

# **Inefficiencies in a Rural Trauma System: The Burden of Repeat Imaging in Inter-facility Transfers**

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# Background

- During the evaluation of trauma patients, local hospitals routinely obtain CT scans to diagnose injuries and justify transfer to a regional trauma center



# Background

- A retrospective review of injured patients transferred to a rural ACS Level I trauma center demonstrated a high rate of repeated CT scans
- A prospective study was then performed to define the reasons for repeating these studies



# Retrospective Review

CT scan	Head	Chest	Abd	C-sp	T-sp	L-sp	Total
Local Hospital (n)	259	108	130	173	23	18	711
Trauma Center (n)	132	34	38	86	14	14	318
Percent	51%	31%	29%	50%	61%	78%	<b>45%</b>



# Methods

- Prospective evaluation of injured patients transferred to a rural ACS Level I trauma center between Oct 2007 – Feb 2008
- Data abstracted:
  - CT scans performed at local hospitals
  - CT scans repeated at the trauma center
  - Reason for repeating a study



# Methods

- Reasons for repeating a study categorized as follows:
  1. Scan not sent
  2. Software not compatible
  3. Inadequate technique – no IV contrast
  4. Inadequate technique – no reconstructions
  5. Clinical indication



# Prospective Review

CT scan	Head	Chest	Abd	C-sp	T-sp	L-sp	Total
Local Hospital (n)	75	35	45	67	10	9	243
Trauma Center (n)	39	11	9	31	5	3	98
Percent	52%	31%	20%	46%	50%	33%	<b>40%</b>
Reason	5	3	3	4	4	4	



# Results

- 104 of 138 (75%) pts transferred underwent CT imaging prior to transfer
- 60 of 104 (58%) patients underwent repeat CT imaging at the trauma center
- 98 of 243 scans (40%) were repeated
  - 7 of 98 (7%) scans were not sent with the patients
  - 13 of 98 (13%) software was incompatible



# Conclusions

- In patients being transferred to a regional trauma center,  $\geq 40\%$  of CT scans performed at the local hospital are repeated
- Head and spine scans are the most commonly repeated
- Most common reason for repeating scans is inadequate technique



# Discussion

- Repeat CT scans inevitably result in increased radiation exposure to patients as well as additional charges
- This is an important patient safety and cost issue for trauma systems



