

# Hepatitis B Screening Practices in the Setting of Immunotherapy Related Adverse Events

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## Introduction

- Complications from immune checkpoint inhibitor (ICI) and chimeric antigen receptor T-cell (CAR-T) therapies impact all organ systems and consist of immunotherapy-related adverse effects (irAEs), cytokine release syndrome (CRS), and immune effector cell-associated neurotoxicity syndrome (ICANS).<sup>1</sup>
- Immunotherapy adverse events are treated with immunosuppressive agents (IS), such as high dose steroids, tumor necrosis factor alpha (TNF- $\alpha$ ) inhibitors, and B-cell depletion therapies.<sup>1</sup>
- In the “Management of Immunotherapy-Related Toxicities” National Comprehensive Cancer Network (NCCN) guidelines, the risk of hepatitis B virus reactivation (HBVr) is recognized with the use of IS. The guidelines recommend testing both hepatitis B surface antigen (HBsAg) and core antibodies (anti-HBc) prior to initiation of IS.<sup>1</sup>
- IS have been stratified by the American Gastroenterological Association (AGA) into high, moderate, and low risk groups. With these classifications, there are recommendations for screening patients with moderate or high risk of HBVr when receiving immunosuppressive medication therapy.<sup>2</sup>
- Recommendations for antiviral prophylaxis in light of a positive HBV screening also follow AGA stratification for high, moderate, and low risk. Prophylaxis holds a strong recommendation in patients at high risk receiving immunosuppressive medication therapy, a weak recommendation in moderate risk patients, and a recommendation against routine use in patients at low risk of HBVr.<sup>2</sup>

## Objectives

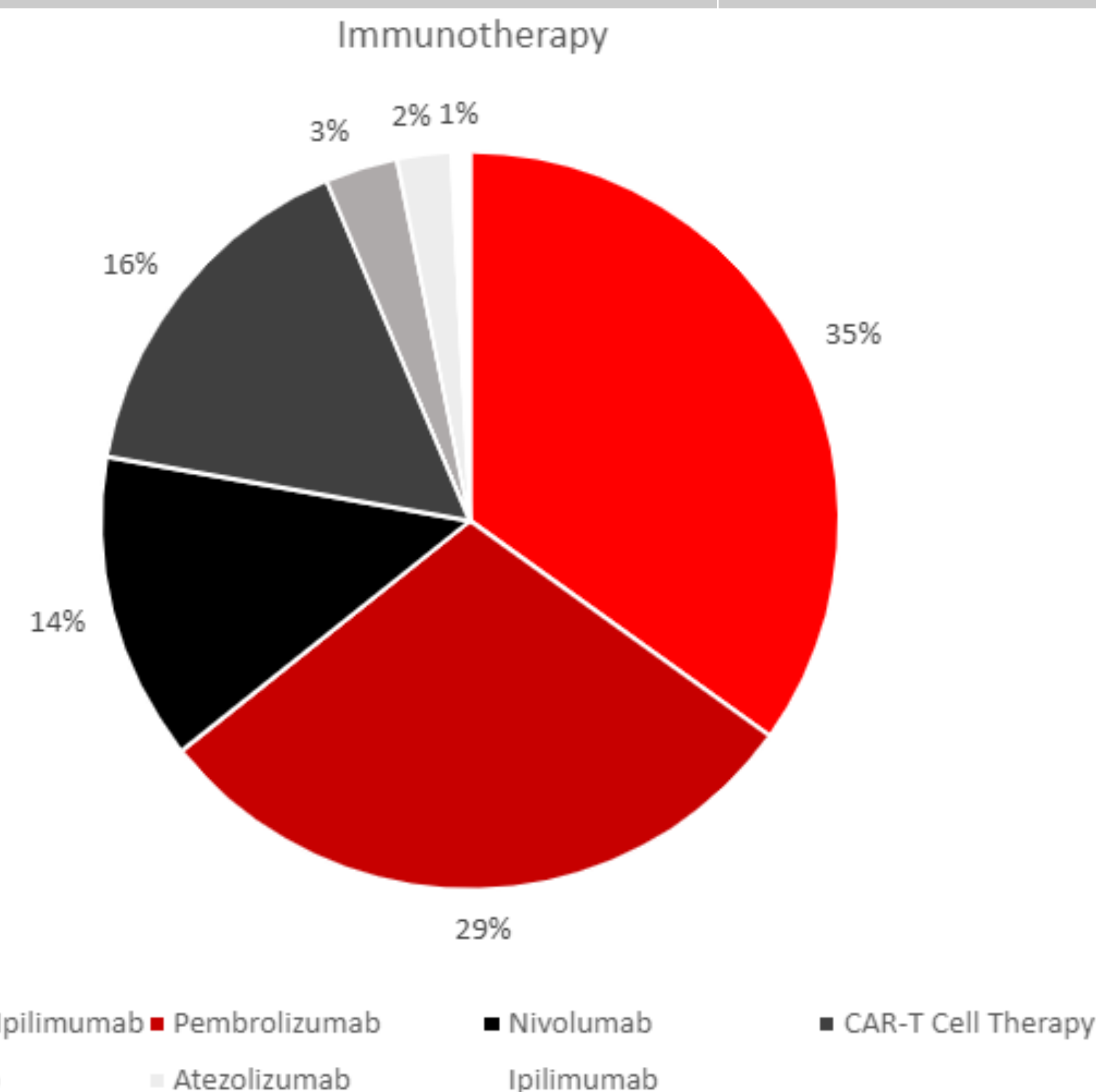
- To determine the appropriateness of HBV testing, defined as the presence of both a HBsAg and anti-HBc result available in the electronic medical record within one year of IS initiation
- To assess for reactivation of HBV within 6-12 months of the last administered dose of an immunosuppressive agent
- To assess for appropriate initiation and treatment duration of antiviral prophylaxis in accordance with guideline recommendations

## Methods

- Research Design:** A single-center, retrospective chart review of electronic medical records from January 2015 to December 2022 of patients who received an immunosuppressive agent for the treatment of a CAR-T or ICI immunotherapy related adverse event
- Setting:** UT Southwestern Medical Center (UTSW)
- Primary Endpoint:** Proportion of patients with both a HBsAg and anti-HBc result within one year prior to administration of an immunosuppressant
- Secondary Endpoints:** Proportion of patients with HBV reactivation, proportion of patients appropriately initiated on antiviral prophylaxis depending on determined risk
- Inclusion Criteria:** Adults (age  $\geq$  18 years), with current treatment or history of treatment with an ICI or CAR-T cell therapy agent and documented immune related adverse event treated with an immunosuppressive medication
- Exclusion Criteria:** Pregnant patients, prisoners, children

## Results

Patient Characteristics (n=126)	
Male, n (%)	77 (61.1%)
Age (mean)	68.8 years
ECOG PS (mean)	1
Malignancy, n (%)	
Renal cell carcinoma	34 (27%)
Lung	25 (19.8%)
Melanoma	21 (16.7%)
Diffuse large B-cell lymphoma	15 (11.9%)
Urothelial	10 (7.9%)
Breast	4 (3.2%)
Multiple myeloma	3 (2.4%)
Other solid malignancy	11 (8.7%)
Other hematologic malignancy	3 (2.4%)
Immunotherapy related adverse event, n* (%)	*n=147
Gastrointestinal	43 (29.3%)
Pulmonary	33 (22.4%)
CRS/ICANS	20 (13.6%)
Musculoskeletal	16 (10.9%)
Cardiac	8 (5.4%)
Endocrine	8 (5.4%)
Neurologic	7 (4.8%)
Dermatologic	5 (3.4%)
Renal	5 (3.4%)
Hematologic	2 (1.4%)



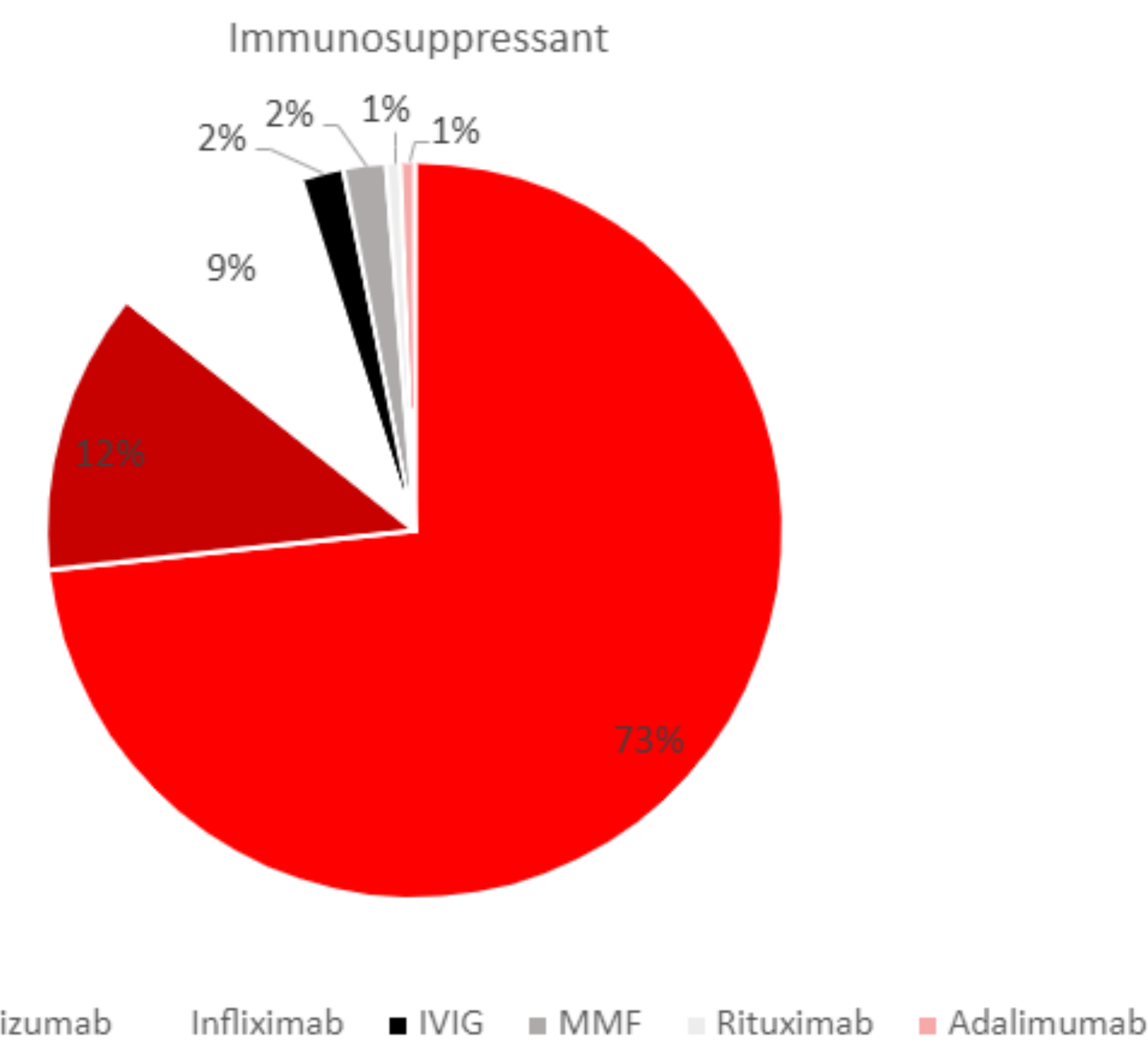
Primary Objective (n=126)	
HBsAg and anti-HBc within 1 year of IS, n (%)	111 (88.1%)
Positive HBsAg	1 (0.9%)
Positive anti-HBc	12 (10.8%)

Secondary Objectives (n=111)	
HBVr risk, n (%)	
Low	101 (90.9%)
Moderate	9 (8.1%)
High	1 (0.9%)

HBV prophylaxis indicated, n (%)	10 (9%)
On prophylaxis prior to admission	2 (20%)
Prophylaxis started at time of irAE	1 (10%)
Prophylaxis not administered	7 (70%)

HBV prophylactic agent administered, n* (%)	*n=3
Entecavir	2 (66.7%)
Tenofovir	1 (33.3%)

HBV reactivations	0 (0%)
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## Discussion

- Primary Objective:
  - Majority of patients received appropriate HBV screening within one year of receipt of an immunosuppressant agent for the treatment of an irAE
  - Low incidence of patients with positive results at screening, the majority with results indicating resolved HBV infection
- Antivirals for prophylaxis of hepatitis B reactivation administered in a small proportion of patients. Agents included entecavir and tenofovir.
- No patients experienced hepatitis B reactivation upon assessment of available serologies in the electronic medical record
- Limitations:
  - Retrospective chart review
  - Appropriate 6-12 month follow up for HBVr not available some patients due to death from disease or irAE within the recommended time frame
  - Potential for treatment of irAE given outside of UTSW system

## Conclusions

- Hepatitis B results within one year of review are available for a majority of oncology patients at UTSW, likely due to screening conducted at the initiation of chemotherapy/immunotherapy.
- Most patients studied were low risk for HBVr due to serology status and therefore did not require prophylactic antiviral therapy.
- No hepatitis B virus reactivations were seen in this cohort, but more data is necessary to elucidate the true rate of HBVr at our site. More patients with moderate to high risk of reactivation are needed to assess this endpoint.
- Availability of repeat serologies from patients 6-12 months after treatment with an immunosuppressive agent were lacking, therefore additional HBVr may have been unable to be discovered in this retrospective chart review.

## Disclosure

Authors have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

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