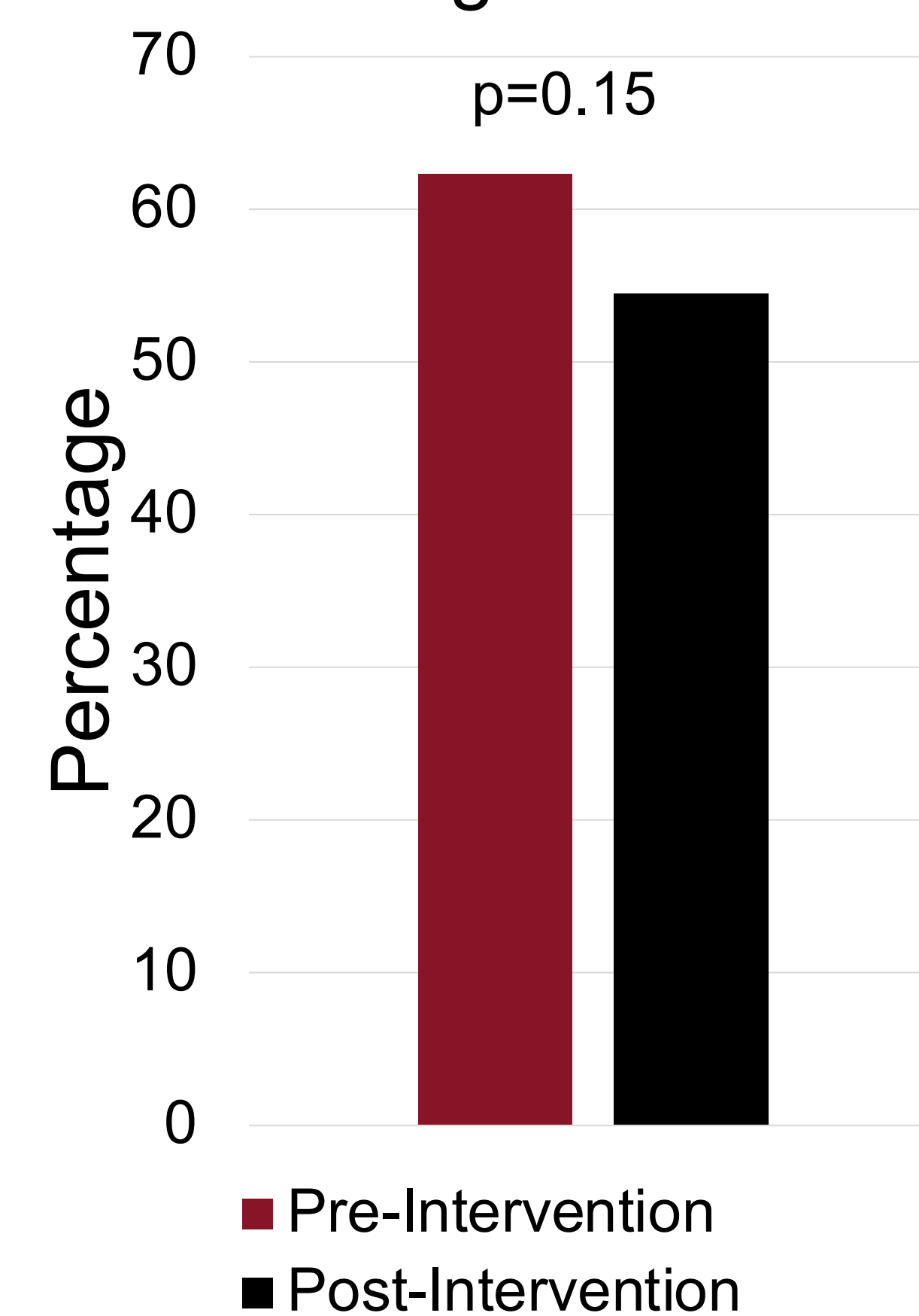


Figure 2: Duration of Therapy

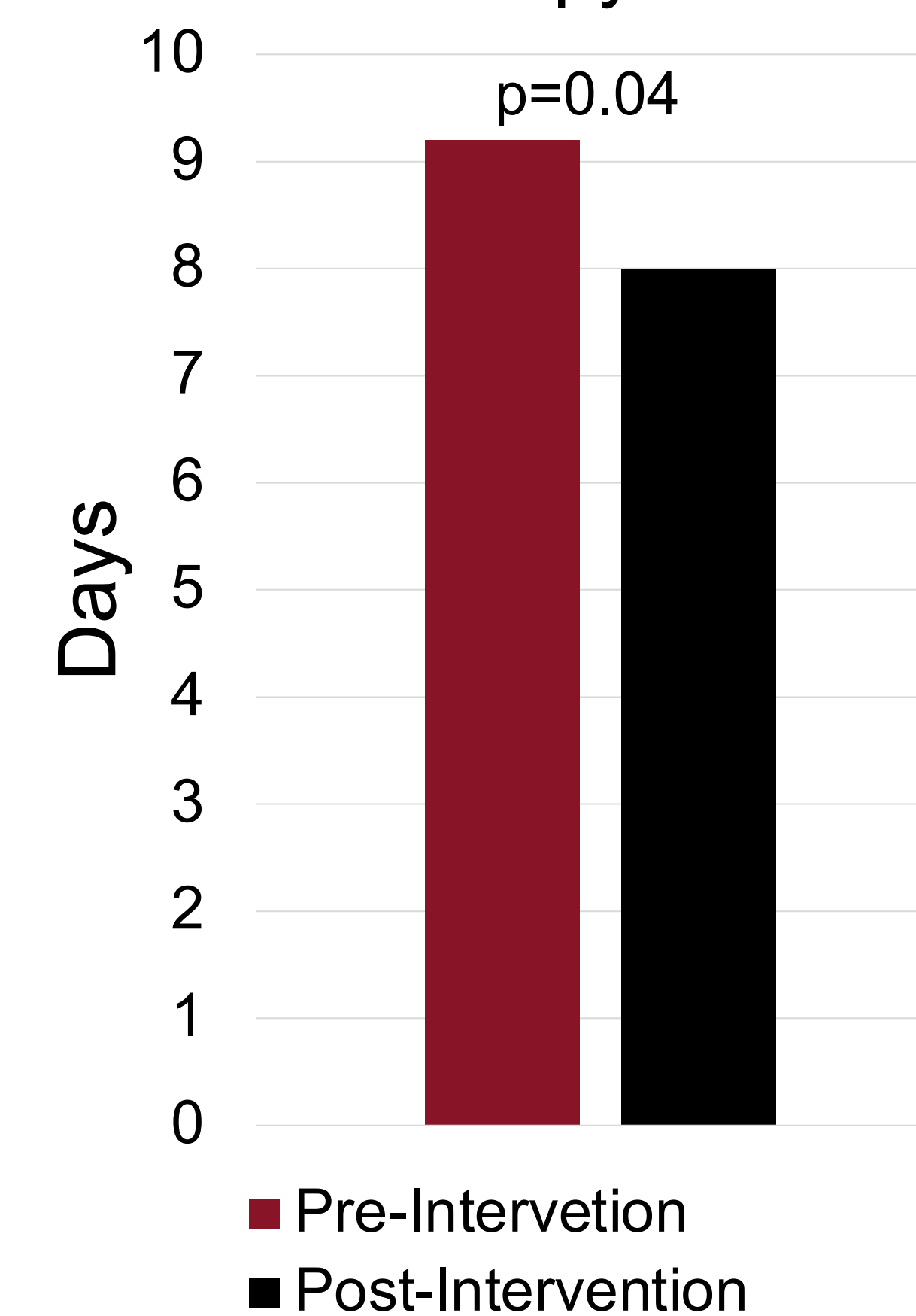


Figure 3: Appropriate Duration of Therapy

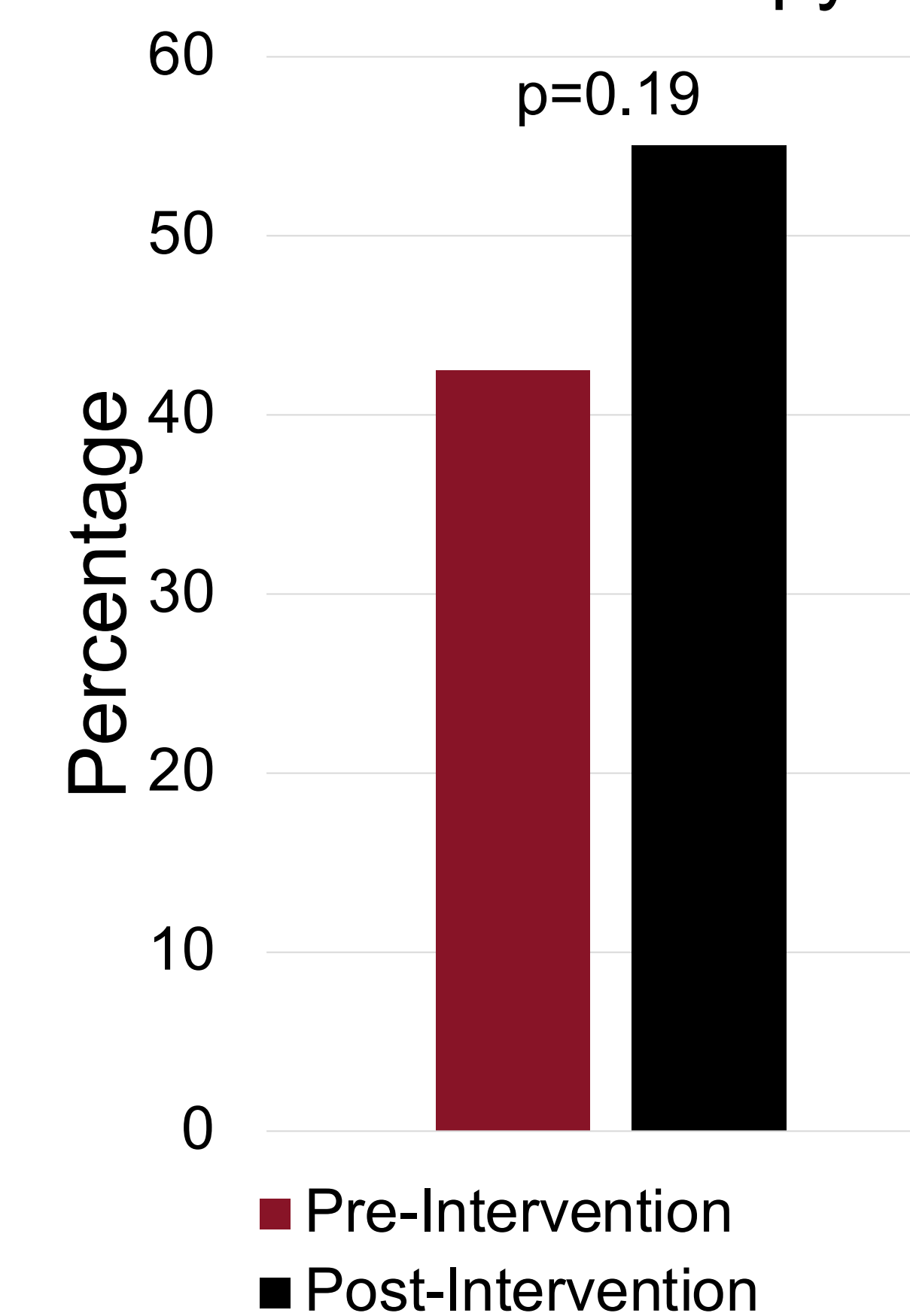


Table 2: Primary and Secondary Endpoints in Catheterized Patients

Endpoint	Pre-Intervention (n=81)	Post-Intervention (n=87)	P value
Appropriate Management, n (%)	41 (50.6)	40 (45.9)	0.59
Appropriate Duration of Therapy, n (%)	20 (64.5)	19 (57.5)	0.77

## Conclusion

- Our study found no statistically significant difference in the appropriateness of management of patients with a positive urine culture following implementation of a urinalysis with reflex to culture protocol, with a trend towards a decrease in appropriate prescribing following implementation of the protocol (62% vs. 54%).
- We did find a statistically significant decrease in the duration of antimicrobial therapy following implementation of the protocol of approximately one day, suggesting that this protocol may still have a positive impact on antimicrobial stewardship in patients with a positive urine culture.
- Appropriate management, including antimicrobial initiation and duration of therapy, of patients with a positive urine culture did not statistically differ in catheterized patients before and after implementation of the protocol.
- Additional interventions may be required to further optimize management of bacteriuria in hospitalized patients in addition to the urinalysis with reflex to culture protocol.

## References

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## Disclosures

Authors have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation.