Visualizing Better Ways to Secure Airways

I-GEL PLACEMENT AND VIDEO LARYNGOSCOPY

Jon Jui MD, MPH

MCEMS i-gel : January 1 to August 31, 2017

	Number	Percent
Successful	**115**	**94%**
Unsuccessful	**7**	**6%**
Total	**122**	**100%**

MCEMS i-gel Pediatric 2017

- 2017 successful - 92% (13/14)

Video Laryngoscopy vs Direct Laryngoscopy

Which is Better
Old School vs. New School ?

DL

VL

Warning:
This is NOT a discussion on devices but on deployment and training.

Questions

- How should we deploy?
  - Experienced users

    VS.

  - Less experienced users

- How do you deploy and train on this new technology
  - - Differences in training new paramedic vs. experienced paramedic

“Is video laryngoscopy superior to direct laryngoscopy for EMS providers”

Direct Laryngoscope (DL) vs Video Laryngoscope (VL)

Direct : DL

Video : VL

Direct Laryngoscopy Advantages

- Direct Laryngoscopy

- tried and tested method
- portable
- inexpensive
- **fogging and fluids have less impact** on equipment function
- **Success rate** of DL in expert hands approaches or is similar to VL
- a perfect view is not necessary for successful intubation

Video Laryngoscopy Advantages

- Generally higher success rate, especially in difficult situations
- Better view when mouth opening or neck mobility is limited (e.g. c-spine precautions)
- less risk of esophageal intubation
- less c-spine movement when c-spine precautions in place (conflicting evidence)

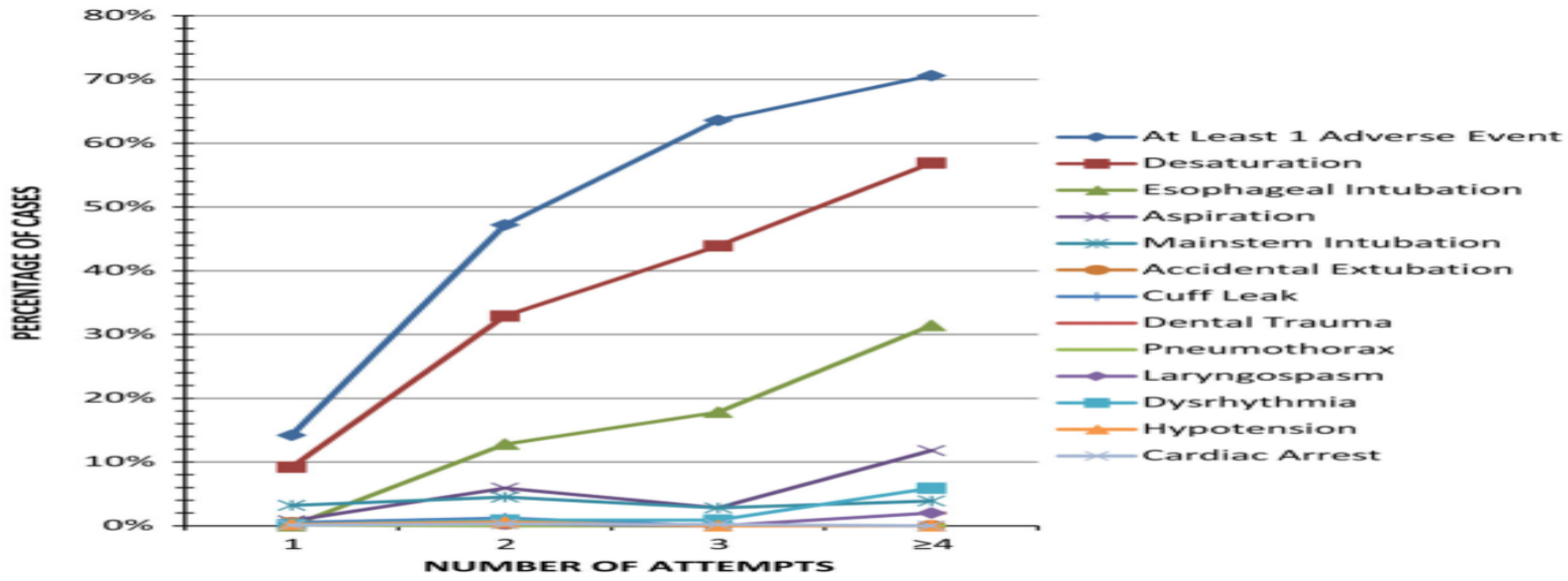
Video laryngoscopy Disadvantages

- **Direct laryngoscopy skills are not directly transferable to use of hyper angulated laryngoscopes**
- **Passage of tube may be difficult despite great view**; stylet often necessary
- **Fogging and secretions may obscure view**
- Potential for equipment failure
- More expensive
- may lead to deskilling at direct laryngoscopy over time
- Video screen may be difficult to visualize in the brightly lit outdoor setting

VL vs DL : Conclusion

- A device with both VL and DL capability offers the best of both worlds
- – direct laryngoscopy can be performed in the usual way, with the video as an immediately available back up

Intubation : Importance of First Pass Success

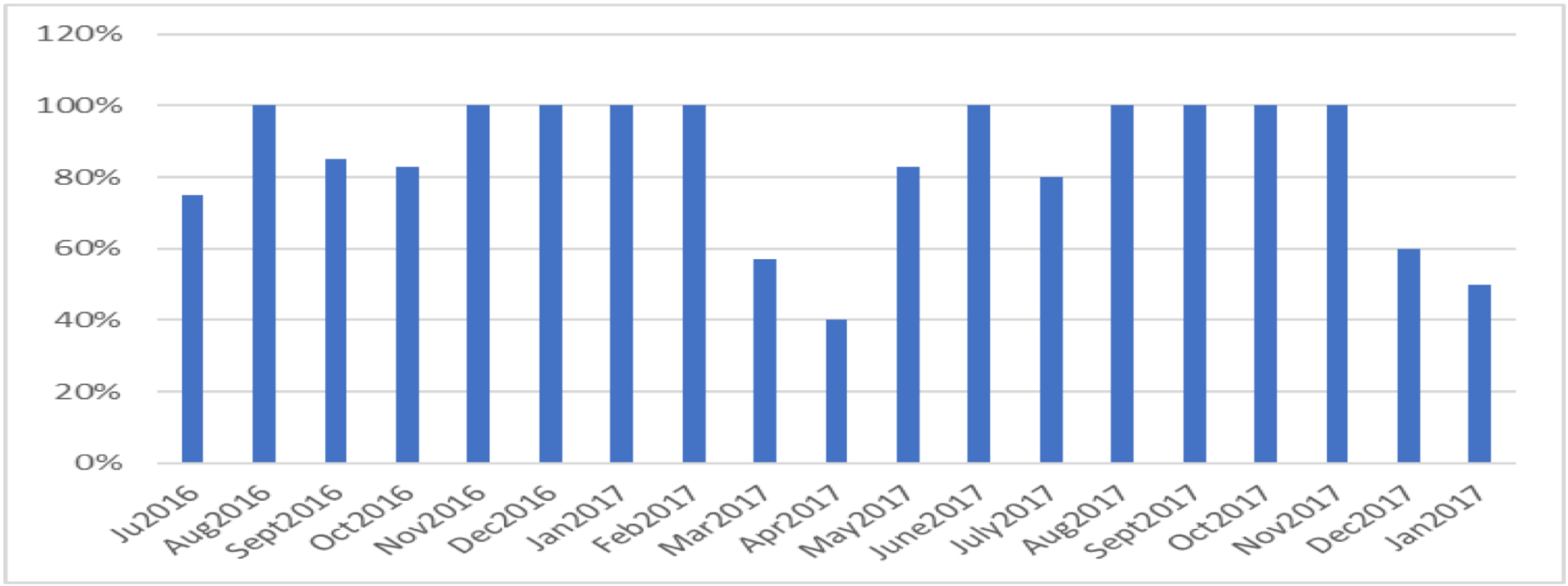


“Experience of one Fire Service in the Deployment of Videolaryngoscopy Lessons Learned”

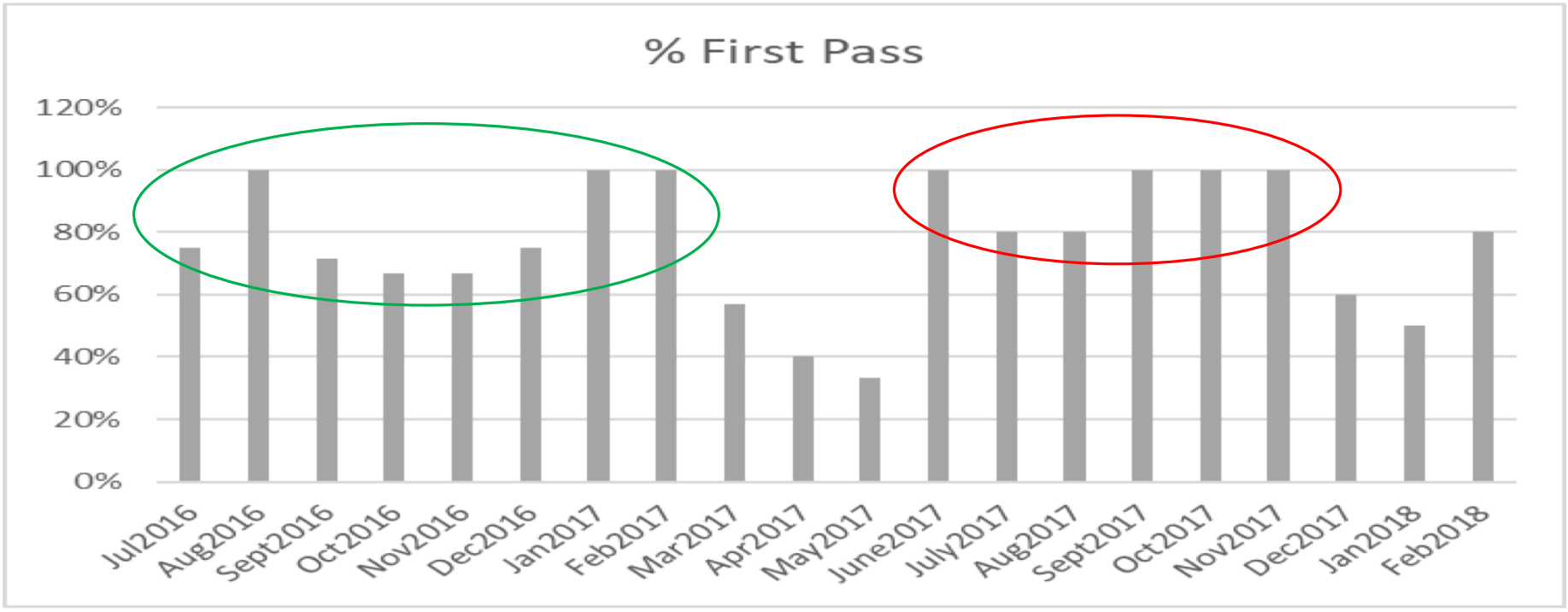
Gresham Fire Department Videolaryngoscopy Training

April	2016	DL Video training and written testing of intubation techniques
May	2016	Traditional Intubation training lab 1.5 hour peds and adult
June	2016	VL Video training and written testing
July	2016	Initial McGrath trainning with traditional intubation training 1.5 hours Adult
Nov/Dec	2016	Mandatory Paramedic Inservice
Feb/March	2017	ACLS/PALs Pediatric and adult intubation station
Nov	2017	Pediatric McGrath and traditional Training
Nov	2017	Surgical and Needle Cricothryotomy Training to everyone including basics
Nov/Dec	2017	Mandatory Paramedic Inservice
May	2018	Intubation Lab Scheduled

GFES Overall Success July 2016 - Jan 2018
Total Number = 122 attempts



GFES 1st Pass Success



Predictors of Failure: DL vs VL

DL

- High Mallampati score
- Reduced TM distance
- Obesity

VL

- Neck pathology
- Obesity
- Mallampati score did not predict VL failure
- Poor laryngeal view

Risk Factors for VL Failures

- Strongest predictor of failed VL intubation was
  - presence of airway pathology from previous surgery,
  - local mass
  - radiation

What does the literature tell us?

Cochrane Review : VL vs DL

BJA

British Journal of Anaesthesia, 119 (3): 369–83 (2017)

doi: 10.1093/bja/aex228
Review Article

Videolaryngoscopy versus direct laryngoscopy for adult patients requiring tracheal intubation: a Cochrane Systematic Review†

S. R. Lewis[1,*], A. R. Butler[1], J. Parker[2], T. M. Cook[3,4], O. J. Schofield-Robinson[1] and A. F. Smith[5]

[1]Patient Safety Research Department, Royal Lancaster Infirmary, Lancaster, UK, [2]Department of Gastroenterology, Royal Bolton Hospital, Bolton, UK, [3]Department of Anaesthesia, Royal United Hospitals Bath, NHS Foundation Trust, Bath, UK, [4]School of Clinical Sciences, University of Bristol, Bristol, UK and [5]Department of Anaesthesia, Royal Lancaster Infirmary, Lancaster, UK

Intubation Process

	Video Laryngoscopy	Direct Laryngoscopy
First Attempt Success		
Number of Attempts		
Time for intubation		
Difficulty in Intubation	VL easier to use than DL	
Improved visualization	Higher number of Cormack and Lehane grade 1 views	

Airway Outcomes

	Video Laryngoscopy	Direct Laryngoscopy
Failed Intubations	Fewer	
Hypoxia		
Mortality		
Serious Airway Complications		
Laryngeal airway trauma	Fewer complications	
Sore throat		

Conclusion VL Training

- Success and deployment of any new device or protocol to EMS agencies require patience and perseverance and adequate training with **periodic refreshing of skills.**
- General trend for improved overall success and first pass success
- Ideally, EMS personnel should have competency with both DL and VL devices.

Conclusion : My Opinions

- VL is a major paradigm change
- DL offers major advantages to EMS providers
- EMS providers must be able to use both DL and VL
- Training is the key to successful implementation of a new device

The END