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Improving Patient Throughput in Akron General Cleveland Clinic Postpartum Unit

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Improving Patient Throughput in Akron General Cleveland Clinic Postpartum Unit

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Honors Research Project

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Improving Patient Throughput in Akron General Cleveland Clinic Postpartum Unit

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Abstract

Exceeding hospital limitations can impair safety and induce unnecessary health risks for patients and staff. At Akron General Cleveland Clinic (AGCC), current birth rates are double the amount the facility is designed to handle. In order to accommodate increasing numbers, it must be seen that birthing mothers and their infants are not withholding space more than what is deemed required. Patients are permitted to stay 48 to 96 hours preceding birth, given the type of delivery. However, many are unaware that they can be discharged between 24 and 48 hours post-delivery, so long as a physician has signed off on the matter. Techniques have been implemented to help improve patient throughput in postpartum units. These techniques have proven to significantly decrease both the number of length of stay (LOS) hours and recovery time versus preliminary studies.

Introduction

Research was conducted at Akron General Cleveland Clinic that focused on the limitations imposed on discharge of new mothers from the postpartum unit. Akron General's facility was designed to safely permit 1,500 births each year. In actuality, the number of births in the facility has doubled this amount, impairing safety and increasing health risks. Research conducted by Dr. Austin Hill is aimed at improving patient throughput in the postpartum unit. In various hospitals around the world, studies have been conducted to determine bottlenecks in birth units that may be resulting in prolonged visits. Utilizing a hospital in South Atlanta, Georgia, maternity as a generalization was found to be the major bottleneck for all hospitals and new life centers around the world (Griffin et. al, 2012). However, much research also goes into detail regarding the most frequent hindrances.

Preliminary studies were conducted to determine the most recurrent obstacle in discharging new mothers. In prior research, it was found that decreasing postpartum units to 86% occupancy increases throughput by up to 10% (Cochran and Bharti, 2006). Similarly, it has also been shown that a floor 10 to 15% empty functions at full capacity and avoids significant bottlenecks (Gorunescu et al., 2002). Once above this 90% threshold, bed space for additional patients is significantly impaired (Bagust et al., 1999). By creating a goal of discharging patients by 11:00 am, Yale-New Haven Hospital was able to decrease patient stay from 5.23 days to 5.05 days, accommodating an additional 45 patients a day. They were also capable of improving discharge efficiency by color coding to prioritize patients, which aided in increasing the hospital's income margin (Jweinat et al., 2013). Compiling evidence and research, a complete list of potential bottlenecks for healthcare facilities was created (Sayah et al., 2014).

Based on these findings and internal investigation within Akron General's new life center and postpartum units, the following changes were implemented: having patients escorted by patient transporters, freeing up nurses on the floor to attend to other patients, discharge at 11:00 am, avoiding a postpartum unit occupancy above 86% by opening secondary units if needed, ensuring lactation consultants for breastfeeding mothers occurs by 11:00 am, warranting effective communication between pediatric teams and postpartum physicians, increasing bed cleaning rates to match those of other floors, arranging infant lab work more quickly, and providing visual trackers on the probability of discharge of the patient, allowing care prioritization. Further improvements to the system are also being employed, such as quarterly nurse awards and developing a teaching schedule. Simulation models conducted previously have shown that these changes are likely to be effective (Fetter and Thompson, 1965). It is hypothesized that these changes will decrease the amount of time from admission to discharge.

Materials and Methods

The lab charts for all birthing mothers, $n = 215$, in May of 2016 were obtained through ChartMaxx. Data including placenta delivery time, postpartum transfer time, circumcision time, teaching completion date and time, medications request form (MRF) completion date and time, time of last physician note, maternal discharge time, and time of infant discharge were obtained from patient files and logged in an Excel spreadsheet. From this data, LOS hours were calculated based on the time of transfer from labor and delivery to postpartum units to final discharge. Averages were obtained and analyzed against preliminary results. Relevant means can be found in **Table 1**. Refer to **Appendix** for all data.

Results

All relevant means can be found in **Table 1**. The mean length of stay hours proceeding implemented changes was 48.23. Prior to any procedural adjustments, the mean was found to be 50.63. These results can be seen in **Figure 1**. Therefore, there was a 2.4 hour, 4.7%, decrease in birthing mother's length of stay time proceeding having patients escorted by patient transporters, freeing up nurses on the floor to attend to other patients, discharge at 11:00 am, avoiding a postpartum unit occupancy above 86% by opening secondary units if needed, ensuring lactation consultants for breastfeeding mothers occurs by 11:00 am, warranting effective communication between pediatric teams and postpartum physicians, increasing bed cleaning rates to match those of other floors, arranging infant lab work more quickly, and providing visual trackers on the probability of discharge of the patient. These values show to be statistically different ($p = 8.70 \times 10^{-7}$), as seen in the t-test output shown in **Figure 2**.

Previously, only 23% of mothers were discharged prior to one in the afternoon. However, results now show that 32% are being released before one. This is a 9% increase in discharge rates prior to this 1 p.m. deadline. Yet, the average discharge time has increased slightly from 2:25 to 2:28, as seen in **Table 1**. However, unique medical emergencies creating outliers in the collected data could have affected this value. Also seen in **Table 1**, the recovery time in hours has decreased by 53.33%. Previously requiring, on average, three recovery hours prior to being transferred to postpartum units, mothers tend to only require 1.40 hours now. These values are statistically different ($p = 9.63 \times 10^{-33}$), showing that the recovery time decrease was unlikely to occur by chance. Graphical representation of this data can be seen in **Figure 3**. The t-test output for recovery time can also be seen in **Figure 4**.

Averages	Placenta Delivery Time	Recovery Time (Hours)	Discharge Time	LOS Hours
	11:50	1.40	2:28	48.23

Table 1. Result Averages. This table shows the overall averages for placenta delivery time, recovery time, discharge time, and LOS hours for all 215 May 2016 births.

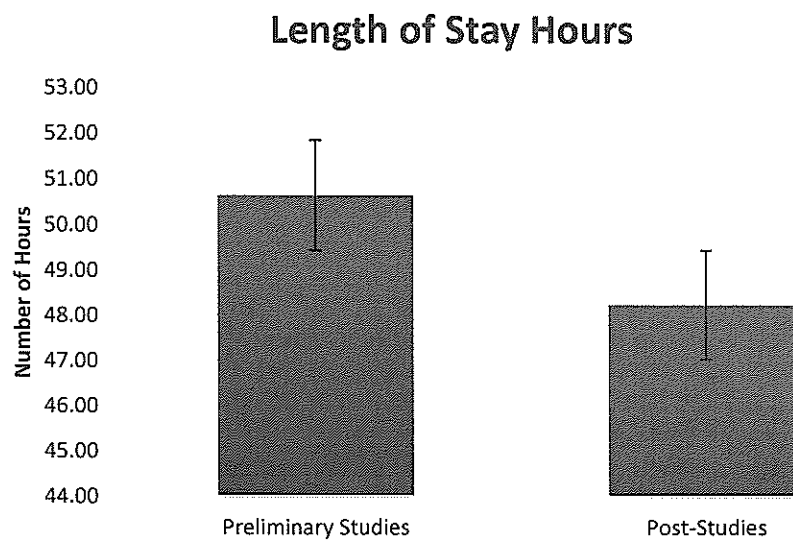


Figure 1. Length of Stay. This figure shows the average length of stay hours prior to and proceeding changes to hospital procedure. A mother’s length of stay decreased by 2.4 hours, or 4.7%, on average. These values are statistically different with a p-value of 8.70×10^{-7} . Standard error bars are shown.

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	Variable 2
Mean	50.6315829	48.2315829
Observations	232	215
t Stat	1072.118438	
P(T<=t) one-tail	4.34995E-07	
t Critical one-tail	2.91998558	
P(T<=t) two-tail	8.69989E-07	
t Critical two-tail	4.30265273	

Figure 2. LOS T-Test. This t-test output shows the p-value associated with the LOS hours prior to and proceeding hospital changes, 8.70×10^{-7} .

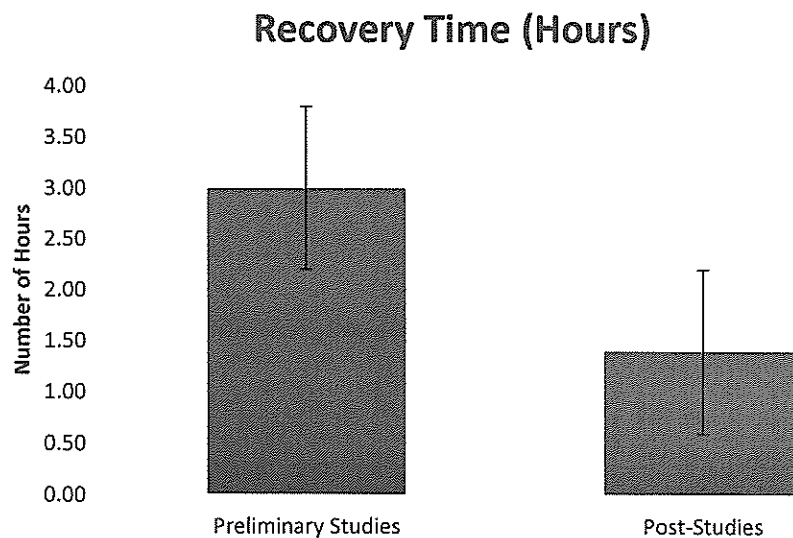


Figure 2. Recovery Time. This figure shows the average recovery time prior to and proceeding hospital procedural adjustments. Recovery time decreased by 53.33%. This value diminished from 3.00 hours to 1.40 hours. These values are statistically different with a p-value of 9.63×10^{-33} . Standard error bars are shown.

t-Test: Two-Sample Assuming Unequal Variances

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	3	1.4
Observations	232	215
t Stat	1.01905E+16	
P(T<=t) one-tail	4.81482E-33	
t Critical one-tail	2.91998558	
P(T<=t) two-tail	9.62965E-33	
t Critical two-tail	4.30265273	

Figure 4. Recovery Time T-Test. This t-test output shows the p-value associated with recovery time hours prior to and proceeding hospital changes, 9.63×10^{-33} .

Discussion

Results show that the implemented changes significantly decreased the total length of stay hours for birthing mothers at Akron General Cleveland Clinic ($p = 8.70 \times 10^{-7}$) by 2.4 hours or 4.7%. Graphical representation of this data can be seen in **Figure 1**. The statistical output from a LOS t-test, including the p-value, can be seen in **Figure 2**. The recovery time for mothers also decreased significantly ($p = 9.63 \times 10^{-33}$) by 1.60 hours or 53.33%. This data can be seen illustrated in **Figure 3**. The statistical output from a recovery time t-test, containing the p-value, can be seen in **Figure 4**. These statistics support the hypothesis that the procedural changes implemented increased patient throughput at Akron General Cleveland Clinic.

Research in this area dates back to 1913, when A.K. Erlang studied the dynamics of queues in telephone facilities (Singh, 2006). Patient blocking has since been found to be the single largest source of bottlenecks and cost increase of hospital maintenance (Brailsford et al., 2009). Each mother and child presents an entirely unique case which may entail various risk factors, predisposed health conditions, and an array of complications. Although further studies can work to better patient throughput, many factors are unpredictable. For this reason, a direct cause of increasing patient throughput in this study cannot be determined, but is likely linked to the changes made by Dr. Austin Hill. For example, 147 of all May births, 68.06%, were spontaneous vaginal births, while 69, 31.94%, were cesarean section births. These values could have had bearing on the length of stay hours, as mothers required more or less surgical recovery time. This effect was not investigated in this study, but proves that there is much more to be revealed.

Conclusion

Continually improving patient throughput is essential to all hospital departments worldwide. As physicians, the ultimate goal is to help as many individuals as possible and decrease the number of losses. In order to do so, progress in this field of research must be made. Akron General Cleveland Clinic strives to implement additional changes with further exploration that can aid to better assist patients and ensure they are not kept longer than necessary. Additional improvements to the system are being made, such as quarterly nurse awards, developing a new teaching schedule, and investigation of infant units. These efforts are likely to continue to decrease recovery time and length of stay hours, as those investigated in this study have shown to do.

References

- Bagust et al. (1999). *Dynamics of bed use in accommodating emergency admission; stochastic simulation model*. British Medical journal. 319:155-158
- Brailsford et al. (2006). *An analysis of the academic literature on simulation and modelling in health care*. Journal Simulation. 3:120-140
- Cochran, J. Bharti, A. (2006). *Stochastic Bed Balancing of an Obstetrics Hospital*. Health Care Manage Sci. 9:31-45
- Fetter, RB. Thompson JD. (1965) *The simulation of hospital systems*. Operations Research September-October 689-711
- Gorunescu et al. (2002) *Using a queueing model to help plan bed allocation in a department of geriatric medicine*. Health Care Management Science. 5:307-312
- Griffin et al. (2012). *Improving Patient flow in an obstetric unit*. Health Care Management. 15:1-14.
- Jweinat et al. (2013). *The Safe Patient Flow initiative: A collaborative Quality Improvement Journey at Yale-New Haven Hospital*. Operations Management. 39(10):447-459
- Sayah et al. (2014). *Minimizing ED waiting times and Improving Patient Flow and Experience Care*. Emergency Medicine International.
- Singh V. (2006) *Use of Queueing Models in Helath Care*. Singh V. Selected Works of Vikas Singh. Retrieved from www.works.bepress.com/vikas_singh/4.

Appendix

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
4.4833333335	3:00 PM	18:20	68.66666667	1LTCS
2.3166666667	1:30 PM	22:30	87	1LTCS
3.1166666665	1:20 PM	20:04	65.26666667	RLTCS
4.4666666667	4:00 PM	14:09	49.85	RLTCS
-21.7333333335	1:10 PM	1:10	84	FAVD
3.6833333333	12:30 PM	22:30	No info. found	SVD
2.2500000000	3:45 PM	5:40	58.08333333	SVD
3.3833333334	11:00 AM	11:30	47.5	VAVD
2.5833333334	5:45 PM	20:00	93.75	1LTCS
3.3000000001	1:30 PM	5:00	32.5	SVD
2.7999999999	11:30 PM	15:34	31.93333333	SVD
3.2166666667	12:40 PM	4:30	56.16666667	SVD
1.7000000001	2:24 PM	5:45	56.65	VAVD
3.6666666667	2:33 PM	16:30	No info. found	RLTCS
1.9333333333	11:30 AM	22:50	No info. found	SVD
2.9666666667	1:54 PM	8:25	53.48333333	1LTCS
5.6666666666	12:00 PM	8:50	51.16666667	SVD
2.2833333334	11:00 AM	23:00	36	SVD

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
-21.1166666667	3:20 PM	2:15	61.08333333	SVD
2.0333333333	4:10 PM	14:20	25.83333333	SVD
3.0833333333	2:00 PM	13:30	48.5	SVD
-20.4166666667	1:00 PM	3:18	57.7	SVD
2.6833333333	3:45 PM	23:30	40.25	SVD
3.3500000001	2:19 PM	10:05	52.23333333	SVD
2.2166666667	2:00 PM	5:25	56.58333333	SVD
3.2166666667	4:00 PM	9:30	78.5	1LTCS
-23.1833333335	10:50 AM	0:21	82.48333333	1LTCS
3.2000000000	1:30 PM	6:15	31.25	FAVD
2.6166666666	11:50 AM	18:12	41.63333333	RLTCS
3.0166666665	12:42 PM	8:20	28.36666667	SVD
4.8500000001	5:29 PM	21:30	43.98333333	VAVD
1.9500000001	1:20 PM	19:33	17.78333333	VAVD
2.8000000000	2:30 PM	7:40	30.83333333	VAVD
0.7666666667	12:15 PM	22:50	61.41666667	1LTCS
0.4166666668	2:20 PM	16:15	22.08333333	SVD
0.2000000001	3:57 PM	20:45	43.2	SVD
2.8666666666	11:20 AM	5:27	29.88333333	SVD

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
2.2166666666	12:30 PM	3:15	57.25	VAVD
3.8000000000	2:30 PM	12:30	74	RLTCS
2.9666666667	8:00 PM	13:30	30.5	RLTCS
2.8333333333	6:28 PM	4:30	37.966666667	SVD
2.5666666667	1:05 PM	8:18	52.783333333	SVD
3.0833333333	11:30 AM	12:21	47.15	VAVD
-21.5666666666	2:00 PM	0:40	61.333333333	VAVD
2.8666666668	3:25 PM	13:05	74.333333333	RLTCS
3.9500000000	11:28 AM	19:00	40.466666667	RLTCS
5.1666666666	4:21 PM	9:50	54.516666667	SVD
1.6666666667	3:00 PM	4:40	34.333333333	SVD
2.3166666667	2:40 PM	22:40	40	SVD
2.7500000001	1:47 PM	14:55	70.866666667	SVD
-21.3666666666	3:30 PM	1:30	62	SVD
5.3833333334	3:32 PM	12:00	75.533333333	RLTCS
5.3666666667	3:20 PM	15:30	47.833333333	RLTCS
7.2000000001	11:33 AM	12:40	22.883333333	SVD
2.9000000000	3:50 PM	4:45	35.083333333	SVD
7.2833333333	12:36 PM	16:40	19.933333333	SVD

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
3.5833333333	3:00 PM	9:00	-8730	SVD
5.3833333334	6:30 PM	20:00	22.5	VAVD
2.9833333333	2:40 PM	23:30	39.16666667	SVD
3.4333333333	3:35 PM	10:15	53.33333333	SVD
2.9666666667	3:40 PM	18:32	45.13333333	SVD
3.0666666667	12:46 PM	12:10	24.6	SVD
2.6166666666	6:07 PM	18:25	23.7	SVD
-22.4333333333	6:00 AM	0:58	53.03333333	SVD
1.8333333332	4:45 PM	12:50	27.91666667	SVD
-17.4500000000	6:20 PM	0:30	41.83333333	SVD
8.5166666667	8:35 PM	13:55	54.66666667	SVD
1.9500000001	2:22 PM	21:30	16.86666667	SVD
3.2833333334	6:00 PM	14:45	51.25	SVD
3.6333333333	1:25 PM	16:07	45.3	SVD
2.8666666668	6:35 PM	13:05	77.5	1LTCS
3.1333333332	8:00 PM	11:30	32.5	RLTCS
2.7333333333	1:30 PM	15:00	70.5	RLTCS
2.3166666665	5:00 PM	16:00	25	SVD
1.9166666666	11:30 AM	23:30	36	SVD

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
4.4000000000	2:39 PM	20:26	18.21666667	SVD
2.5166666667	11:00 AM	3:00	32	SVD
2.4000000000	7:00 PM	4:45	38.25	SVD
2.0666666668	11:30 AM	22:25	37.08333333	SVD
2.4833333334	12:40 PM	4:20	56.33333333	SVD
2.1833333333	2:02 PM	18:15	43.78333333	SVD
2.1666666667	1:30 PM	17:35	43.91666667	SVD
2.0833333333	12:18 PM	18:00	18.3	SVD
3.1666666667	3:55 PM	18:30	No info. found	SVD
2.8333333333	6:25 PM	5:30	36.91666667	VAVD
5.0500000000	4:50 PM	17:32	47.3	1LTCS
4.2833333333	10:20 AM	14:00	68.33333333	RLTCS
4.2666666668	1:10 PM	20:35	40.58333333	RLTCS
2.6333333334	11:15 AM	13:00	46.25	SVD
2.1666666666	4:00 PM	14:30	49.5	SVD
1.4166666667	6:30 PM	6:30	60	SVD
2.5666666667	1:19 PM	14:45	70.56666667	1LTCS
-16.9666666666	3:00 PM	6:19	80.68333333	1LTCS
4.9833333333	2:00 PM	15:10	46.83333333	RLTCS

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
2.9833333335	5:59 PM	9:40	No info. found	RLTCS
2.7000000001	4:19 PM	19:40	68.65	SVD
3.4166666668	1:00 PM	21:40	15.33333333	SVD
2.9833333333	1:46 PM	6:00	No info. found	SVD
2.0166666666	8:00 PM	23:30	68.5	SVD
2.8333333333	8:50 PM	20:20	24.5	VAVD
3.8666666665	1:38 PM	18:15	43.38333333	1LTCS
2.0000000001	11:32 AM	22:30	No info. found	SVD
3.7166666667	1:50 PM	19:30	42.33333333	SVD
3.5833333333	1:40 PM	11:00	50.66666667	SVD
2.4000000000	12:30 PM	9:45	No info. found	SVD
2.4000000000	7:00 PM	18:20	No info. found	SVD
2.8833333333	2:00 PM	8:25	29.58333333	SVD
3.0833333334	1:01 PM	5:45	31.26666667	SVD
5.4500000000	7:35 PM	13:30	54.08333333	VAVD
3.9000000001	11:00 AM	17:10	41.83333333	1LTCS
4.0833333334	1:00 PM	13:20	71.66666667	1LTCS
3.7500000000	12:17 PM	15:00	69.28333333	RLTCS
2.8000000000	1:05 PM	3:40	33.41666667	SVD

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
3.3499999999	11:49 AM	13:30	22.31666667	SVD
2.3666666667	1:53 PM	10:30	27.38333333	SVD
4.9833333333	2:55 PM	10:15	52.66666667	1LTCS
3.9666666667	6:12 PM	17:10	49.03333333	1LTCS
-21.3499999999	1:30 PM	1:30	60	SVD
3.8666666667	6:00 PM	15:00	27	SVD
4.0333333334	2:41 PM	22:50	39.85	VAVD
3.0000000000	12:11 PM	22:50	61.35	1LTCS
2.8999999998	6:30 PM	4:35	61.91666667	1LTCS
4.3666666666	11:30 AM	16:30	67	RLTCS
-20.3666666667	11:00 AM	1:50	81.16666667	SVD
3.2833333334	2:40 PM	15:00	No info. found	SVD
3.5000000001	2:52 PM	23:00	39.86666667	SVD
2.0166666666	4:01 PM	4:00	36.01666667	SVD
2.6666666668	1:00 PM	16:15	44.75	SVD
-21.1500000000	2:21 PM	2:50	59.51666667	SVD
4.3333333333	1:26 PM	16:46	68.66666667	1LTCS
5.5833333334	2:40 PM	20:26	No info. found	RLTCS
2.5833333334	12:42 PM	3:00	81.7	RLTCS

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
3.2833333334	9:20 PM	21:30	23.83333333	SVD
1.2833333333	6:00 PM	3:05	No info. found	SVD
4.6000000000	11:37 AM	23:00	12.61666667	SVD
3.2499999999	3:00 PM	6:55	32.08333333	SVD
7.5166666665	12:15 PM	15:28	20.78333333	SVD
0.2000000001	3:30 PM	8:00	55.5	SVD
3.2333333334	6:30 PM	3:45	62.75	VAVD
2.7333333333	4:30 PM	17:25	47.08333333	1LTCS
2.8666666668	1:20 PM	6:30	78.83333333	1LTCS
8.2666666667	3:40 PM	21:00	42.66666667	1LTCS
3.3000000001	11:30 AM	13:25	46.08333333	RLTCS
-9.5166666666	6:30 PM	7:57	34.55	SVD
2.4166666667	3:24 PM	17:00	22.4	SVD
2.9500000000	2:00 PM	14:30	23.5	SVD
0.3666666666	1:20 PM	11:25	25.91666667	SVD
0.0500000000	1:25 PM	13:45	71.66666667	SVD
2.0833333333	6:00 PM	2:45	63.25	SVD
-20.4333333334	8:12 PM	1:45	66.45	SVD
7.5833333333	2:30 PM	21:15	65.25	1LTCS

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
2.6666666668	10:51 AM	5:00	77.85	ILTCS
2.4166666667	11:03 AM	20:30	62.55	ILTCS
3.5333333333	1:00 PM	19:45	65.25	RLTCS
4.2166666666	2:51 PM	18:45	68.1	RLTCS
4.2000000001	7:30 PM	17:34	25.933333333	SVD
-21.4166666666	10:44 AM	1:05	81.65	SVD
2.6333333332	11:35 AM	14:20	45.25	SVD
3.1666666667	11:27 AM	13:45	69.7	RLTCS
2.4166666667	2:00 PM	20:00	18	SVD
3.1166666667	2:35 PM	8:40	53.916666667	SVD
2.2166666667	6:00 PM	3:45	38.25	SVD
2.7499999999	12:00 PM	20:07	39.883333333	SVD
2.2500000000	2:05 PM	22:15	39.833333333	SVD
3.3833333334	12:46 PM	6:20	54.433333333	VAVD
3.4333333333	12:00 PM	13:30	46.5	RLTCS
1.9500000001	1:34 PM	3:10	58.4	SVD
2.4833333332	3:30 PM	14:40	48.833333333	SVD
2.6333333334	12:35 PM	11:50	24.75	SVD
3.5833333333	1:00 PM	11:50	73.166666667	ILTCS

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
4.3333333333	2:40 PM	15:10	47.5	FAVD
4.7833333334	1:10 PM	17:00	44.16666667	RLTCS
2.9500000000	10:30 AM	9:15	73.25	SVD
0.1000000000	4:45 PM	20:20	44.41666667	SVD
2.7166666668	12:00 PM	23:10	60.83333333	1LTCS
3.2000000000	11:57 AM	11:40	48.28333333	1LTCS
2.7833333333	12:19 PM	18:45	41.56666667	RLTCS
-21.0500000000	12:00 PM	2:55	81.08333333	RLTCS
2.7499999999	12:45 PM	13:00	47.75	RLTCS
1.8666666666	2:00 PM	4:15	57.75	SVD
3.3500000001	6:00 PM	5:45	60.25	SVD
2.1666666667	1:12 PM	23:15	13.95	SVD
2.4000000001	1:51 PM	20:00	41.85	SVD
1.8666666666	7:10 PM	6:15	36.91666667	SVD
2.5166666667	1:51 PM	16:00	45.85	SVD
2.3500000000	12:59 PM	21:50	39.15	SVD
2.1333333333	12:37 PM	12:15	48.36666667	SVD
0.2666666667	1:00 PM	13:00	No info. found	VAVD
3.6500000000	2:26 PM	23:55	38.51666667	VAVD

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
3.1000000000	4:11 PM	16:30	47.68333333	VAVD
5.5166666668	10:30 PM	16:38	77.86666667	1LTCS
2.9500000000	2:03 PM	12:40	73.38333333	1LTCS
2.8000000000	1:00 PM	19:08	41.86666667	SVD
3.1166666667	4:10 PM	20:54	43.26666667	SVD
1.8833333334	3:14 PM	6:30	32.73333333	SVD
3.5166666666	2:15 PM	21:50	16.41666667	SVD
3.1333333334	1:30 PM	11:10	74.33333333	1LTCS
5.5833333332	11:19 AM	6:18	53.01666667	1LTCS
10.5666666665	2:40 PM	22:00	16.66666667	RLTCS
4.4333333335	4:45 PM	17:00	71.75	RLTCS
4.7333333334	3:25 PM	14:05	49.33333333	RLTCS
-20.4166666667	12:26 PM	0:15	36.18333333	SVD
4.1666666666	1:30 PM	18:15	43.25	SVD
3.0833333333	1:11 PM	21:00	16.18333333	SVD
4.6000000000	3:38 PM	14:45	72.88333333	RLTCS
3.2166666667	2:00 PM	14:30	47.5	RLTCS
6.0333333333	12:30 PM	17:50	42.66666667	VAVD
4.1499999999	2:01 PM	16:00	70.01666667	1LTCS

IMPROVING PATIENT THROUGHPUT IN AKRON GENERAL CLEVELAND CLINIC
 POSTPARTUM UNIT

Recovery Time	Discharge Time	Time Transfer Postpartum	Recovery Time	Delivery Mode
2.966666667	10:30 AM	12:45	No info. found	RLTCS
5.2833333334	11:58 AM	9:20	74.633333333	VAVD
3.0833333333	10:49 AM	3:45	55.066666667	RLTCS
3.0166666667	5:08 PM	18:00	No info. found	SVD
2.0666666668	4:46 PM	21:30	43.266666667	SVD
3.2999999999	7:00 PM	17:20	49.666666667	SVD
3.3499999999	12:30 PM	6:50	29.666666667	SVD
2.1666666667	2:15 PM	5:45	32.5	SVD