The Impact of an Infusion Reaction Documentation Template on Rapid Rituximab Infusion Escalation

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Background

- Rituximab is a chimeric anti-CD20 antigen monoclonal antibody commonly used for non-Hodgkin's lymphoma (NHL) and chronic lymphocytic leukemia
- Rituximab is generally well tolerated, but carries a black box warning for severe or fatal infusion reactions
- Approximately 80% of all infusion reactions from rituximab occur with the initial infusion
- When titrated per standard protocol, rituximab is titrated over 4-6 hours
  - Earlier studies have demonstrated that if a patient tolerates the initial rituximab infusion over 4-6 hours, second and subsequent infusions can safely be administered over 90 minutes
- At the University of Chicago (UCM) outpatient Infusion Therapy (IVTH) clinic, over 300 rituximab infusions were administered in 2019
- Per protocol at UCM, IVTH pharmacists and nurses can adjust the rate of rituximab from standard to rapid for patients meeting specific criteria as outlined by a series of order questions included within the rituximab electronic order including, if patients have tolerated previous infusions without having a reaction
- However, prior to our intervention, there was no universal location in the patients electronic health record (EHR) where reaction to a chemotherapy infusion could be documented or easily located by the IVTH pharmacists and nurses
- To more efficiently identify if a patient tolerated an infused chemotherapy, and to more easily identify if a patient can be changed to rapid rituximab infusion, a flowsheet was built into the EHR for IVTH nurses to complete after each infusion encounter
- We hypothesized that the implementation of the flowsheet would increase the number of rituximab infusions administered as a rapid, 90 minute infusion

Objectives

Primary:
- Incidence of appropriate escalation to rapid rituximab infusion rate pre- and post-flowsheet implementation

Secondary:
- Incidence of accurate chair time scheduling
- Nursing compliance with flowsheet documentation

Methods

Project Design	Retrospective, quasi-experimental quality improvement project
Inclusion Criteria	Adult patients receiving rituximab infusion for an oncologic indication at UChicago outpatient infusion center between January 2019-October 2019
Exclusion Criteria	Receiving rituximab for non-oncologic indication
Statistical Analysis	Chi-squared or Fisher's exact test with p-value ≤ 0.05 considered statistically significant

Results

Figure 1: Patient selection

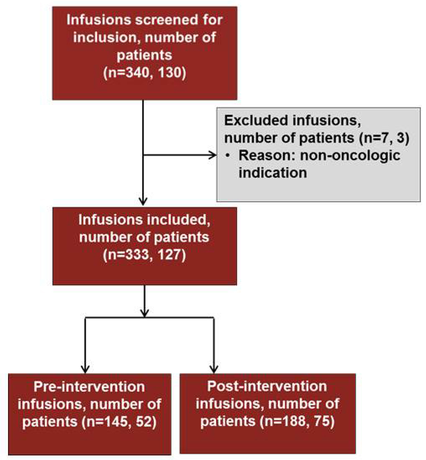

Table 1: Patient Characteristics

Number of patients	127
Number of rituximab infusions	333
Indication by infusion encounter	
NHL	277 (83)
Post-transplant lymphoproliferative disorder	28 (8.5)
Other	28 (8.5)

Data presented as n (%)

Table 2: Primary outcome

Variable	Pre-intervention (n=124)	Post-intervention (n=145)	p-value
Rituximab appropriately escalated to rapid infusion	101 (81.4)	105 (72.4)	0.143

Data presented as n (%)

Table 3: Secondary outcomes

Variable	Pre-intervention (n=145)	Post-intervention (n=188)	p-value
Encounter scheduled for appropriate chair time	59 (40.6)	73 (38.8)	0.998
Adherence to flowsheet documentation	-	44 (23.4)	-

Data presented as n (%)

Table 4: Rituximab order questions updates

Original Order Questions	Proposed Changes
-	Is this the patients first rituximab infusion in 3 months? (If NO, the following questions will display)
Has the patient experienced a grade 3 or 4 infusion-related reaction due to rituximab within the past 3 months?	Has the patient experienced a grade 3 or 4 infusion-related reaction due to rituximab within the past 3 months (see IVTH flowsheet)?
Is the patient receiving rituximab as part of a clinical trial?	Is the patient receiving rituximab as part of a clinical trial excluding rapid rituximab?
Does the patient have clinically significant cardiovascular disease	Does the patient have clinically significant cardiovascular disease (NYHA grade II or higher heart failure, peripheral vascular disease, or ventricular arrhythmia requiring medication)?
Does the patient have a circulating lymphocyte count ≥5000 per mm^3 ?	Does the patient have a circulating lymphocyte count ≥5000 per mm^3 or bulky disease defined by lesions greater than 10cm?
Is the patient's dose <250 mg or >1000 mg?	Is the patient's dose <250 mg or >1000 mg?
Adult patients receiving rituximab for an oncologic condition that have answered "NO" to all of the above questions may receive rituximab as rapid infusion over 90 minutes per policy.	

Discussion

- The implementation of the infusion reaction documentation flowsheet did not affect our primary and secondary outcomes as predicted
- Pre-implementation 81.4% of patients eligible for a rapid rituximab infusion received it as a rapid infusion
- Post-implementation 72.4% of eligible patients eligible for a rapid rituximab infusion received it as a rapid infusion (Table 2)
- Pre-implementation chair time was scheduled appropriately 40.6% of the time, and 38.8% post-implementation (Table 3)
- Nursing adherence to the flowsheet was 23.4% (Table 3)
- We found that the majority of patients eligible for rapid infusion that did not receive a rapid infusion were patients that relapsed
  - All 42 of these patients had received rituximab within 3 months without a reaction, and were eligible for rapid infusion
  - Since new treatment was considered "Cycle 1 Day 1" in their treatment plan, the standard infusion was administered per our rituximab order questions and infusion policy
- Limitations to our study include
  - Lack of control for accurate documentation
  - Patients with multiple encounters receiving multiple standard infusions
  - Infusion reactions not graded by IVTH nurses
  - Inability to assess cost savings with chair time saved

Future Directions

- Additional measures are needed to guide care teams to the appropriate infusion rate for rituximab, including:
  - Updating the rapid rituximab rapid infusion policy
  - Updating the current rituximab order questions (table 4),
  - Completing nursing in-services to update them on the rituximab infusion policy and rituximab order questions
- Data will be collected and analyzed after the new order questions are implemented
- We will look to apply similar strategies for other titratable monoclonal antibodies

References

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Disclosures

The authors of this presentation have no financial interests with commercial entities that may have a direct or indirect interest in the subject matter of this presentation