

Background

- Rituximab is a chimeric monoclonal antibody against CD20, which is present on developing B cells
 - Depletes B cells with average recovery time of 6-9 months
- Rituximab complications:
 - 19.3%-38.5% develop persistent hypogammaglobulinemia
 - Skewing of B-cell subpopulation toward naïve B cells with decreased memory and switched memory B cells
- Increased risk of serious infectious complications mitigated by immunoglobulin replacement therapy
 - Immunoglobulin replacement was required in 4.5%² - 6.6%³
- Long-term dysfunction may be related to individual patient factors:
 - Rituximab may “unmask” a pre-existing humoral defect
 - B-cell dysfunction may develop in susceptible individuals following rituximab treatment
- Increased risk for hypogammaglobulinemia may be related to increased dosages of rituximab
- Immunologic screening can identify patients with pre-existing immune dysfunction and those with persistent immunologic derangements following rituximab

Objectives

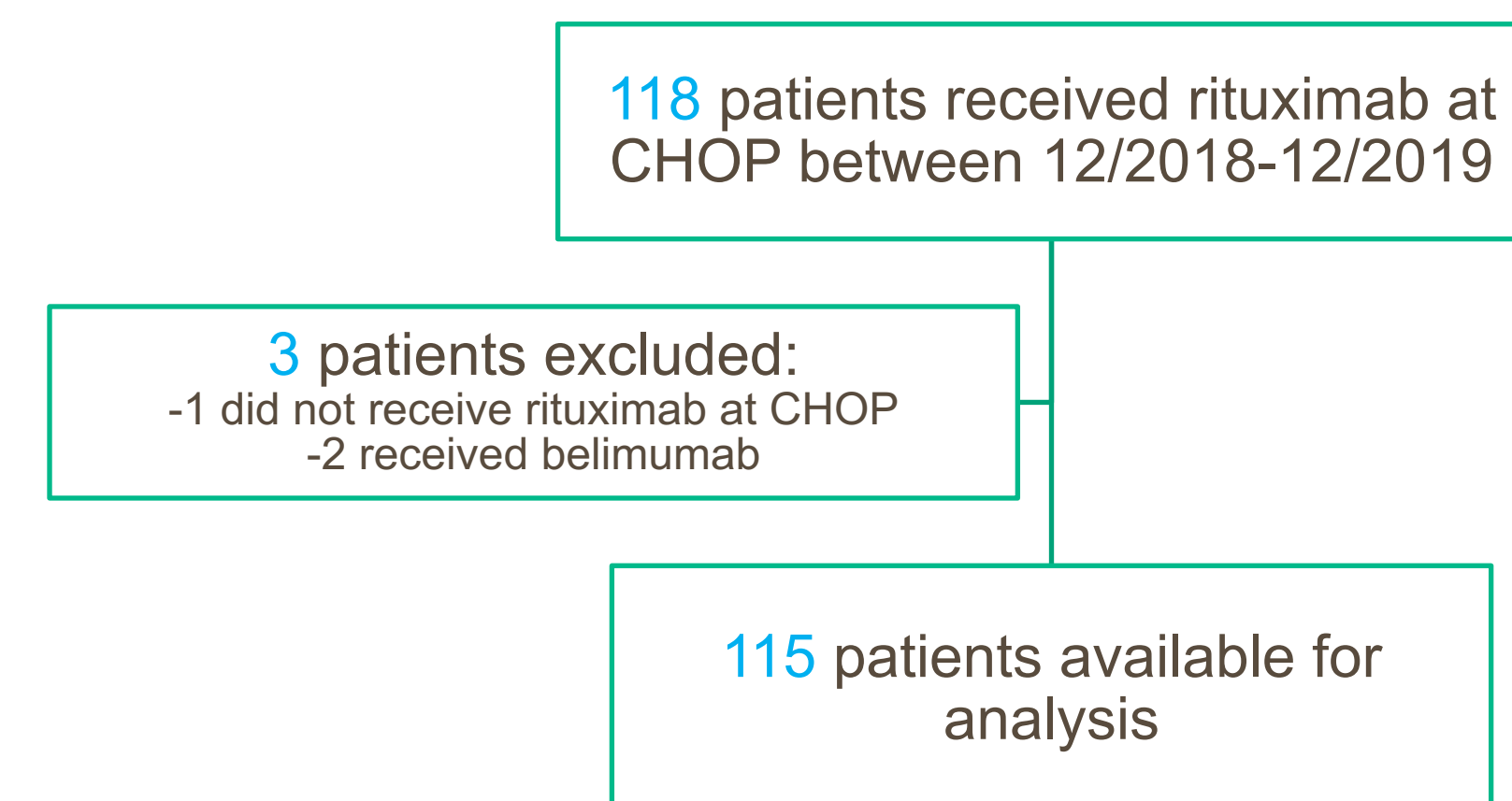
- Characterize the current practice of pre- and post- rituximab immunologic screening labs in both the inpatient and outpatient settings at the Children's Hospital of Philadelphia (CHOP)

Methods

- Retrospective review of all patients receiving rituximab at CHOP between 12/2018-12/2019
 - Age, reason for rituximab therapy
 - Laboratory evaluations obtained pre- and post-rituximab
 - Referral to immunology
 - Ordering service

Results

Rituximab is used by multiple services in the hospital and most are not referred to immunology.

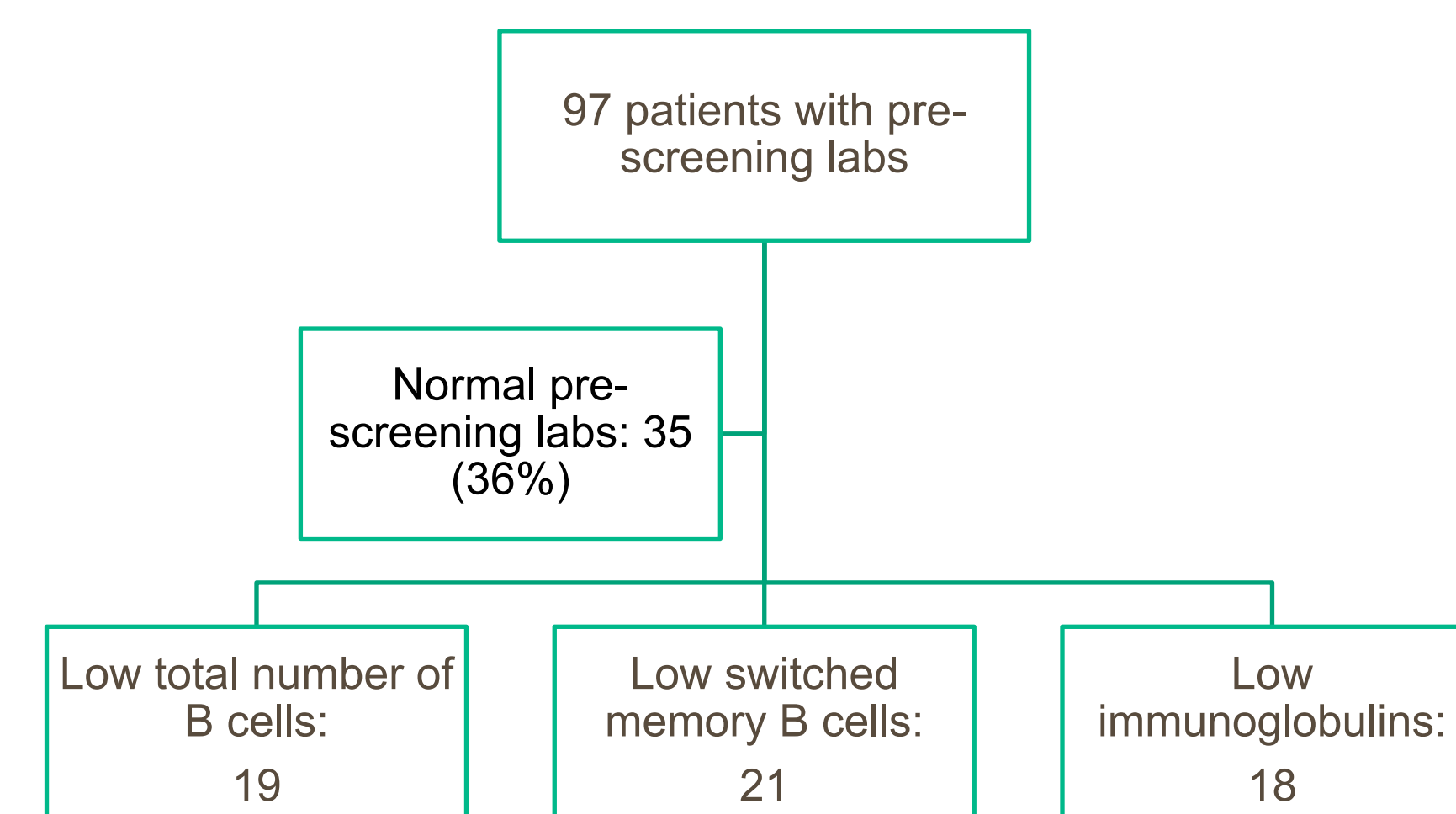
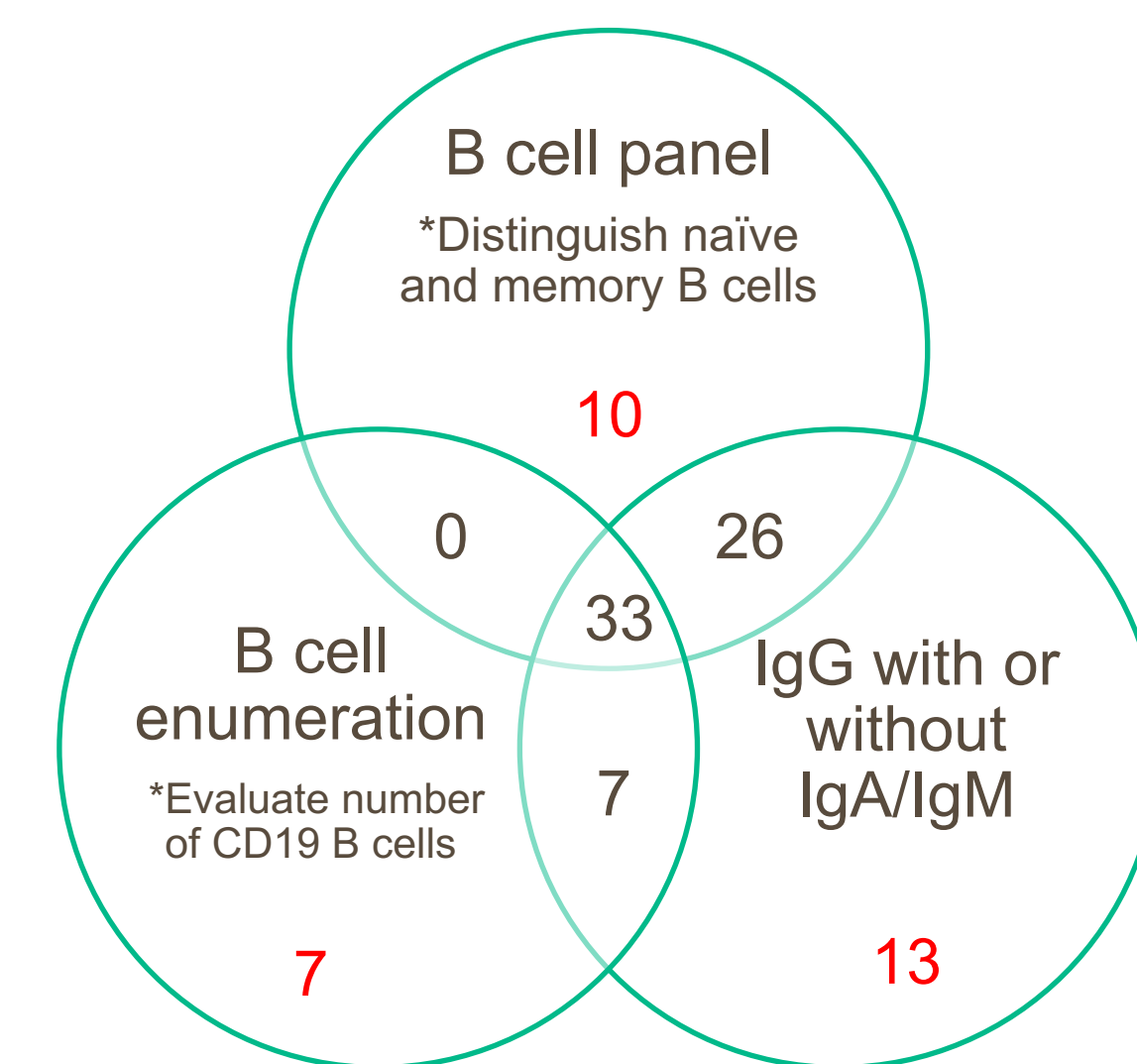


Patient characteristics	
Median age at first dose	13 years
Seen by immunology	22 patients

Ordering Services	Patients (n)
Bone Marrow Transplant	24
Rheumatology	22
Neurology	22
Nephrology	17
Oncology	16
Hematology	5
Cardiology	5
Pediatric Intensive Care Unit	1
Pulmonary	1
Immunology	1
Rheumatology/Nephrology	1
Total	115

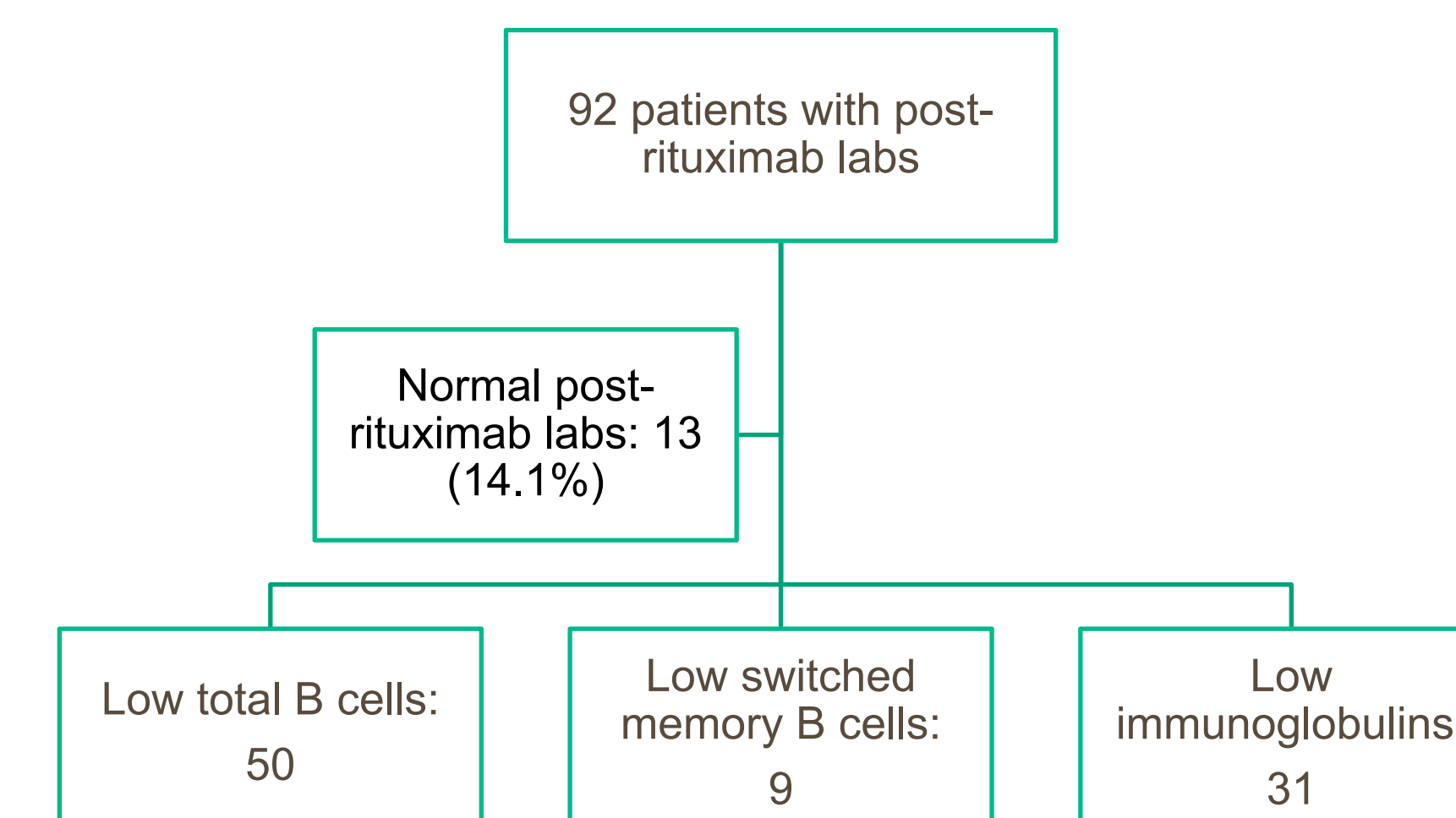
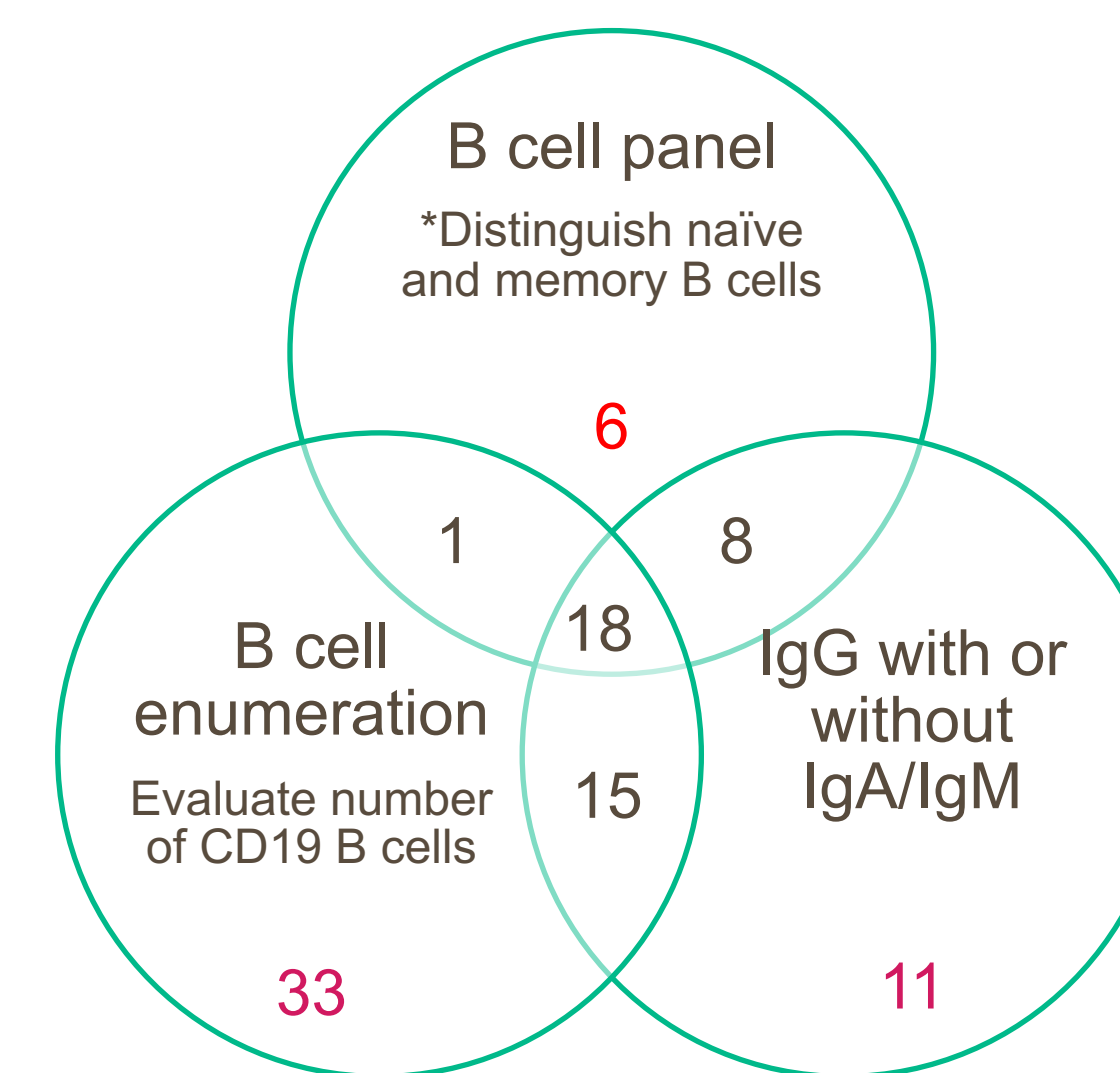
Immunophenotyping pre-rituximab

- 18/115 (15.7%) patients received rituximab without pre-screening labs
- Both B cell enumeration AND functional studies evaluated: **66 patients (68%)**



Immunophenotyping post-rituximab

- 23/114 (20.2%) patients did not have immunology monitoring labs post-rituximab
- Both B cell enumeration AND functional studies evaluated: **41 patients (44.6%)**



Conclusions

- The majority of patients had some form of immunology testing pre- and post-rituximab administration
- There was wide variability in types of labs ordered and many patients did not undergo both B cell enumeration and functional studies
- Screening demonstrated that many patients had abnormal lab results both pre- and post-rituximab administration
- Additional interventions are required to standardize immunophenotyping to evaluate for existing immunodeficiencies pre-rituximab and to monitor for immunologic recovery following drug administration

Future Directions

- Work with ordering services to develop an algorithm for immunophenotyping pre- and post-rituximab and for referral to immunology clinic
- Standardize ordersets in the electronic medical record to facilitate ordering relevant labs
- Develop a formal clinical pathway that is accessible for all providers to reference
- Assess changes to current practice with implementation of these interventions

References

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