

INTRODUCTION

- Oral chemotherapy is a growing area of oncology treatment, with oral agents constituting ~25% of cancer treatments in the pipeline.[1]
- Many oral chemotherapy drugs elevate blood pressure, with incidences up to 73% for some agents.[2] Appropriate management of hypertension in oncology patients may be overlooked.
- Previous pharmacist-led hypertension management protocols in ambulatory care have demonstrated improved clinical outcomes, but such protocols have not been developed for oral chemotherapy in the oncology setting.[3]
- Our specialty pharmacy developed and implemented a hypertension management protocol which had the potential to help patients on oral chemotherapy achieve and maintain blood pressure control.

OBJECTIVE

- To assess the impact of a pharmacist-led hypertension management protocol on the blood pressure control of patients on oral chemotherapy.

PROTOCOL DESCRIPTION

- A hypertension management protocol was created for patients on oral chemotherapy and incorporated established hypertension guideline recommendations, manufacturer recommendations, and previously published outpatient hypertension protocols.
- Pharmacists in the specialty pharmacy contacted patients via telephone to collect blood pressure readings, assess values, and provide interventions as needed.
- Follow-up was initially conducted every 2 weeks for each patient. Patients who had stable blood pressures at goal were transitioned to follow-up every 4 weeks.

METHODS

- Retrospective, single-center study through chart review.
- Inclusion criteria: adult pt's receiving oral chemotherapy from specialty pharmacy with reported $\geq 5\%$ incidence of hypertension per package labeling.
- 2 cohorts:
 - Pt's receiving oral chemotherapy between 1/1/2019 and 12/31/2019, not followed with protocol.
 - Pt's receiving oral chemotherapy between 11/1/2020 and 1/31/2021, followed with protocol.
- Primary outcome: proportion of patients with blood pressure within goal in the protocol group (at the end of the follow-up period) compared to the pre-protocol group (overall in 2019)
- Approved by the USC Institutional Review Board.

BASELINE DEMOGRAPHICS

Table 1. Pre-protocol cohort characteristics (n = 50)

Age (in 2019)	
Median (range)	75 (52 - 89)
Sex	
Male (%)	40 (80)
Female (%)	10 (20)
Hypertension comorbidity per chart	
Yes (%)	32 (64)
No (%)	18 (36)
On anti-hypertensive in 2019	
Yes (%)	37 (74)
No (%)	13 (26)

Figure 1. Pre-protocol cohort cancer types (n)

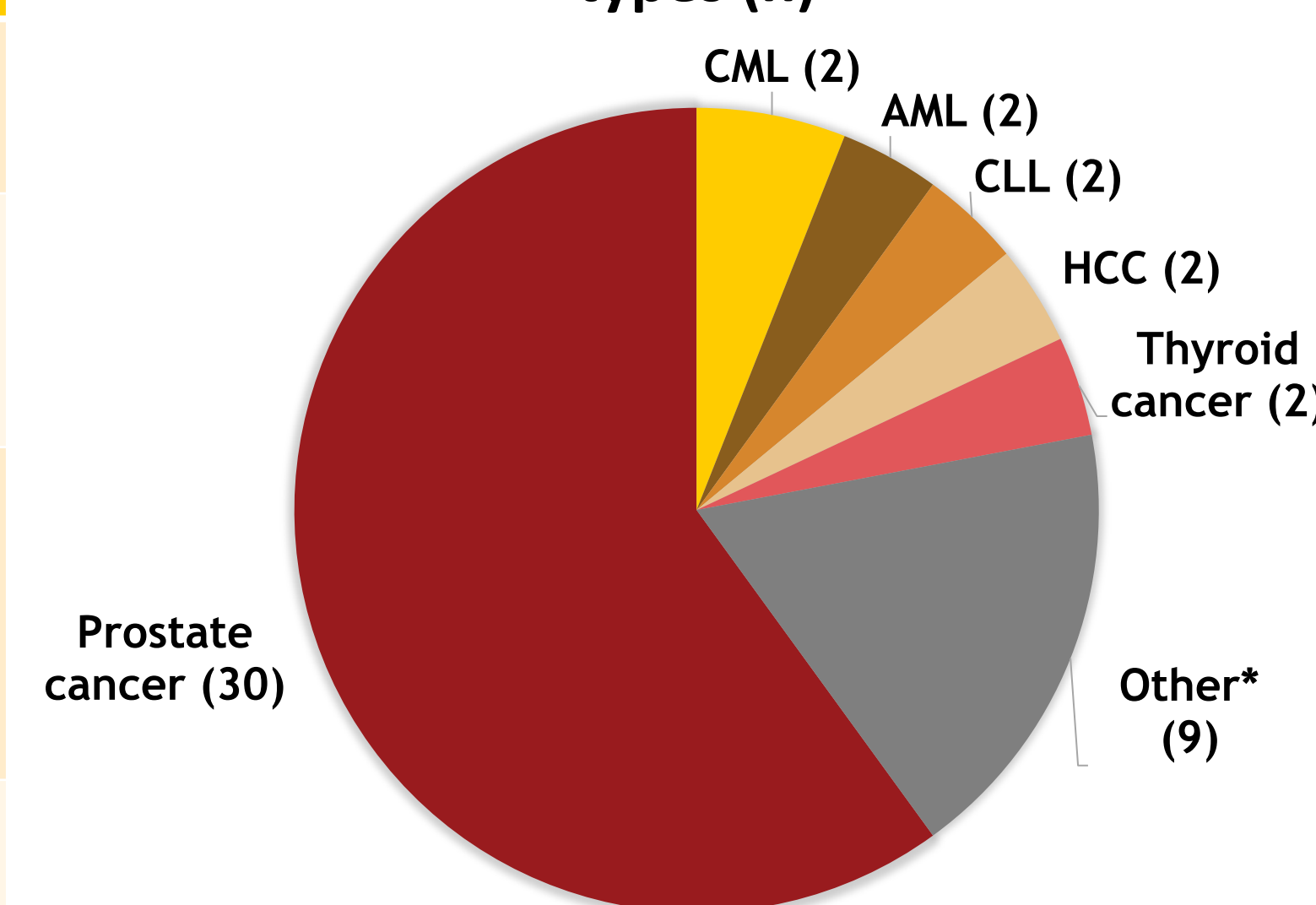
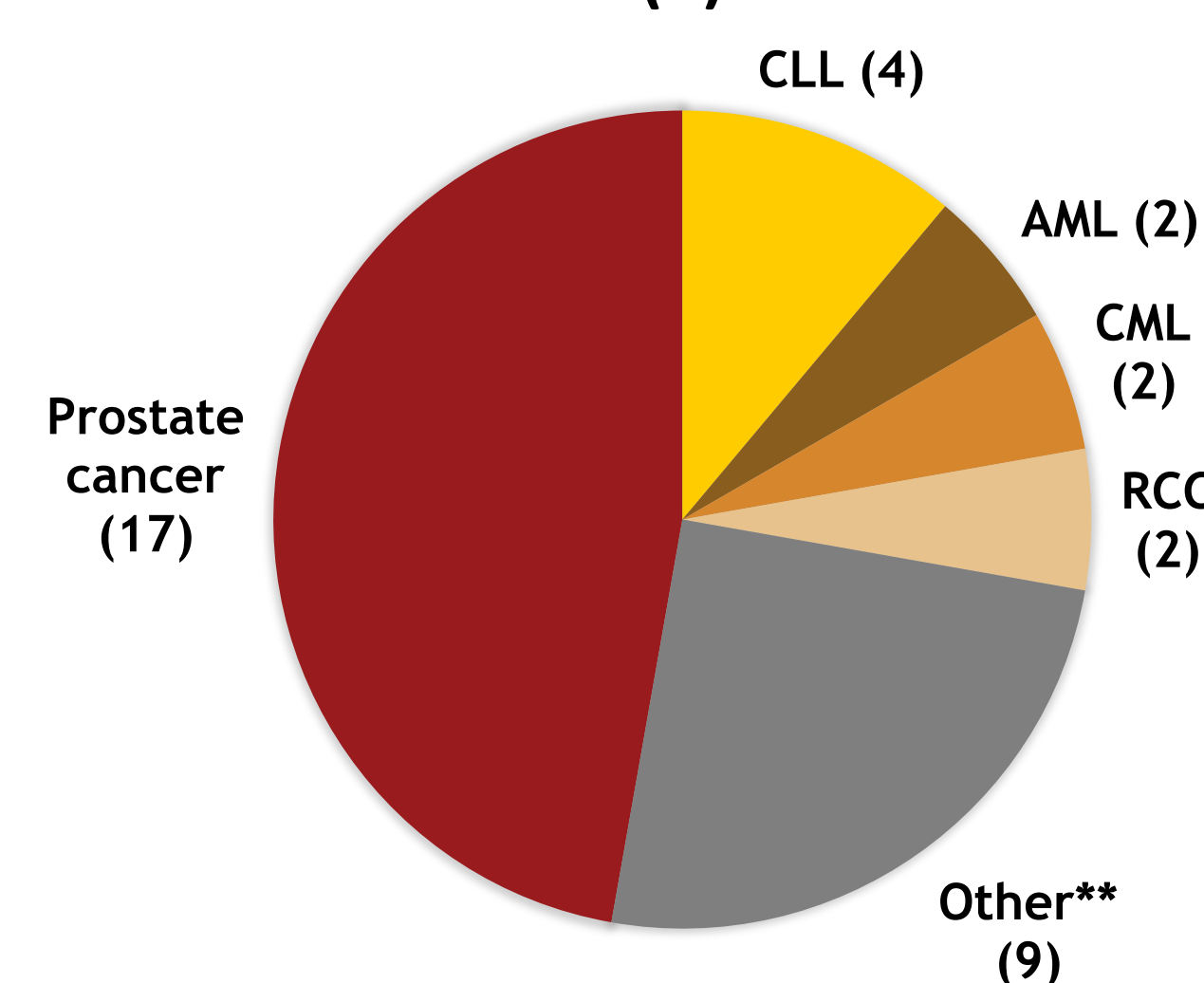


Figure 2. Protocol cohort cancer types (n)



*Other cancer types in pre-protocol group (1 each): acute lymphoid leukemia, breast cancer, gastrointestinal stromal tumor, lung cancer, mantle cell lymphoma, meningioma, polycythemia vera, renal cell carcinoma, Waldenström macroglobulinemia

**Other cancer types in protocol group (1 each): breast cancer, carcinoid tumor, chordoma, colon cancer, endometrial cancer, fallopian tube cancer, hepatocellular carcinoma, mantle cell lymphoma, papillary thyroid carcinoma

Table 2. Protocol cohort characteristics (n = 36)

Age	
Median (range)	71.5 (43 - 90)
Sex	
Male (%)	26 (72)
Female (%)	10 (28)
Pt starting new oncology med at time of enrollment	
Yes (%)	15 (42)
No (%)	21 (58)
Baseline hypertension at time of enrollment	
Yes (%)	24 (67)
No (%)	12 (33)
Taking anti-hypertensive at time of enrollment	
Yes (%)	19 (53)
No (%)	17 (47)
Pt provided with blood pressure machine	
Yes (%)	13 (36)
No (%)	23 (64)

CML = chronic myeloid leukemia; AML = acute myeloid leukemia; CLL = chronic lymphoid leukemia; HCC = hepatocellular carcinoma; RCC = renal cell carcinoma

RESULTS

Figure 3. Proportion of patients with blood pressure within goal

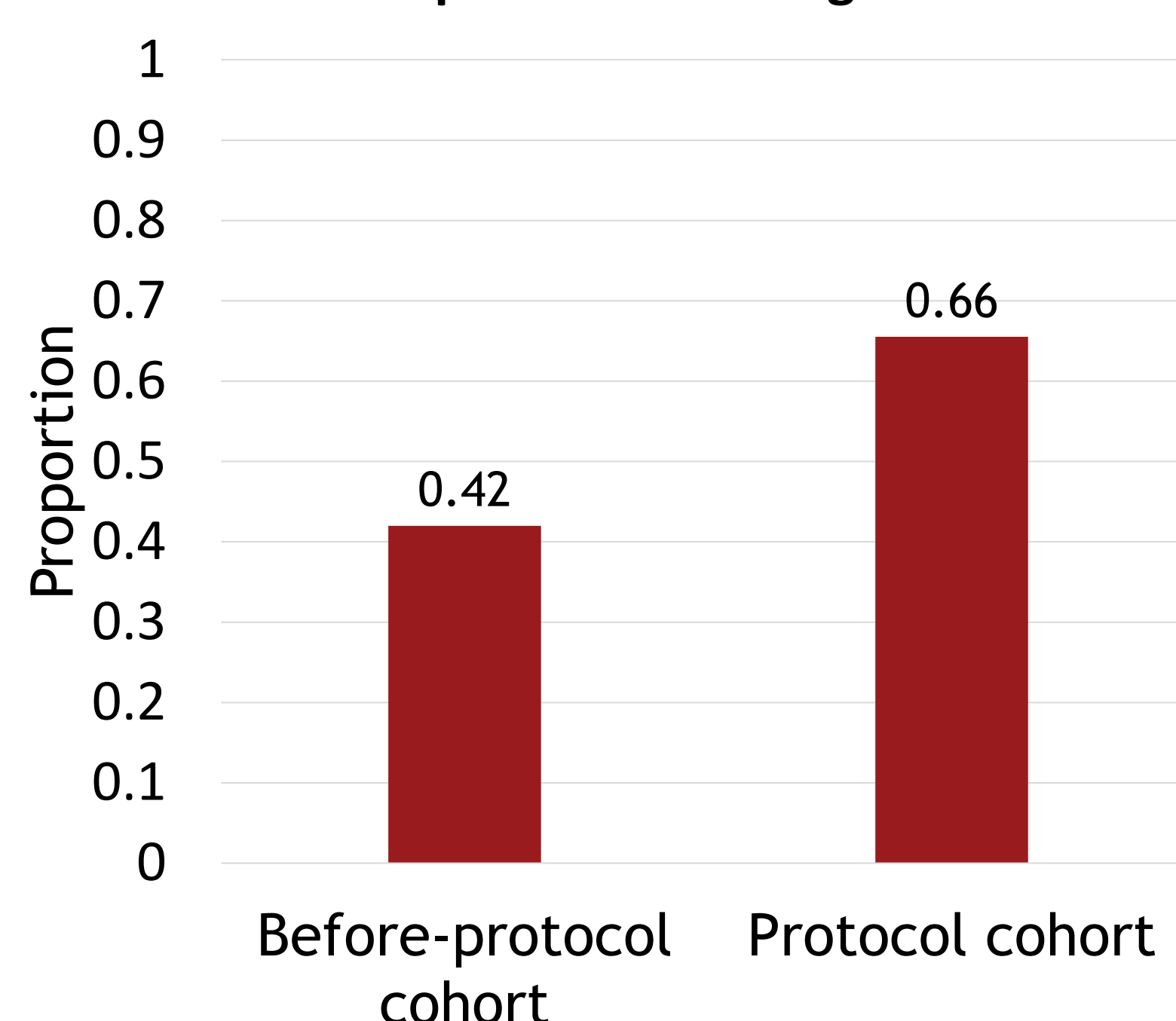


Figure 4. Mean blood pressure readings with each assessment in protocol group

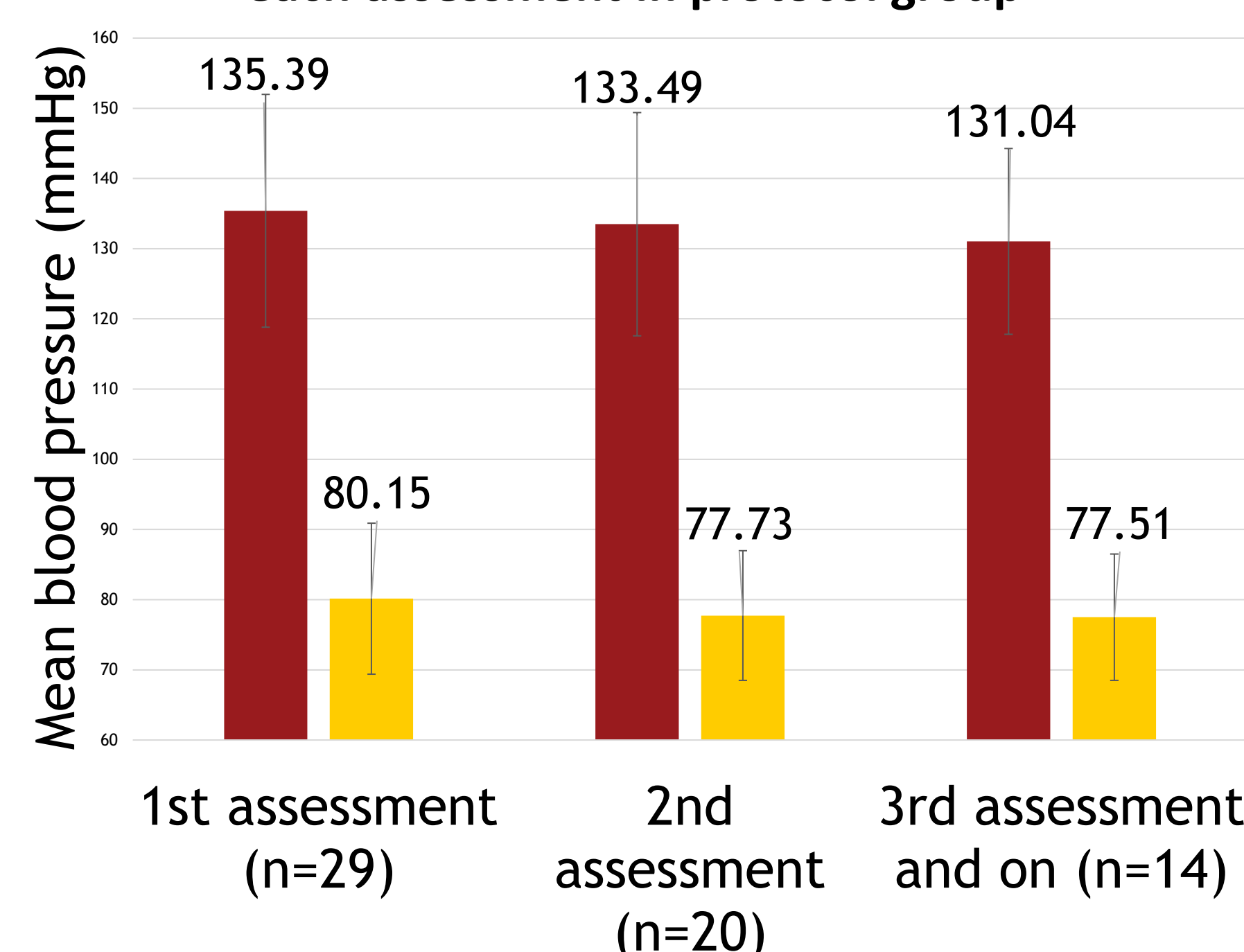


Table 3. Pharmacist recommendations provided in protocol group

Patient counseling/recommendation	
Lifestyle modification	26
Adherence to blood pressure monitoring	18
Home blood pressure monitoring technique	17
Adherence to antihypertensives	6
Contact prescriber	1
Hypotension management	1
Provider recommendations	
Add antihypertensive agent	2
Increase dose of antihypertensive agent	2
Recommendation accepted by provider (%)	4 (100)

DISCUSSION

- We found a statistically significant difference in the proportion of patients with blood pressure within goal between the two cohorts ($p = 0.044$).
 - This finding was despite the protocol being set up such that patients with more controlled blood pressures were assessed less frequently.
- There was a similar number of BP readings between the pre-protocol group (499 readings) and protocol group (488 readings).
- There was a high provider acceptance rate of pharmacist recommendations regarding modifying or initiating antihypertensive therapy with the protocol.
- Limitations of this study include:
 - Small sample size in both groups
 - Inability to fully match patients in the protocol group with the pre-protocol group for comparison
 - Limited opportunity for interventions given sample size

CONCLUSIONS

- A pharmacist-led hypertension management protocol for patients on oral chemotherapy shows improvement in blood pressure control and reduction in mean blood pressure readings.
- Pharmacists in health systems specialty pharmacy are well positioned to provide recommendations to providers regarding antihypertensive therapy.
- This study supports pharmacists making therapy modifications of antihypertensives in oncology patients and provides a foundation for the establishment of a collaborative practice agreement.

REFERENCES

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