



## Reducing Inpatient Transfer Times in the Center for Heart and Vascular Care

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### Define

#### Validate Problem

Due to organizational and service line growth, the daily occupancy of beds in the Center for Heart and Vascular Care has been greater than budgeted with most days being greater than 90%. Between May 24, 2013 and June 25, 2013, the average time between H&V inpatient transfer bed assignment (assuming EVS has cleaned bed) and patient arrival at destination is 1 hour and 10 minutes with a standard deviation of 49 minutes (n = 103). In order to accommodate patients admitted through various means, including open access, efficient Heart & Vascular throughput must be optimized.

SUPPLIER	INPUT	PROCESS	OUTPUT	CUSTOMER
Licensed Independent Practitioner (LIP)	LIP transfer order	1. Patient assigned to clean bed 2. Communication of bed assignment 3. RN report given to receiving unit 4. Patient transported 5. Patient arrives and logged by HUC	Transfer of inpatient	• RN staff • LIP • Home Supervisor

H&V Inpatient Transfer Survey

Survey Item	Yes	No	Not Sure
1. Bed assignment received within 5 minutes	10	1	0
2. Bed assignment received within 10 minutes	15	2	0
3. Bed assignment received within 15 minutes	20	3	0
4. Bed assignment received within 20 minutes	25	4	0
5. Bed assignment received within 25 minutes	30	5	0
6. Bed assignment received within 30 minutes	35	6	0
7. Bed assignment received within 35 minutes	40	7	0
8. Bed assignment received within 40 minutes	45	8	0
9. Bed assignment received within 45 minutes	50	9	0
10. Bed assignment received within 50 minutes	55	10	0
11. Bed assignment received within 55 minutes	60	11	0
12. Bed assignment received within 60 minutes	65	12	0
13. Bed assignment received within 65 minutes	70	13	0
14. Bed assignment received within 70 minutes	75	14	0
15. Bed assignment received within 75 minutes	80	15	0
16. Bed assignment received within 80 minutes	85	16	0
17. Bed assignment received within 85 minutes	90	17	0
18. Bed assignment received within 90 minutes	95	18	0
19. Bed assignment received within 95 minutes	100	19	0
20. Bed assignment received within 100 minutes	105	20	0

- Survey: 23 LIPs, 5 Nurse Managers, 107 RNs, 33 HUCs, 3 CEBs, 25 NAs, 5 Home Supervisor, 5 Bed Assignment
- Interviews: 5 Nurse Managers
- Focus Groups: 4 RN Focus Groups, 1 HUC Focus Group, 1 Home Supervisor Focus Group
- Observations: 1 Home Supervisor and 1 Bed Assignment

H&V Inpatient Transfer Survey Results (All Units Combined)

Acceptable Transfer Time (minutes)	Count	Percentage
0-10	1	0.97%
10-20	2	1.94%
20-30	3	2.91%
30-40	4	3.88%
40-50	5	4.85%
50-60	6	5.82%
60-70	7	6.79%
70-80	8	7.76%
80-90	9	8.73%
90-100	10	9.70%
100-110	11	10.67%
110-120	12	11.64%
120-130	13	12.61%
130-140	14	13.58%
140-150	15	14.55%
150-160	16	15.52%
160-170	17	16.49%
170-180	18	17.46%
180-190	19	18.43%
190-200	20	19.40%
200-210	21	20.37%
210-220	22	21.34%
220-230	23	22.31%
230-240	24	23.28%
240-250	25	24.25%
250-260	26	25.22%
260-270	27	26.19%
270-280	28	27.16%
280-290	29	28.13%
290-300	30	29.10%
300-310	31	30.07%
310-320	32	31.04%
320-330	33	32.01%
330-340	34	32.98%
340-350	35	33.95%
350-360	36	34.92%
360-370	37	35.89%
370-380	38	36.86%
380-390	39	37.83%
390-400	40	38.80%
400-410	41	39.77%
410-420	42	40.74%
420-430	43	41.71%
430-440	44	42.68%
440-450	45	43.65%
450-460	46	44.62%
460-470	47	45.59%
470-480	48	46.56%
480-490	49	47.53%
490-500	50	48.50%
500-510	51	49.47%
510-520	52	50.44%
520-530	53	51.41%
530-540	54	52.38%
540-550	55	53.35%
550-560	56	54.32%
560-570	57	55.29%
570-580	58	56.26%
580-590	59	57.23%
590-600	60	58.20%
600-610	61	59.17%
610-620	62	60.14%
620-630	63	61.11%
630-640	64	62.08%
640-650	65	63.05%
650-660	66	64.02%
660-670	67	64.99%
670-680	68	65.96%
680-690	69	66.93%
690-700	70	67.90%
700-710	71	68.87%
710-720	72	69.84%
720-730	73	70.81%
730-740	74	71.78%
740-750	75	72.75%
750-760	76	73.72%
760-770	77	74.69%
770-780	78	75.66%
780-790	79	76.63%
790-800	80	77.60%
800-810	81	78.57%
810-820	82	79.54%
820-830	83	80.51%
830-840	84	81.48%
840-850	85	82.45%
850-860	86	83.42%
860-870	87	84.39%
870-880	88	85.36%
880-890	89	86.33%
890-900	90	87.30%
900-910	91	88.27%
910-920	92	89.24%
920-930	93	90.21%
930-940	94	91.18%
940-950	95	92.15%
950-960	96	93.12%
960-970	97	94.09%
970-980	98	95.06%
980-990	99	96.03%
990-1000	100	97.00%

The data indicate that 27.1% of respondents thought 60 minutes was an acceptable transfer time, which was a yield of 33.8% cumulatively. Based on the results, 60 minutes was determined to be our transfer time expectation.

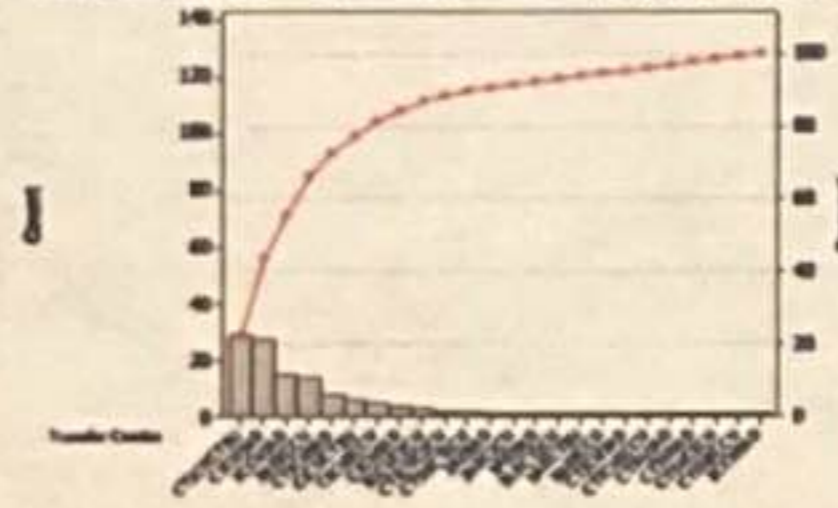
### Measure

#### Assess & Focus Problem

##### Measure Phase Discoveries

- Report was given on the first attempt for 79.3% of measured transfers
- Patient transportation was utilized for 4.8% of measured transfers
- Transfers from ICU level of care to acute & intermediate level of care accounted for 43% of measured transfers.

Pareto Chart of Inpatient Transfer Conditions: 5/24/13 - 6/25/13



##### Process Sigma

Opportunities (if data points used in determining our Sig Y) = 103  
 Defects (inpatient transfers > 60 minutes (CTQ) from our Define phase) = 52  
 Process Yield (% of inpatient transfers < 60 minutes) = 49.5%  
 Process Sigma = 1.49  
 Goal Process Sigma = 6

##### Focus Problem Statement

Between 5/24/13-6/25/13, the average time between H&V inpatient transfer bed assignment (assuming EVS has cleaned bed) and patient arrival at destination is 1 hour and 10 minutes with a standard deviation of 49 minutes

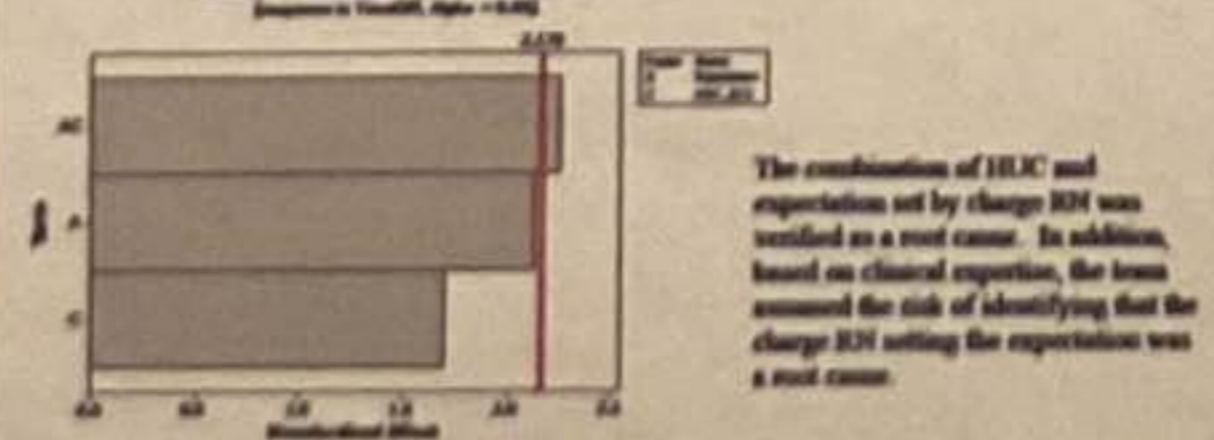
In Scope: Transfers (from to) CTICU-CTBU, CTICU-SAND, ICU-ICCU, ICU-SAND  
 Out of Scope: All other H&V combinations  
 Start: After EVS cleans bed and patient is assigned to AIX  
 End: When patient arrives on unit and is logged by HUC

### Analyze

#### Verify Root Causes

Factor	Potential Root Cause	Low Level	High Level
A	Charge RN sets inpatient transfer "expectations"	Tell the bedside RN their patient has a bed	Tell the bedside RN their patient has a bed and the expected transfer time is within 60 minutes
B	Charge RN notifies ICU team	Blank	Speak with ICU team about bed assignment within 5 minutes
C	HUC notifies ICU team	Blank	HUC speaks with ICU team about bed assignment within 1 minute
D	RN to RN report (ICCU to IAD/ICCU)	No change	If bedside RN unavailable to take report, charge RN takes report

Pareto Chart of the Standardized Effects (response = Transfer, Alpha = 0.05)

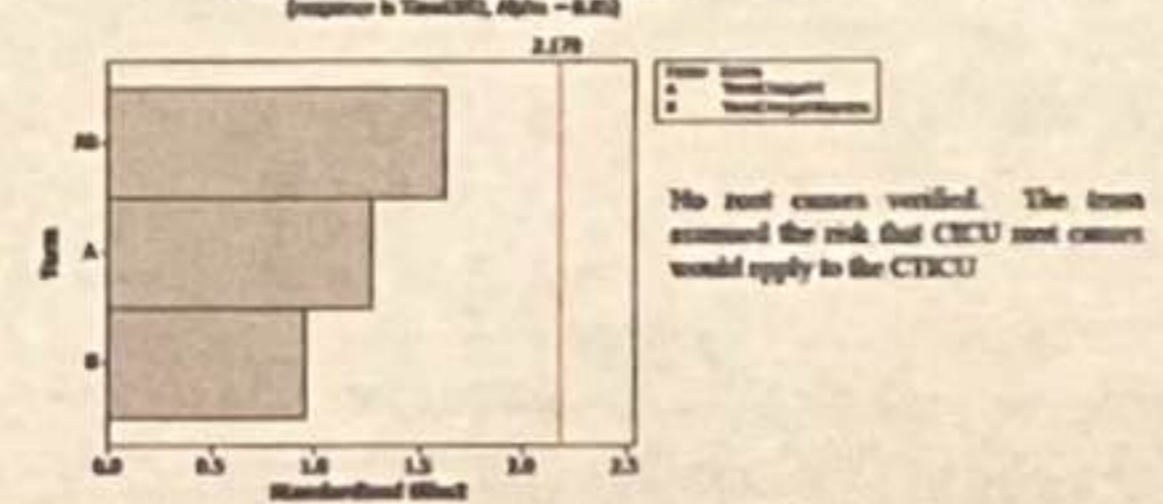


The combination of HUC and expectations set by charge RN was verified as a root cause. In addition, based on clinical expertise, the team assumed the risk of identifying that the charge RN setting the expectation was a root cause.

### Analyze cont.

Factor	Potential Root Cause	Low Level	High Level
A	Transferring Charge RN sets inpatient transfer "expectations"	Blank	Transferring Charge RN sets the bedside RN the patient has a bed and the expected transfer time is within 60 minutes
B	Transfer Charge RN notifies ICU team	Blank	After 30 minutes, the transferring Charge RN sets the bedside RN when they stand in the transfer process
C	Receiving Charge RN sets "expectations"	Blank	Receiving Charge RN notifies the bedside RN of the patient bed assignment and sets expectation to receive patient within 60 minutes
D	Receiving Charge RN notifies ICU team	Blank	Receiving Charge RN checks to make sure team is clean and equipment is present at time of bed assignment

Pareto Chart of the Standardized Effects (response = Transfer, Alpha = 0.05)



No root causes verified. The team assumed the risk that CTICU root causes would apply to the CTICU

### Improve

#### Change & Evaluate Process

Verified Root Cause	Solution
Charge RN sets inpatient transfer expectations	Charge RN sets inpatient transfer expectations
Interaction of Charge RN sets inpatient transfer expectations and HUC notifies ICU team	Nurse leadership sets expectations

#### H&V Transfer Pilot

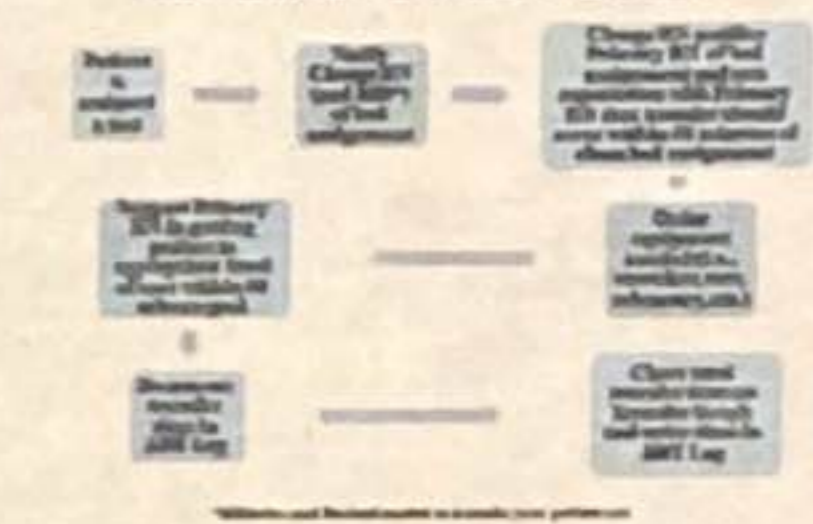
- Solutions
  - Charge RN sets expectation for transfer <60 min
  - Partner with leadership to set expectations
- Method
  - Competition between units
  - Incentives
  - Visual aids
  - Collaboration with leadership
  - Greenbelt team presence



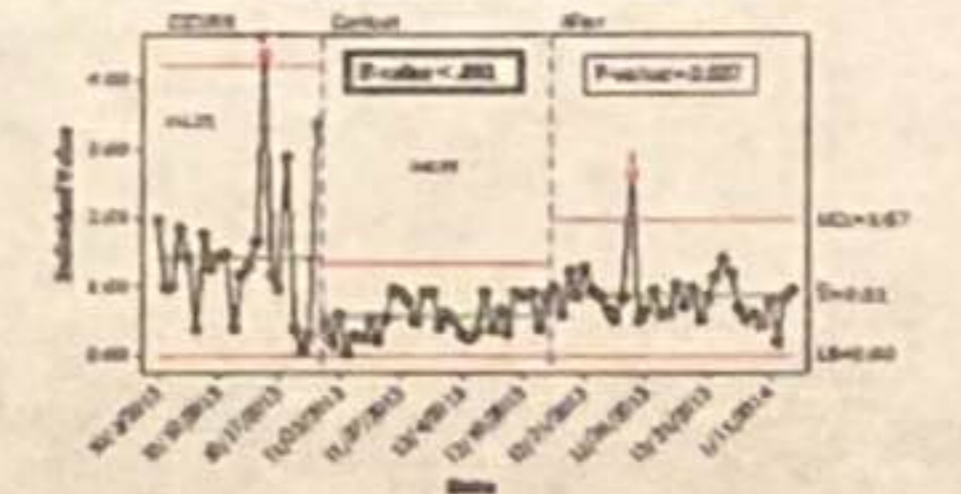
### Control

#### Change & Evaluate Process

H&V TRANSFER PROCESS CHART ICU

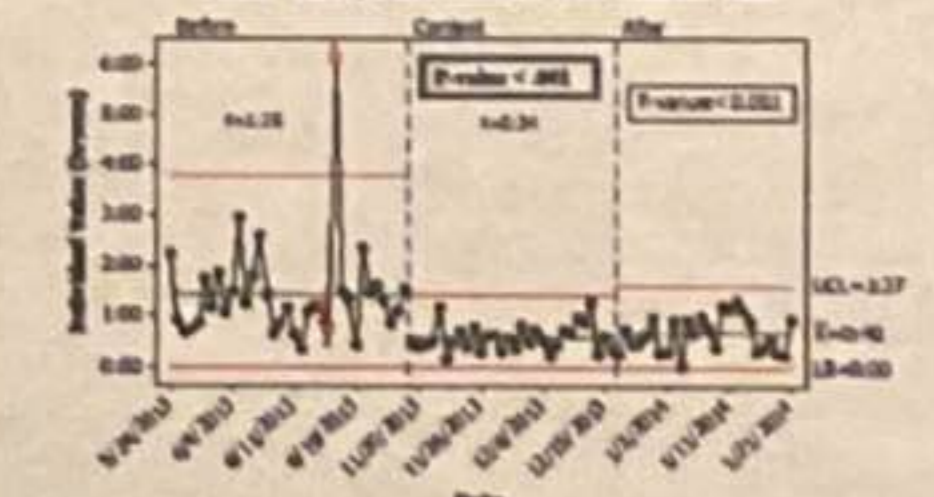


CTICU - IAD/ICCU: I Chart of Total Transfer Time



CTICU to IAD/ICCU Results: During the improve phase (control), we significantly reduced (p < 0.001) our mean transfer time from 1 hour and 26 minutes to 33 minutes. This significant decrease (p < 0.001) was maintained during our Control phase, during which our mean transfer time was 31 minutes.

CTICU - CTBU/SAD: I Chart of Total Transfer Time



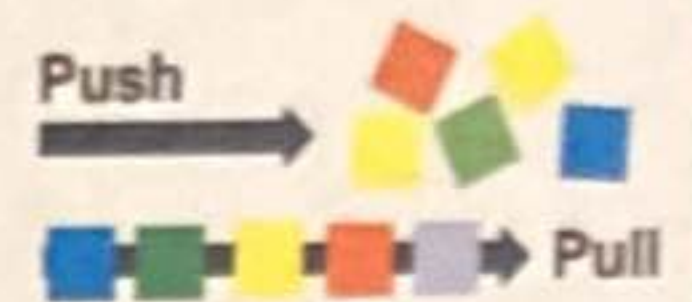
CTICU to CTBU/SAD Results: During the improve phase (control), we significantly reduced (p < 0.001) our mean transfer time from 1 hour and 26 minutes to 34 minutes. This significant decrease (p < 0.001) was maintained during our Control phase, during which our mean transfer time was 40 minutes.

Process Sigma = 2.38

### Conclusion

Expectations set by leadership, including management and charge RNs, leads to significant improvement in inpatient transfer times and is essential to patient throughput in the hospital setting. Further, a collaborative and innovative approach to process implementation is important to engaging staff, and ultimately changing unit culture. Next steps include expanding our process change to transfers outside the scope of our project and finding ways to continue our success amidst the challenges presented by a new electronic charting system.

# Pull to Full



## What is it?

Patient transfer process that provides a smoother transition between Heart & Vascular units.

## Who is participating?

CTSU & 5 Anderson

## Why?

To help meet the goal of transferring patients to their new room within **60 minutes** of a clean bed assignment. *CTSU & 5 Anderson currently have the highest average transfer times within the Heart & Vascular service line.*

## Advantages

- Increased ability of Charge Nurse & Receiving Nurse to control the flow of incoming patients
- Patient arrives to a bed more quickly which will improve the patient's perception of time to admission and allow timely admission of postop patients
- Opportunity to collaborate within the service line to improve/enhance relations



## Process for receiving a patient:

- Patient is assigned to a bed (clean or dirty).
- CST/HUC or Charge RN notifies Primary RN of patient assignment within **5 minutes**.
- CTSU RN calls sending unit within **15 minutes** of notification to get report.
  - If sending RN is unavailable, CTSU calls back in **10 minutes** to get report.
  - If sending RN is unavailable on second try, ask sending Charge RN to facilitate report.
- Patient arrives on CTSU within **30 minutes** of report received and/or within **60 minutes** of clean bed assignment.

## Process for sending a patient:

- Patient is assigned to a bed (clean or dirty).
- CST/HUC or Charge RN notifies Primary RN of patient assignment within **5 minutes**.
- CTSU RN & CTSU NA prepare patient for transfer (notify patient/family, pack belongings, remove telemetry box or set up remote telemetry) and prepare to give report.
- Call receiving unit if receiving RN does not call within **15 minutes** of clean bed assignment.
- Giving report
  - If CTSU RN is unavailable, receiving RN will call back in **10 minutes** to get report.
  - If CTSU RN is unavailable on the second try, CTSU Charge RN will give report to the receiving RN.
- Patient arrives to new unit within **30 minutes** of report given and/or within **60 minutes** of clean bed assignment.

*Data collection: Data will be collected electronically. Weekly transfer times will be shared.*

Please email Tasha or Katie of any issues/concerns involving patient transfers.