

# RAPID MULTIPLEX MOLECULAR DETECTION OF VIRUSES IN CEREBROSPINAL FLUID OF INFANTS FACILITATES FASTER HOSPITAL DISCHARGE

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## INTRODUCTION

Syndrome based multiplex PCR panels are increasingly being used by clinical laboratories to improve clinical outcomes and facilitate more timely patient discharge. One such FDA-approved panel, the meningitis/encephalitis (ME) panel, allows for rapid detection of commonly isolated bacterial, viral and fungal targets in cerebrospinal fluid (CSF). This panel was implemented in our laboratory in May of 2016. This pre vs. post study investigated the impact of ME panel testing on days to discharge post CSF collection in infants at our institution.

## METHODS

### ➤ Retrospective pre- and post-intervention analysis

- Pre-implementation period: 5/16/15 – 12/31/15
- Post-implementation period: 5/16/16 – 12/31/16

### ➤ Inclusion criteria

- Infants ≤ 90 days who had CSF submitted for bacterial culture

### ➤ Exclusion criteria

- Infants ≤ 90 days with CSF positivity for HSV-1 or HSV-2

### ➤ Patient data collected

- Age on the date of CSF submission
- Date of specimen collection
- Laboratory testing results
- Date of hospital discharge

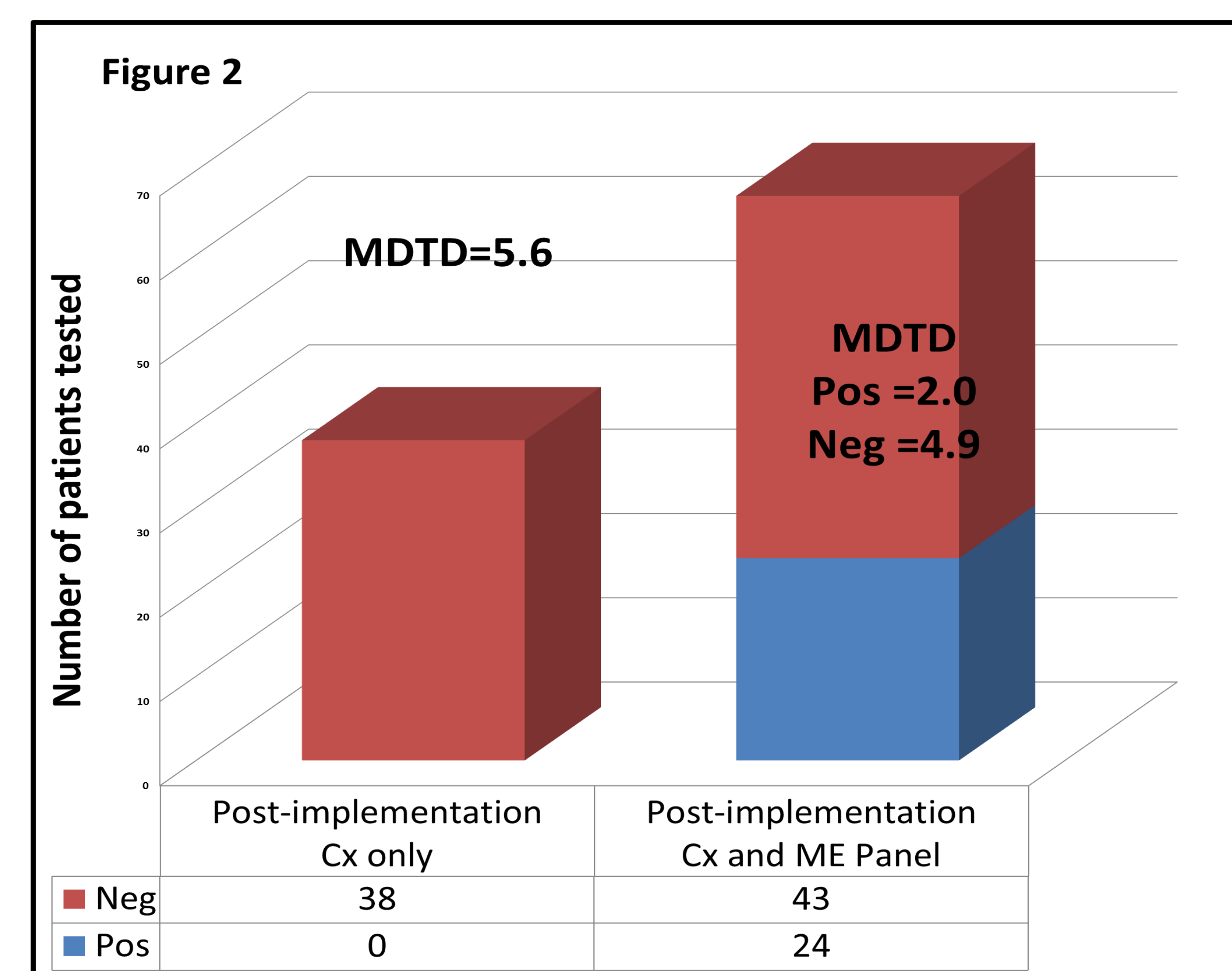
### ➤ Calculation of mean days from CSF specimen collection to hospital discharge (MDTD)

- Infants for whom CSF bacterial culture only performed (2015 and 2016)
- Infants for whom CSF bacterial culture plus single virus testing performed (2015)
  - Viral pathogen positive or negative
- Infants for whom CSF bacterial culture plus panel testing was performed (2016)
  - Viral pathogen positive or negative

## RESULTS (con't)

### ➤ Post-implementation (Figure 2)

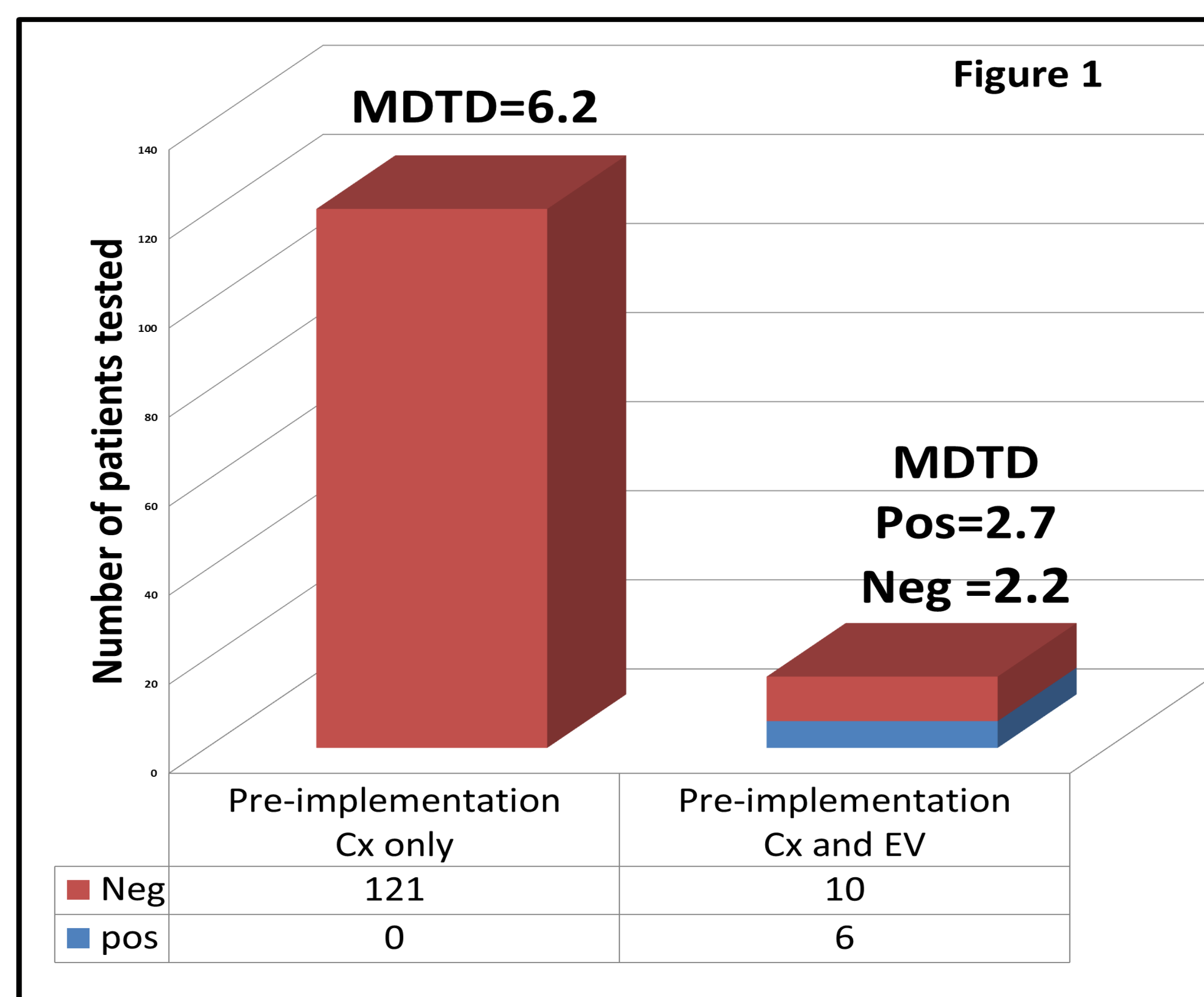
- CSF from 105 patients submitted for bacterial culture
- ME panel testing performed for 67/105 (64%)
- MDTD for culture only = 5.6
- MDTD for culture plus panel testing = 4.7
- Negative panel testing for all targets = 43/67 (64%)
  - MDTD = 4.9
- Positive panel testing for a viral target = 24/67 (36%) (Figure 3)
  - MDTD = 2.0



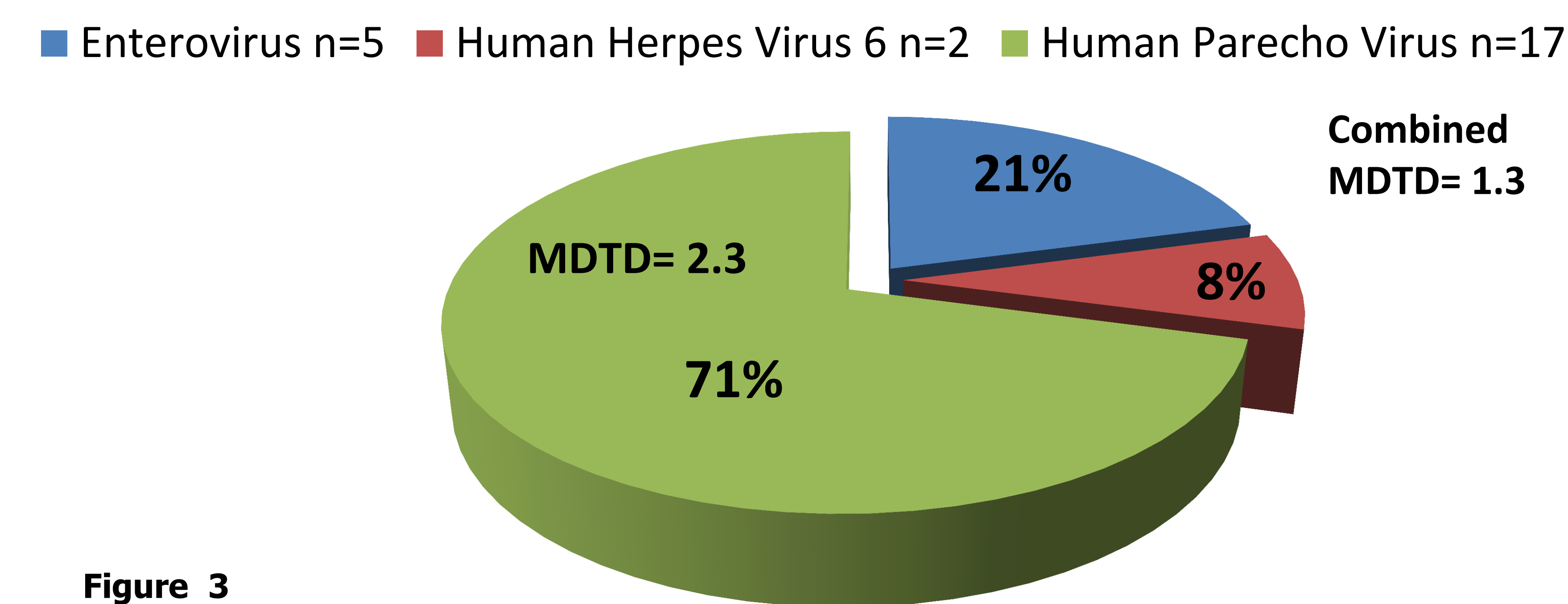
## RESULTS

### ➤ Pre-implementation (Figure 1)

- CSF from 121 patients submitted for bacterial culture
- All cultures negative, and MDTD = 6.2
- Enterovirus (EV) – only viral target for which CSF testing was available in 2015
- EV testing performed for 16/121 (13%), with 6/16 (38%) EV positives
  - EV positive MDTD = 2.7
  - EV negative MDTD = 2.2



## Viral Activity Detected



## CONCLUSIONS

- Syndrome based multiplex PCR panel testing of CSF in infants was frequently utilized by physicians: 64% utilization rate at our institution (vs. 13% utilization rate of single pathogen [EV] testing)
- Panel testing was positive in 36% of infants tested, and 19/24 (79%) would have otherwise remained undiagnosed in the absence of panel testing
- Detection of viruses other than HSV-1 or HSV-2 in infant CSF led to earlier hospital discharge
- No infants in either the pre- or post-implementation periods testing positive for a viral target had concurrent CSF, blood, and/or urine culture positivity