PROJECT NAME:

Improving Chemotherapy Ordering Process

Institution: UTMB Galveston

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Project Category: General Quality Improvement

Purpose:

The purpose of the project, “Improving Chemotherapy Ordering Process”, is to provide safe and efficient care to oncology patients at UTMB’s outpatient infusion clinics. Several issues regarding the chemotherapy ordering process were identified including a lack of consistency with documentation of orders and administration, making it difficult to locate previous orders and to keep track of the chemotherapy cycle. In addition, the electronic health record (EHR) allows orders to be placed into the patient record from a word document using the “cut & paste” function without a standardized format. Other issues of concern include the bypassing of chemotherapy dose checking at the prescriber level and difficulty updating the original order when changes are needed. The chemotherapy ordering process is unsafe and inefficient, putting patients at risk for dosing and scheduling errors. The nursing and pharmacy staffs are dissatisfied with the extra time spent reconciling the errors on the orders. Improving the chemotherapy ordering process is geared to improve the quality of patient care, while simultaneously increasing staff satisfaction through improved communication and coordination of care between clinicians and enhancing the overall patient experience in UTMB’s infusion clinics. Key stakeholders for this project include physicians, nursing, pharmacy, and oncology patients.

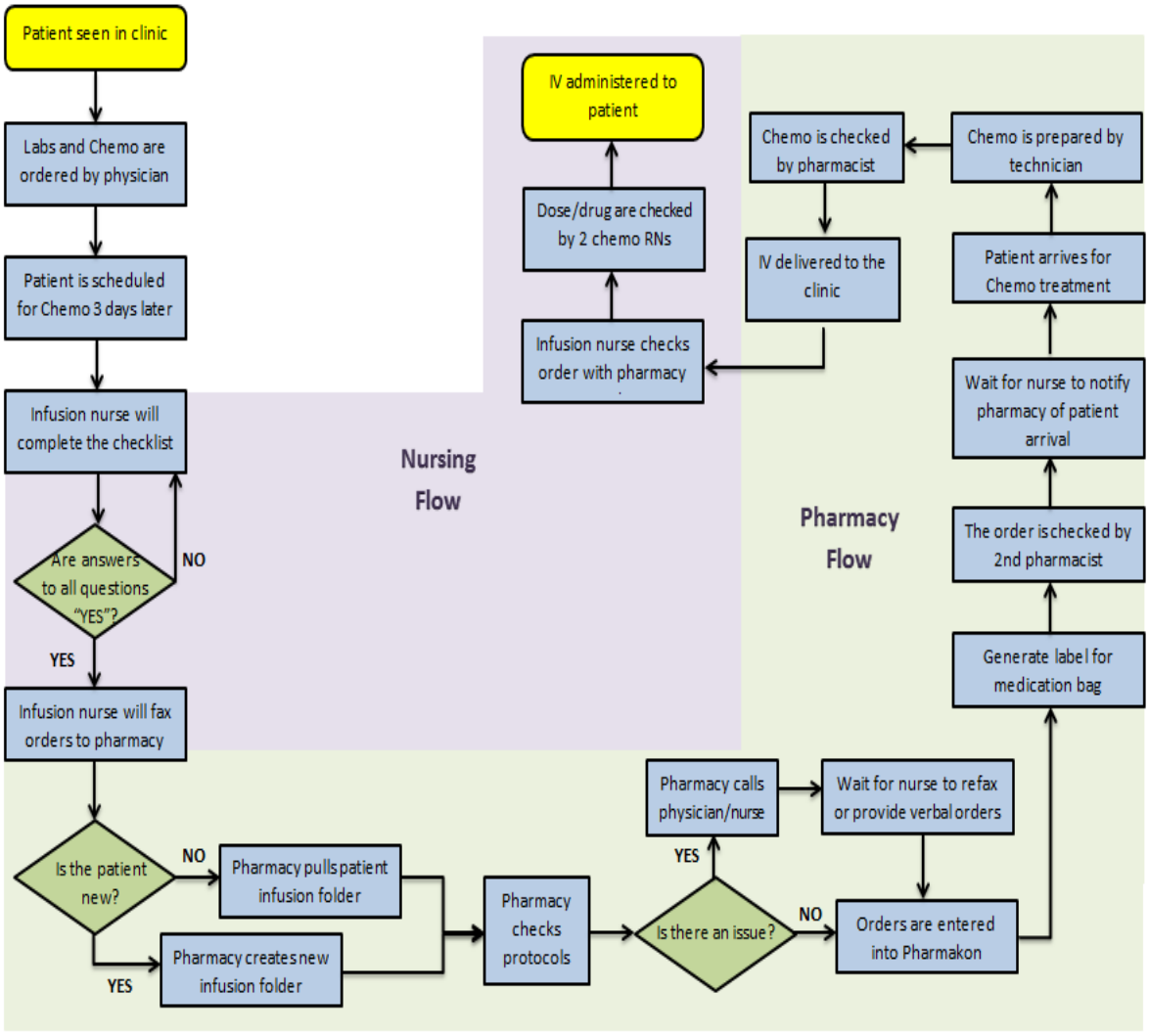
Aim Statement:

Decrease the number of chemotherapy order forms with deviations from the standard chemotherapy ordering policy within outpatient infusion centers by 50% by June 2013.

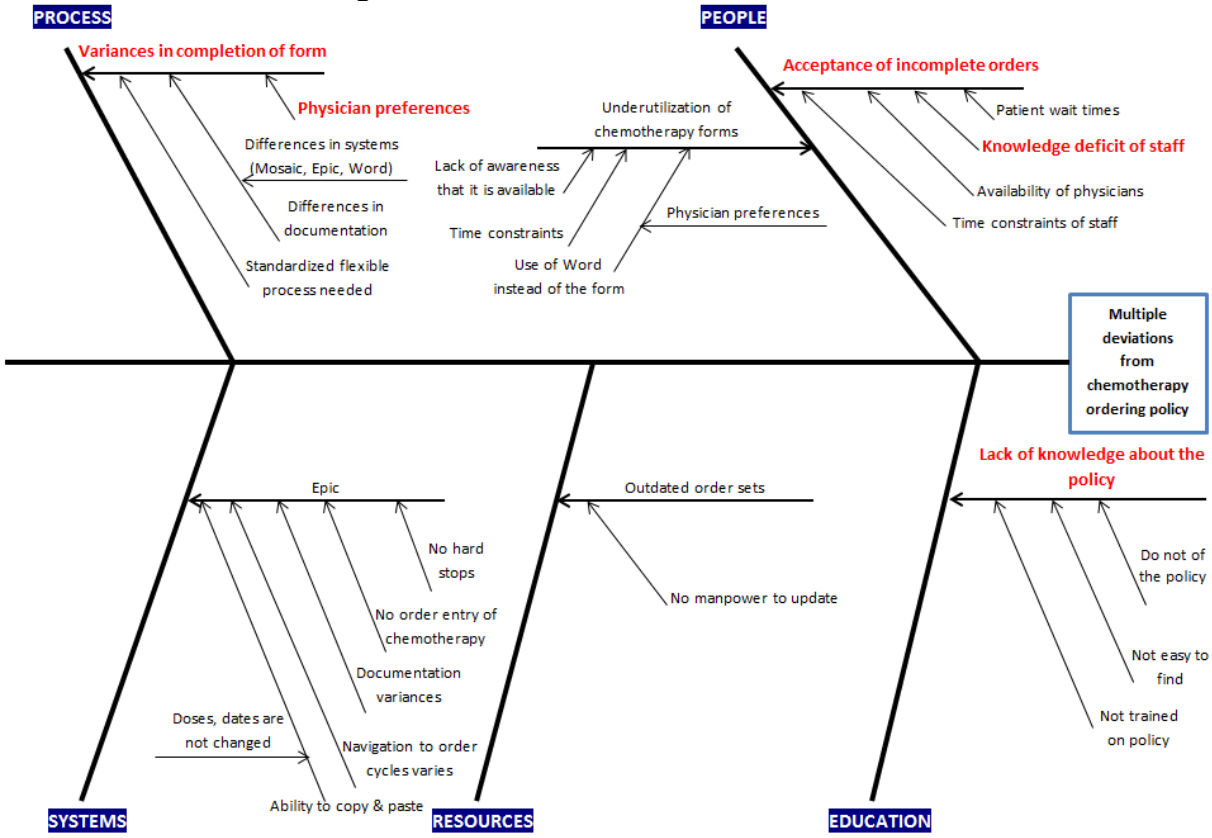
Tools and Measurement:

Process Flow Chart

The current process for ordering chemotherapy was examined.



Cause and Effect Diagram

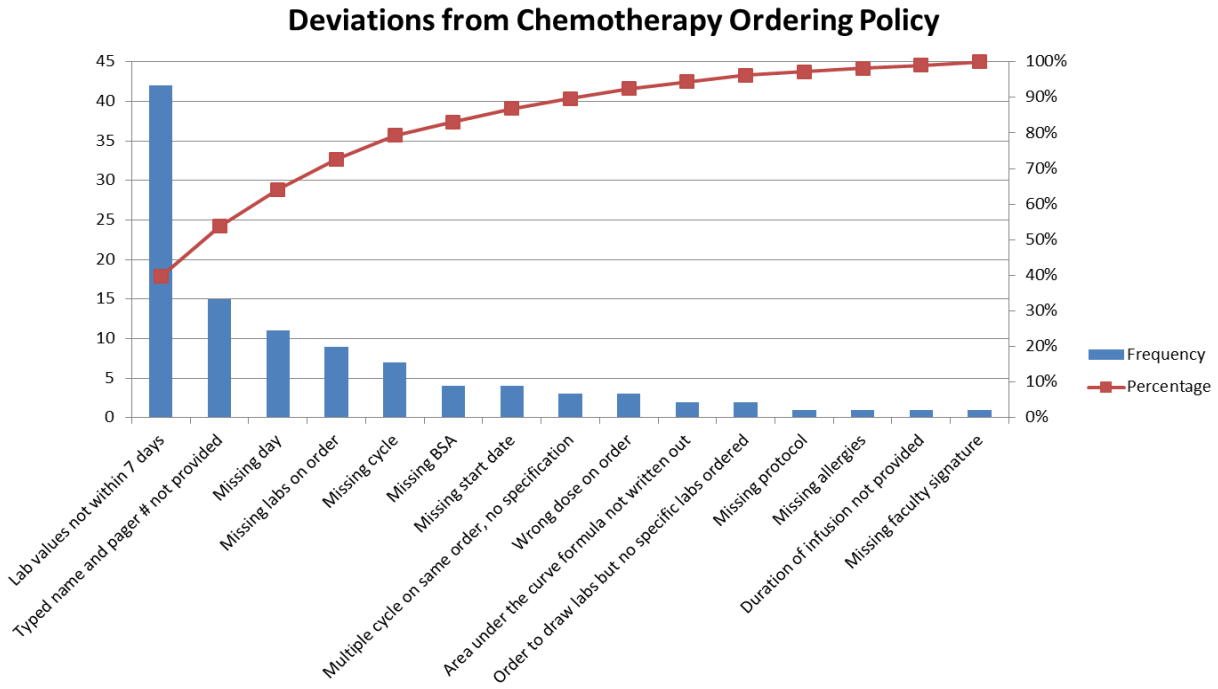


Root causes were identified and then the focus was narrowed to the following: variances in completion of form with physician preferences; knowledge deficit of staff regarding acceptance of incomplete orders; and lack of knowledge of the chemotherapy ordering process.

Pareto Chart

During the chemotherapy medication ordering process, physicians, nurses, and pharmacists have identified deviations from UTMB policy on the chemotherapy order forms.

- Orders were reviewed from January 1, 2013 to May 31, 2013.
- Real time observation of the process for reviewing chemotherapy orders in nursing and pharmacy areas was conducted.
- Data was collected on the types of deviations on the chemotherapy order forms.



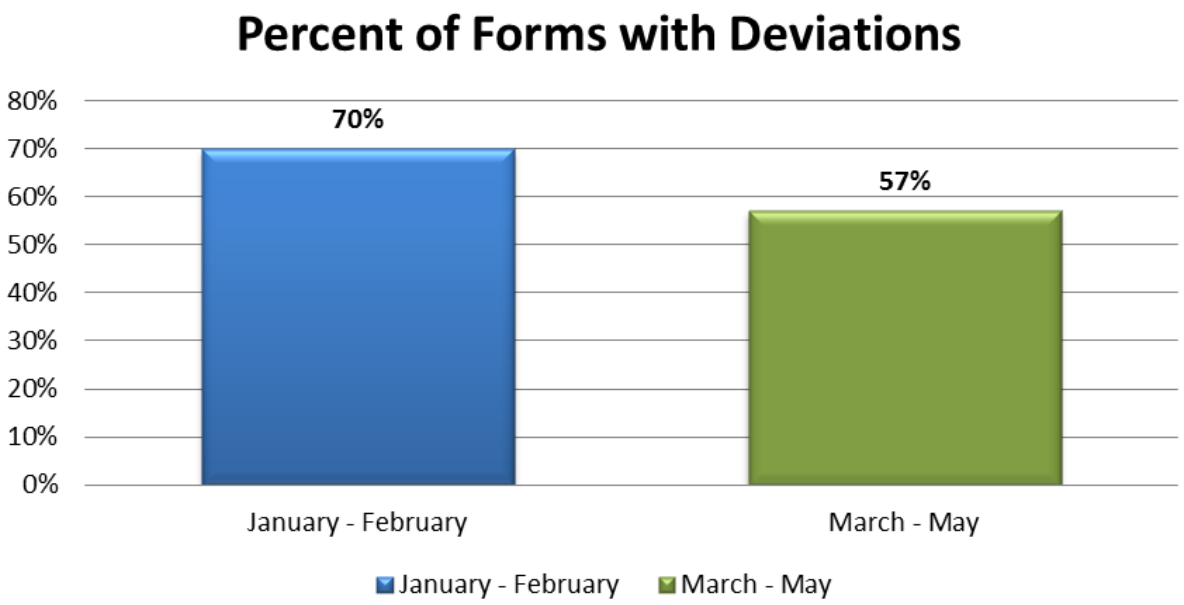
PARETO CHART DATA JAN 1 2013--FEB 28 2013				
No.	**Type of Deviation**	**Frequency**	**Cumulative Frequency**	**Percentage**
1	Lab values not within 7 days	42	42	40%
2	Typed name and pager # not provided	15	57	54%
3	Missing day	11	68	64%
4	Missing labs on order	9	77	73%
5	Missing cycle	7	84	79%
6	Missing BSA	4	88	83%
7	Missing start date	4	92	87%
8	Multiple cycle on same order, no specification	3	95	90%
9	Wrong dose on order	3	98	92%
10	Area under the curve formula not written out	2	100	94%
11	Order to draw labs but no specific labs ordered	2	102	96%
12	Missing protocol	1	103	97%
13	Missing allergies	1	104	98%
14	Duration of infusion not provided	1	105	99%
15	Missing faculty signature	1	106	100%
	Total	**106**		

Intervention and Improvement:

The following interventions were made:

1. Education of ordering physicians; including Fellows:
    - Entering complete orders and including all pertinent information
    - Standardizing the way that cycles are written for protocols
    - Writing in lab parameters
    - Linking to articles
2. Instituted same day labs on day of physician visit
3. Developed standardized lab parameters with medical director
4. Performed manual audits and provided feedback
5. Nursing staff were educated on the policy and not to accept orders with deviations

Intervention Results:



BEFORE January - February		
	Total Orders Reviewed	127
	Total Correct	38
	Total with Deviations	89
	Percent with Deviations	70%

AFTER March - May		
	Total Orders Reviewed	207
	Total Correct	90
	Total with Deviations	117
	Percent with Deviations	57%

Percent Reduction in Forms with Deviations 13%

Revenue Enhancement / Cost Avoidance / Generalizability:

Project Impact

To examine the impact of this project, the team observed and conducted time studies of the chemotherapy order review process in pharmacy and nursing areas. After compiling the time study data, the average time to complete a review of a chemotherapy order with one or more deviations was compared to the average time taken to review an order without any deviations.

The difference between these two times, approximately 7 minutes, was calculated per day assuming 2 orders per day (from baseline data) were found to have at least one deviation. This total time was then attributed to a portion of a pharmacist and a nurse's salaries per year and extrapolated over a five year period accounting for inflation.

Based on a pharmacist and a nurse's current salaries, a total of approximately $3,800 or $2,100 could be devoted to more value add tasks and over a 5 year period anywhere between $10,600 and $19,100 could be dedicated to these value add activities. These amounts represent the dollars spent on re-work and wasted time of the pharmacy and nursing staff due to deviations on these orders.

Data is presented below:

Baseline Data:

Time Period	Jan 1, 2013-Feb 28, 2013
Business days in time period:	41
Total orders reviewed:	127
Percent of orders reviewed without any deviations:	30%
Percent of orders reviewed with at least one deviation:	70%
Order with deviations/day:	2

Time Study Data:

Occupation	Average time (min)/ order w/ deviation	Average time (min)/ order w/o deviation	Average time (min) difference
Nurse	10.16	3.27	6.89
Pharmacist	9.65	2.66	6.99

Time Savings Analysis:

Occupation	Year 1	Year 2	Year 3	Year 4	Year 5	Grand Total
Nurse	$2,002.16	$2,062.23	$2,124.09	$2,187.82	$2,253.45	$10,629.74
Pharmacist	$3,614.02	$3,722.44	$3,834.12	$3,949.14	$4,067.61	$19,187.34

** Based on 2 orders with deviations per day, 260 business day year, 60 hours spent per year reviewing orders with deviations*

Additional items that the project did not measure:

- Costs of chemotherapy drugs when orders are found to have deviations and the medication cannot be used
- Costs associated with hospital admissions due to incorrect drug administration (dosage, timing, etc.)
- Improved patient satisfaction
- Patient safety and quality of care
- Elevated staff satisfaction

Summary / Conclusions / Next Steps:

Interventions in the “Improving Chemotherapy Ordering Process” project reduced the number of order forms with deviations by 13% by June 2013. This is a modest decrease; however, our interventions are on-going, and we hope to further improve the chemotherapy ordering process as more physicians become aware of the chemotherapy ordering policy.

Next steps:

1. Implement the interventions in the inpatient care setting
2. Modify the chemotherapy checklist to reflect the standard for an acceptable chemotherapy order.
3. Eliminate distraction of the pharmacist or nurse while reviewing the orders.
4. Accelerate the implementation of a computerized physician ordering system specific to chemotherapy (e.g. BEACON)
5. Request EPIC to provide separate tabs for chemotherapy orders and chemotherapy administration so that chemotherapy cycles can be easily tracked.