

# ANALYSIS OF THE IMPACT OF AN EXPLODING ELECTRONIC CIGARETTE

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# CONFLICTS OF INTEREST

- I have nothing to declare

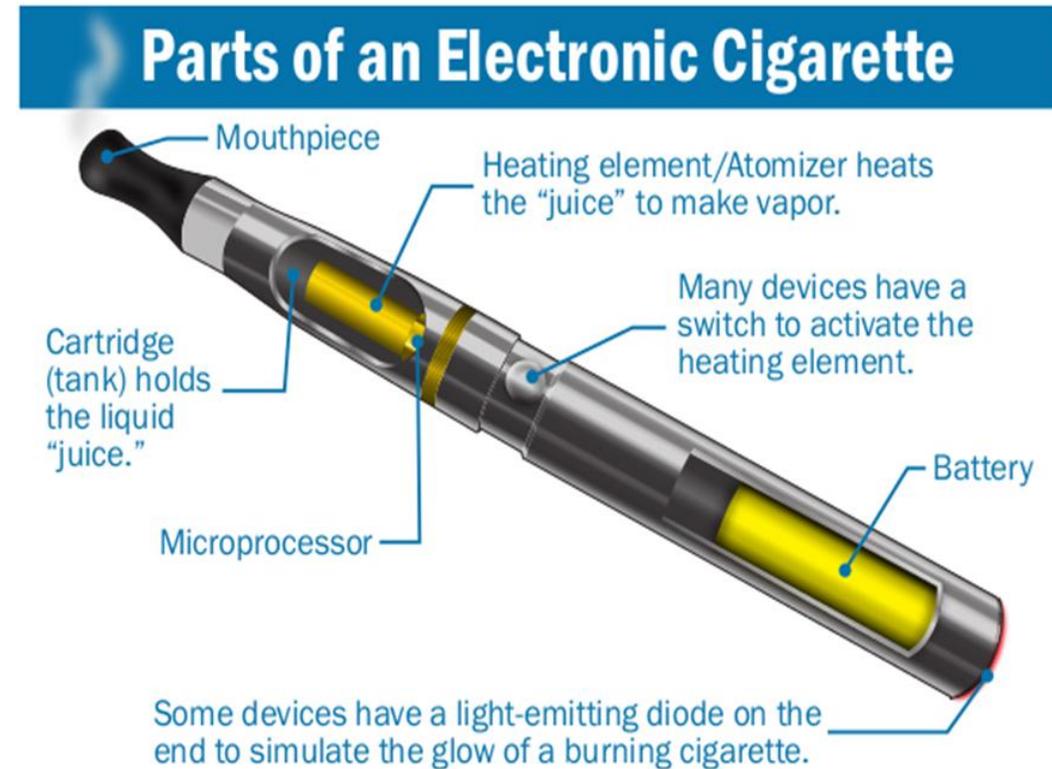
# WHAT IS AN E-CIGARETTE?

- E-cigarettes use a metal heating element to atomize a (nicotine) solution and simulate smoking
- Vaping is the process of vaporizing chemicals to make smoke (fog machine)
- A battery powered heating element heats liquid to its boiling point



# WHY ARE E-CIGARETTES ACCIDENT PRONE?

- Electronic cigarettes often have heavy duty batteries that were originally manufactured for flashlights
- Batteries are generally Lithium ion
- Batteries generally have no safety cutoff to prevent a short
- Switch that connects battery to heating element becomes fused, heating element continues to heat and ignites battery



# MEDIA COVERAGE

- [https://www.usfa.fema.gov/downloads/pdf/publications/electronic\\_cigarettes.pdf](https://www.usfa.fema.gov/downloads/pdf/publications/electronic_cigarettes.pdf)
- <http://www.cnn.com/2016/11/24/us/e-cigarette-explosion-video/>
- <https://www.theguardian.com/society/video/2016/nov/04/no-smoke-without-fire-e-cigarette-explodes-in-mans-pocket-video>
- Locally at LVHN, we have seen an increase in the number of e-cigarette related injuries



# OBJECTIVES

- Compile the records of all patients treated at LVHN with e-cigarette related burns
- Find patterns of injury
- Assess quality of life impact of these injuries
- Evaluate cost of treatment
- Report if incidences are increasing in frequency

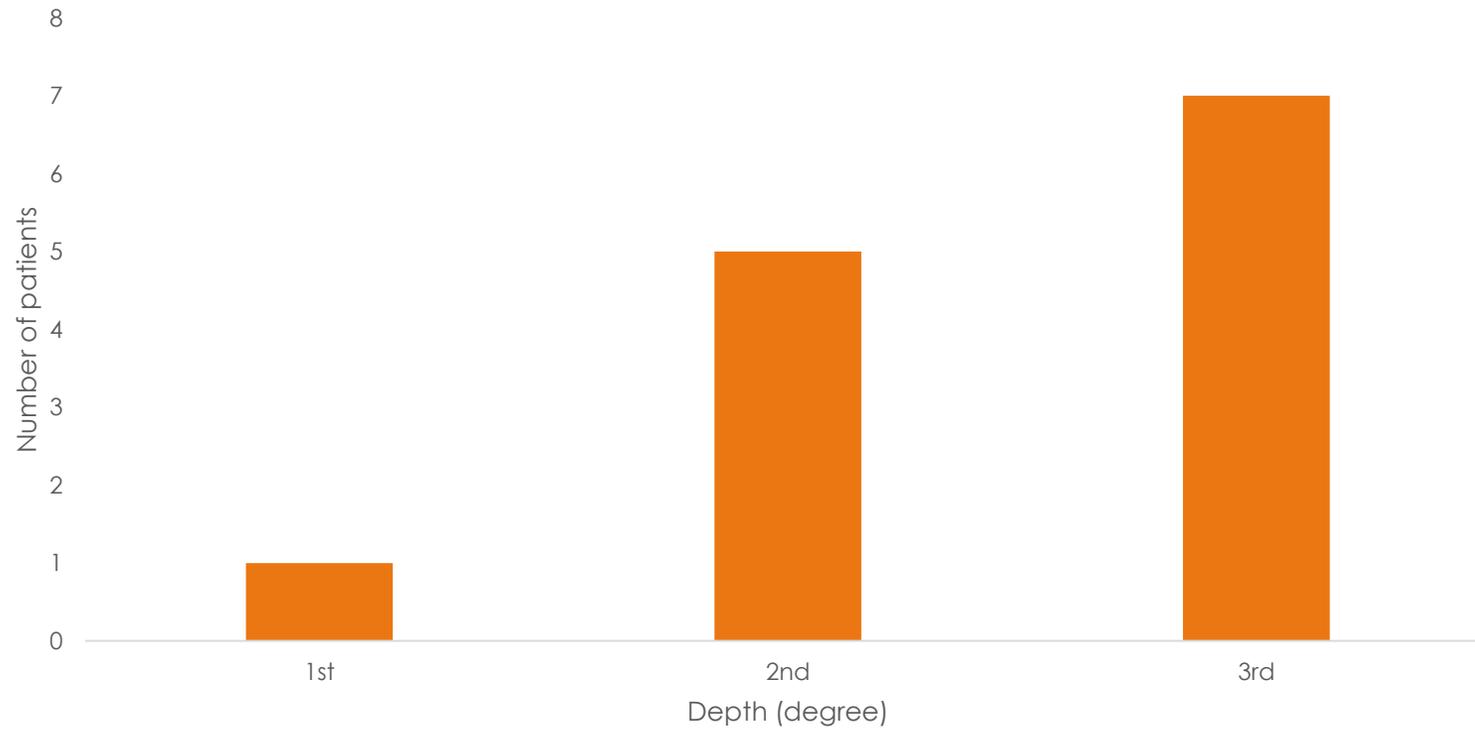
# METHODS

- A retrospective chart review was performed after IRB approval to gather data on both outpatients and inpatients at the Lehigh Valley Hospital who were injured from an exploding electronic cigarette battery
- Included were all patients that were treated at the Lehigh Valley burn center between 2006 and 2016
- Data collected:
  - Age
  - Sex
  - cost of treatment
  - burn pattern
  - time spent in the hospital
  - days until returning to work
  - scarring according to the Vancouver Scar Scale 6 months after injury

# RESULTS

- Of ~5,000 charts examined, 14 met the inclusion criteria
- 93% were male
- 80% were admitted to the hospital
- Mean TBSA: 2.9%
- Time to heal: 2-11 days

# DEPTH OF BURN -RESULTS

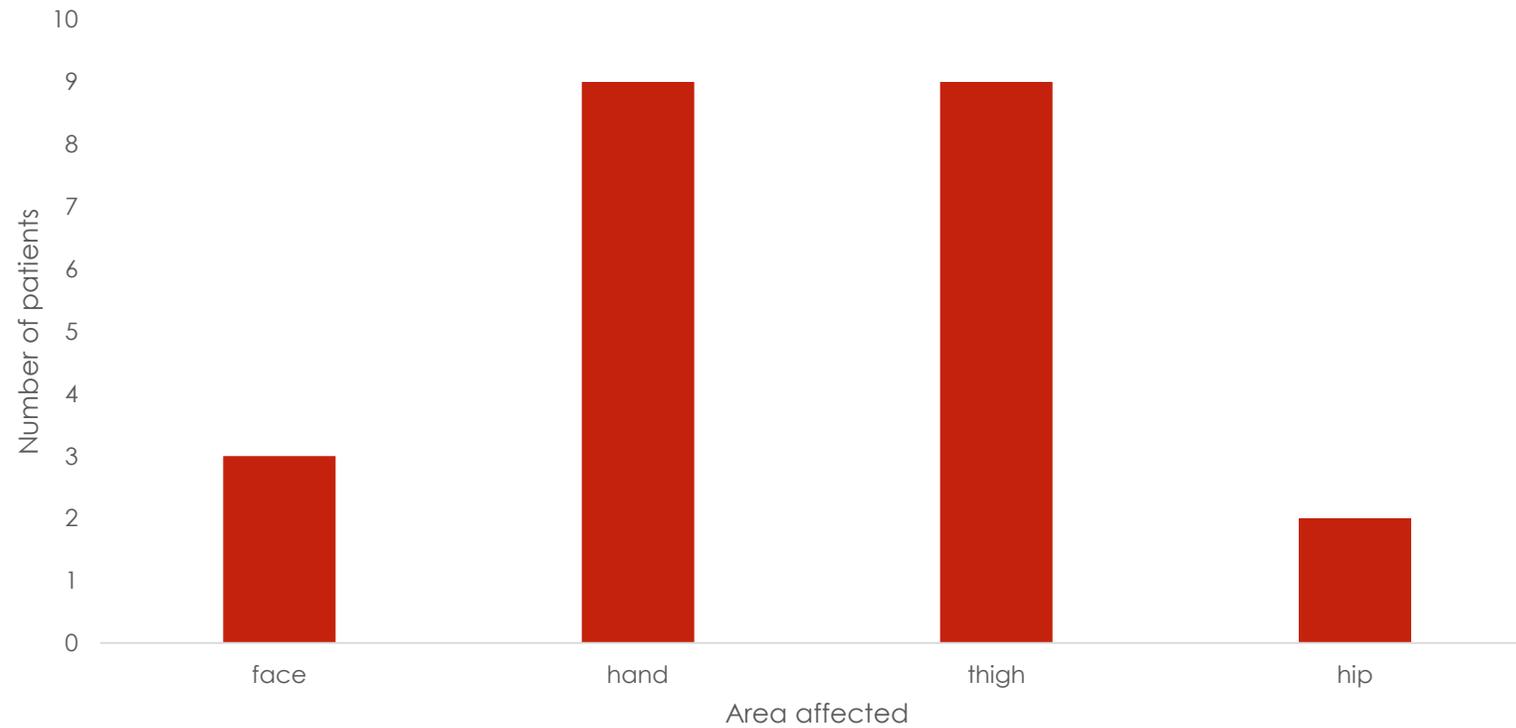




# RESULTS (CONTINUED)

- 50% were non-operative
- Average cost: \$41,439
- 22 work days lost on average
- Scarring (Mean Vancouver Scar Scale): 4/15

# PATTERN OF INJURIES





# SUMMARY

- Frequency of e-cigarette related injuries seems to have increased (most of the injuries seen occurred in 2016)
- Most injuries occur on thigh and hand
- Burn severity ranged from 1<sup>st</sup> to 3<sup>rd</sup> degree
- Injuries had significant socio-economic impact



The most expensive smoke you will have ever had



# DISCUSSION

Thank you for your attention!