Reducing the risks of prehospital intravenous cannulation

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BACKGROUND

East Midlands Ambulance Service NHS Trust (EMAS)
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- 3,000 staff at over 70 locations
- intravenous cannulation
- training
- potential risks including pain and infection
Intravenous Cannulation

where a needle attached to a tube injected into the veins to administer fluids and/or drugs
BACKGROUND … continued

Cannulation rates

- rates of cannulation are increasing and vary widely
- 14.2% of transported patients cannulated
- mean rate of 13.4% (range 5.8% to 19%)
- 15.6% of these cannulation could be avoided
An evaluation of an educational intervention aimed to reduce inappropriate cannulation and improve cannulation technique by paramedics in the East Midlands
OBJECTIVE

Investigating the effect of a complex educational intervention

- to reduce the rate of cannulation and inappropriate cannulation
- to improve cannulation technique in Paramedics of EMAS NHS trust
METHOD

Measurement of improvement

- non-randomised control group (before and after) design
- two geographical areas:
  - intervention group - Nottinghamshire
  - control group - Lincolnshire
- educational intervention delivered to Paramedic Team Leaders (PTLs) cascaded to teams
- data before and after intervention (cannulation rates and appropriateness)
Study Flow Diagram

Intervention area
80 Paramedics in Notts area

Complex Educational Intervention
delivered to PTLs

Outcomes
- Rate of ‘appropriate’ cannulation
- Cannulation technique in sample of paramedics (50)
- Overall rate of cannulation (and any change in rate)

Control area
243 Paramedics in Lincs area

No Educational Intervention
to be delivered later if shown effective

Outcomes
- Rate of ‘appropriate’ cannulation
- Cannulation technique in sample of paramedics (50)
- Overall rate of cannulation (and any change in rate)

Compare change in performance and practice between two groups

- Identify barriers to improvement
- Modify education programme as appropriate
- Implement education programme in other areas

East Midlands Ambulance Service
NHS Trust
INTERVENTION

The Educational Intervention in Nottinghamshire was:

- based on JRCALC current guidelines focused on appropriateness and technique
- conducted by an EMAS tutor
- delivered to Paramedic Team Leaders
- cascaded to other paramedics in team
INTERVENTION ... continued

Educational Intervention was designed to observe the following outcomes:

- increased appropriate and reduced unnecessary cannulation
  i.e. cannula should be inserted if the patient:
  - needs fluid replacement
  - needs intravenous medication
  - condition requires it
- improve technique (prevent sepsis)
- cascade education to paramedics within the team
OBSERVATION EXERCISE

Observation of cannulation technique

- 50 EMAS paramedics randomly selected from both sites
- a predesigned checklist
- observed cannulating “model” in ambulance
- technique and appropriateness of cannulation
RESULTS

Reduction in cannulation rates in intervention site

- Significant reduction in cannulation rates intervention vs control area (p<0.001)
- Reduction in cannulation- intervention area from 9.1% to 6.5% (OR 0.7, 95% CI 1.15 to 1.90, p<0.01)
- Increase in cannulation - control area from 13.8 to 19.1% (OR 1.47, 95% CI 1.15 to 1.90, p<0.01)
OTHER IMPACTS OF THE INTERVENTION

Attitudes, hand washing, inappropriate cannulation

- Paramedics less likely cannulate because admitting centre expected it (5.9% vs. 32.0%, p=0.01) or to retain skills (2% vs. 10%, p=0.06)

- Improved hand washing before cannulating (74.5% vs. 14.9%, p<0.001)

- Reduction in inappropriate cannulation (1.0% to 0% vs 2.5% to 2.6)
LESSONS LEARNT

Paramedic Team Leaders (PTL) - effective means

- cascading key education and training
CONCLUSION

Educational intervention to paramedic team leaders was effective

- bringing about change
- led to enhanced quality and safety in aspects of prehospital cannulation
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References


THANK YOU!