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A RETROSPECTIVE STUDY OF BLOOD PRESSURE, ORTHOSTATIC HYPOTENSION, AND FALLS ADVANCED CANCER IN A SPECIALIST PALLIATIVE CARE INPATIENT UNIT

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This document is an audit summary report describing the work undertaken during a clinical audit in Spring 2016 in a specialist palliative care unit in Ireland. It is not the full audit, but rather an abridged summary report for the purposes of submitting to the APM Undergraduate Student Audit Prize in 2016. Please contact the authors for any further inquiries or details relating to the report.

ABSTRACT

TITLE: A RETROSPECTIVE AUDIT OF BLOOD PRESSURE, ORTHOSTATIC HYPOTENSION AND FALLS IN ADVANCED CANCER IN A SPECIALIST PALLIATIVE CARE UNIT

BACKGROUND: Orthostatic Hypotension (OH) is a drop of ≥20mmHg systolic blood pressure (BP) and/or diastolic 10mmHg within 3 minutes of orthostatic stress[1]. OH seems highly prevalent in advanced cancer. Comorbidities and anti-hypertensives increase OH risk and falls risk. Consequently, cancer patients in palliative settings are high fall risks[2].

OBJECTIVES: BP and OH measurement practices and post-fall interventions were audited amongst in-patients with advanced cancer.

METHODS: A retrospective analysis of four consecutive months of cancer admissions to a specialist palliative care unit was conducted. Data was obtained from 168 non-randomly selected clinical records. Information recorded included: demographics, falls risk assessment, falls occurrence, BP and relevant medications. The audit was against standards for current institutional clinical policies.

FINDINGS: Of 168 admissions, 136 (81%) had the Falls Risk Screening Tool completed. 143 of them (85%) had BP recorded, while 25 (15%) did not. There were 7 falls during the first week post-admission. Post-fall, 5 had BP measured; 2 did not. Only 1 of the 7 who fell had OH measured.

CONCLUSIONS: During the audit period none of clinical standards were fully adhered to. There were 7 falls in one week and only 1 had the required OH measurement conducted. Some admission tools were misinterpreted or were ambiguous. Review of institutional admission tools could increase compliance and clinical standard adherence, especially if tailored for a palliative care cohort.

KEY WORDS: blood pressure, cancer, falls, orthostatic hypotension, palliative care

WORD COUNT: 254

INTRODUCTION

Orthostatic hypotension

Orthostatic hypotension (OH) is a form of low blood pressure, which typically occurs when a person stands up from either a seated/lying position. OH is commonly seen in hypovolemia and due to various medications; in particular anti-hypertensives[1,3,4].

Serial BP measurements while lying or seated, and then standing (with at least a one-minute delay in between each position change) can confirm the presence of OH. OH is defined as a drop in 20mmHg of systolic BP or a 10mmHg drop in diastolic BP at the first and/or third minute following standing[5–7]. Symptoms appear on standing and resolve when the patient lies down[7,8].

OH in geriatric or palliative care cohorts

OH has a reported prevalence of 30% in the elderly and 40% in the hospice setting[1]. It can lead to falls and fractures in the elderly[2]. Patients' associated co-morbidities, medications and polypharmacy are risk factors for OH[1,9]. Polypharmacy is prevalent in patients near the end of life, so it is prudent to revise palliative patients' medication regime, or taper medications, to minimise drug-associated risk of OH[10].

Increased risk of falls in geriatric and cancer patients

Cancer incidence is increasing due to improved screening and detection[11,12]. Older patients and particularly cancer patients in palliative settings have an increased yet underestimated falls risk[13] having significant consequences for morbidity and mortality[14]. OH is a major precipitating factor for falls in a palliative context[2,15].

Screening for OH in palliative care settings

Screening for OH potentially identifies patients at risk of falls. This informs healthcare professionals to tailor patient management in order to reduce falls.

In summary, patients with advanced illness in a palliative setting are faced with both co-morbidities and pharmacological interventions that increase their risk of OH. This confers an increased risk and incidence of falls. Recognising this, Our Lady's Hospice and Care Services (hereafter OLH&CS) designed clinical standards to capture, monitor and manage patients who have OH and those who are a falls risk. Adherence to these clinical standards is currently unknown.

METHODS

Objective

To audit the clinical assessment of BP and OH, especially following falls.

Audit Standards

1. Every patient should be assessed using the 'Falls Risk Screening Tool'.
2. If the falls risk screen identifies a falls risk, the patient should have a full falls risk assessment using the 'Falls Risk Assessment Tool', including an OH assessment: BP should be measured supine/sitting and standing to test for OH.
3. BP should be recorded in the resident/patient chart.
4. If patient has symptoms of OH (falls or postural dizziness) then: BP should be measured supine/sitting and then standing to test for OH.
5. If patient is on antihypertensive medication, then BP should be measured.

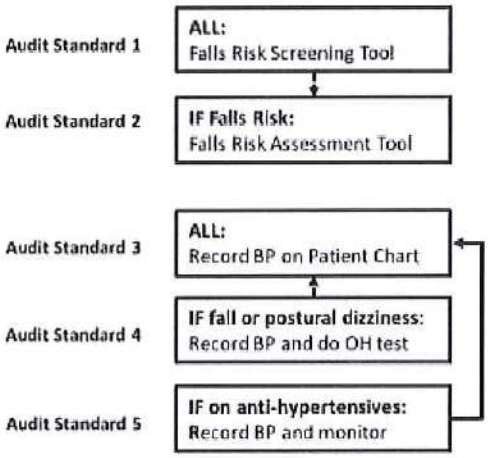

Figure 1. Audit Standards Flowchart

Literature Review

A PubMED search was conducted to assess the current literature on the assessment and management of BP and OH in a palliative care setting.

Data Collection

A retrospective chart review of cancer patients' admissions over four consecutive months during Spring 2016 was undertaken using a proforma. Relevant information was collated from the unified healthcare record.

Ethical Considerations

The institutional Healthcare Audit Committee reviewed and approved the project.

Statistical Analysis

Quantitative statistics were generated using Microsoft Excel, IBM SPSS Statistics Version 23 and GraphPad Prism 6.

RESULTS

Demographics of Patient Cohort

There were a total of 197 admissions during this timeframe of which 170 met the inclusion criteria. 168 admissions were reviewed, 2 admissions were missing, 160 were included in the audit and 8 readmissions occurred. Basic patient demographics were collected to assess the homogeneity of the cohort (Figure 2).

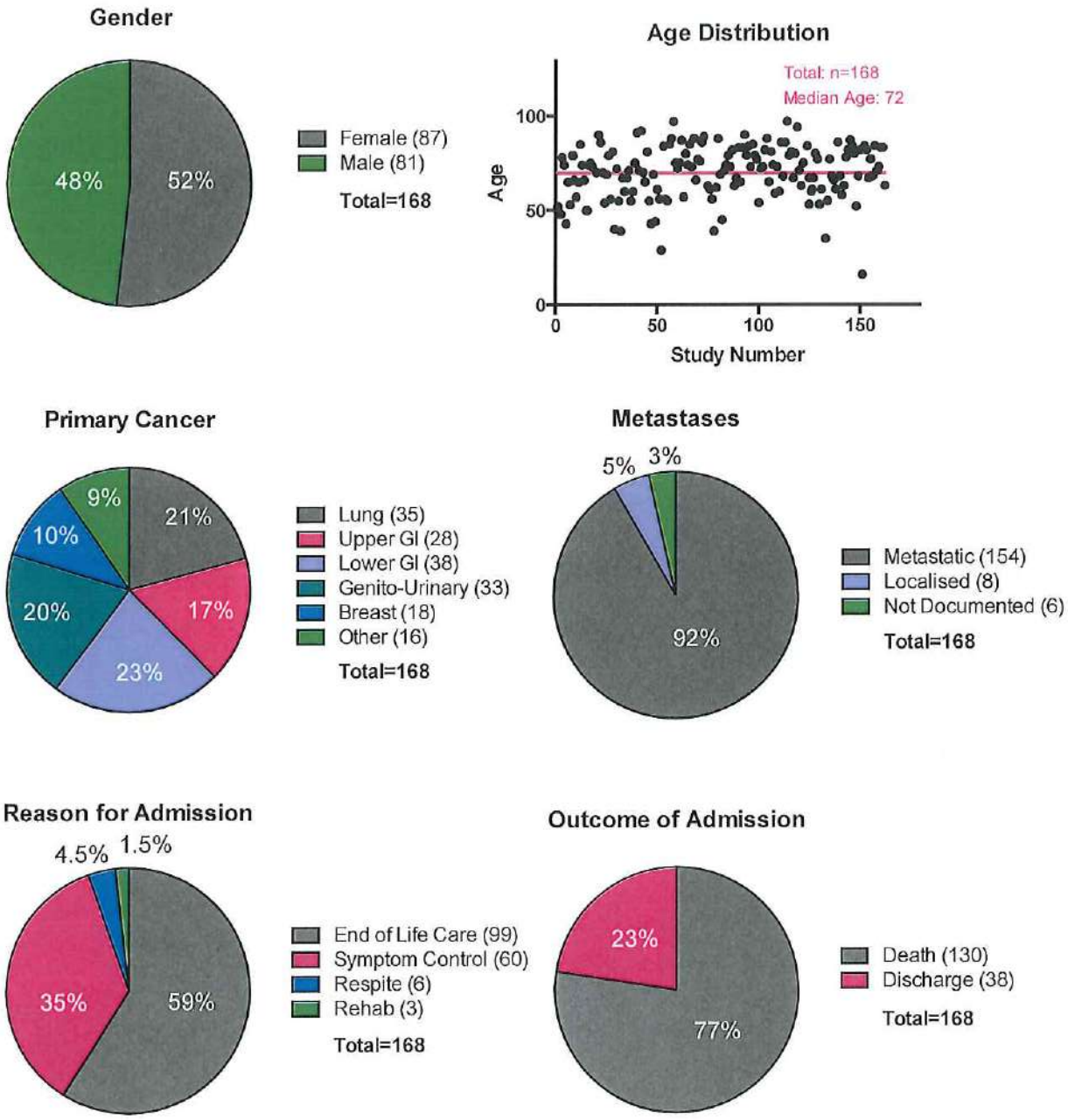

Figure 2. Summary of Patient Demographics. Gender, age distribution, primary cancer diagnosis, metastatic disease progression, reason for admission and outcome of admission percentages for the admissions. The median age was 72 years (range 16-97). 'End of Life Care' and 'Death' accounted for the majority of reasons and outcomes of admissions, respectively.

Audit Standard 1: Falls Risk Screening Tool

Of the 168 eligible admissions, 136 had the Falls Risk Screening Tool completed. 94 of these were deemed to be a fall risk (Figure 4). 32 patients did not have a Falls Risk Screening Tool completed, so their falls risk status was unknown.

Audit Standard 2: Falls Risk Assessment Tool

Of the 136 patients that had the Falls Risk Screening Tool completed, 94 were falls risks and should have had the Falls Risk Assessment Tool completed. Of those 94 patients: 71 had a Falls Risk Assessment completed, 23 did not. Of the 71 who had the Falls Risk Assessment completed, 42 patients could not have the OH test component completed as part of the assessment. These 42 patients were recorded as "Tried But Failed", meaning the OH test could not be completed as the patient was: "unwell", "unable to stand", "too weak" or it was "not appropriate". A further 7 patients were deemed not a falls risk but had a full Falls Risk Assessment Tool completed unnecessarily (Figure 3,4).

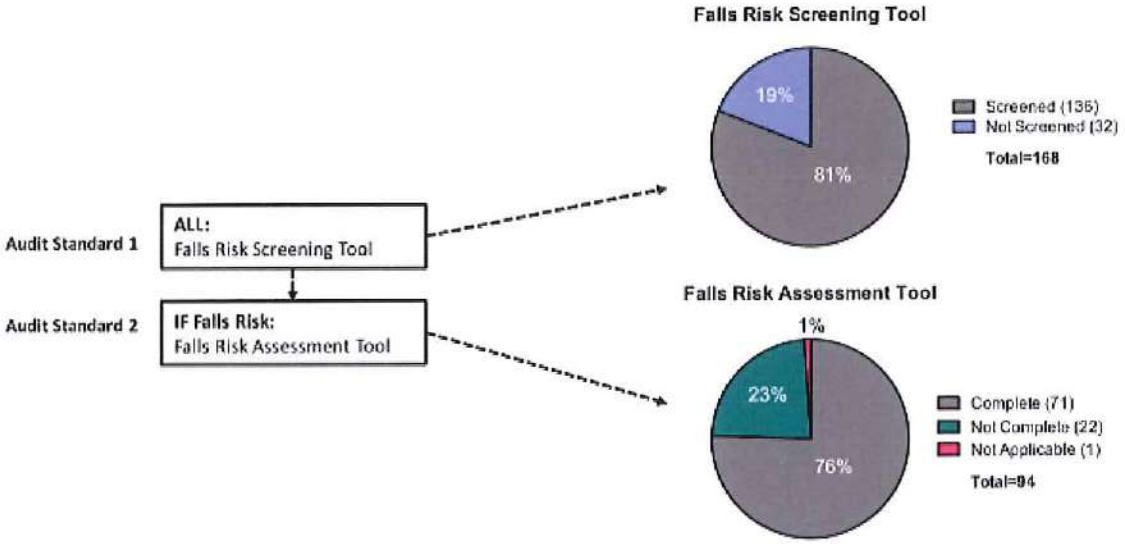

Figure 3. Completion results for Audit Standards 1 and 2 All 168 patients should have the Falls Risk Screening Tool completed: 81% had it completed and 19% did not have it completed. Of those that should have had the Fall Risk Assessment Tool completed: 76% had it completed, 23% did not have it completed and 1% indicated that it was not applicable.

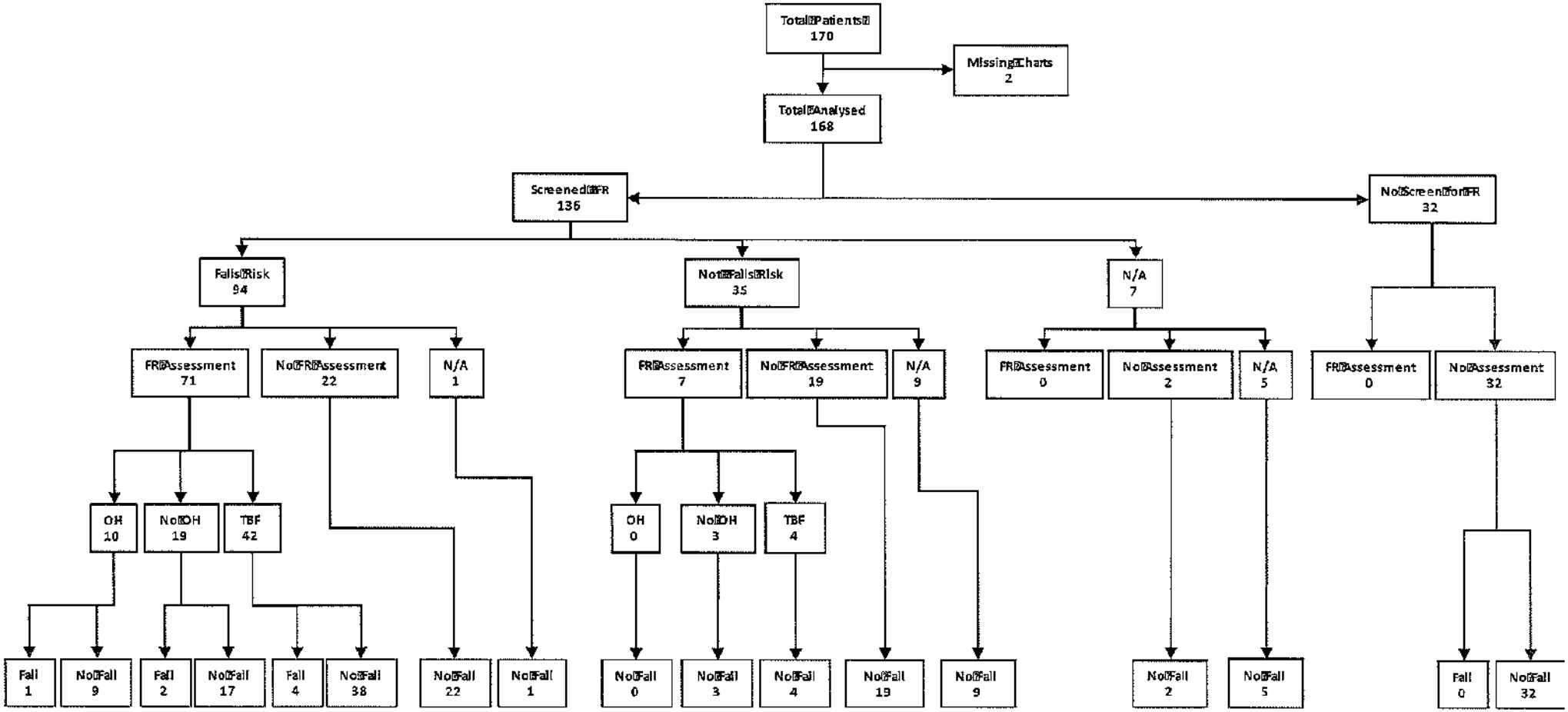

Figure 4. Flowchart outlining the progression of charts through Audit Standard 1: Falls Risk Screening Tool and Audit Standard 2: Falls Risk Assessment Tool and indicating the incidence of falls of those cases Admissions were screened for a falls risk (or not), deemed a falls risk (or not) and then had the falls assessment carried out and ultimately had a test for OH conducted. Notably, some patients were assessed for falls risk inappropriately, others were assessed inappropriately because their screening process was not applied correctly and many were assessed but could not complete the assessment. Those that attempted the falls risk assessment but did not complete it were deemed "Tried But Failed" (TBF) and this includes cases where the patient was documented to be "unwell", "too weak", "unable to stand", it was "inappropriate" at the time and it also includes cases where no reason for non-completion was documented. Finally, the flowchart indicates the incidence of falls in each of those patient cohorts.

Key: FR – Falls Risk, OH – Orthostatic Hypotension, TBF – Tried But Failed, N/A – Not Applicable

Audit Standard 3: BP should be measured in Resident/Patient Chart

Only 85% of patients had their BP recorded on the patient vital signs chart. The median number of BP recordings was 1 per patient admission (Figure 5).

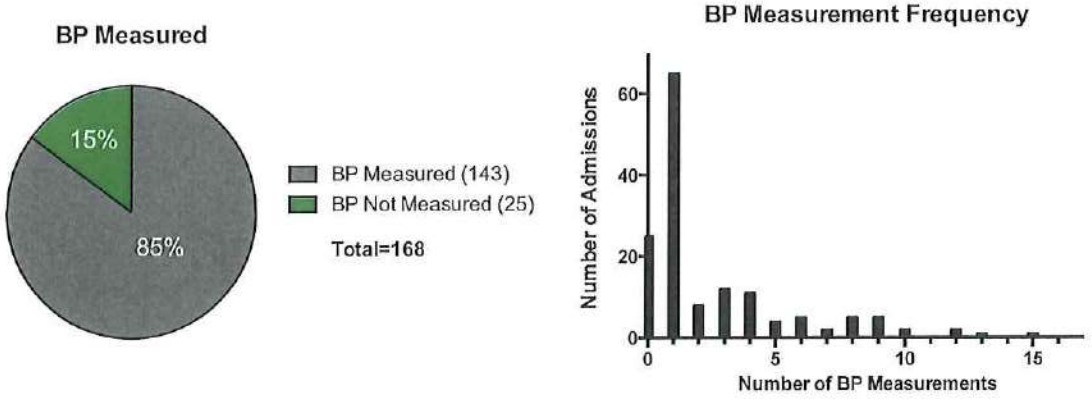

Figure 5. Percentage of Admissions with BP Measured and BP Measurement Frequency.

Audit Standard 4: If patient has symptoms of OH: BP should be recorded supine/sitting and again standing to test for OH.

There were 7 falls during the first 7 days of the admission. Following the fall, 5 of the patients had their BP measured and 2 did not. Of the 5 measured, only 1 was tested for OH and tested positive (Figure 6).

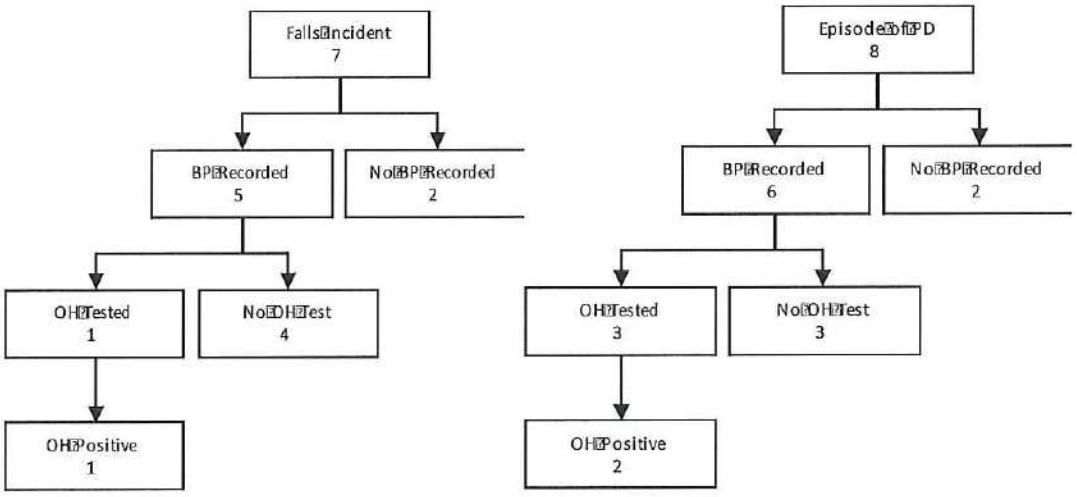

Figure 6. Audit Standard 4 Flowcharts– Procedure if a patient has an incident of a fall or if a patient had an episode of postural dizziness. Clinical standards indicate that a patients' BP be measured and an OH test be carried out, which is BP measured sitting and then standing.

8 cases of postural dizziness were reported during the admission period. Of these 8, 6 had their BP measured following the incident and 2 did not. Of the 6 measured, only 3 were assessed for OH (Figure 6).

Of the 15 incidences, of both falls and postural dizziness, it is worth noting that of the 4 patients that were tested for OH, 3 of those 4 had OH.

Audit Standard 5: If patient is on antihypertensive medication, BP should be recorded.

A total of 62 patients were on anti-hypertensive medication. Of those, 54 patients had their BP measured at least once during their admission period. 8 patients did not have their BP measured at all.

DISCUSSION

Audit Standard 1: Falls Risk Screening Tool

Completing the Falls Risk Screening Tool is an admissions requirement at OLH&CS. Currently this standard is not being achieved. Of 168 admissions analysed, 19% of cancer inpatient admissions did not undergo screening for falls risk within one week of admission. This is of concern given the negative consequences of falls for cancer patients[14].

A number of the Falls Risk Screening Tools were only partially completed or not completed as recommended. Some components of the tool were not intuitive and could benefit from being reformatted. These measures might increase compliance. In addition, occasionally the tool was misfiled, hard to find or absent.

Audit Standard 2: Falls Risk Assessment Tool

The 94 patients deemed a falls risk should have been assessed using the Falls Risk Assessment Tool. Many could not have the OH test completed as part of the assessment. The reasons documented for non-completion included: "unable to stand", "unwell", "bedbound" and "too weak".

Difficulties with the assessment form include the inability to capture a cohort of patients for whom the OH test is not feasible but who are still a falls risk e.g. a patient who is unable to mobilise independently but who could still manoeuvre themselves in a way that might result in a fall.

Audit Standard 3: BP should be recorded in Resident/Patient Chart

143 patients had their BP recorded on the patient vital signs chart, while 25 patients had no BP recorded on their chart at all. This falls short of the current clinical standard.

However, monitoring vital signs is a relatively recent procedure in palliative care settings[16,17]. Recording of vital signs should be kept to a minimum as set by an institution[18]. In actively dying patients, the priority remains palliation and excessive assessment can distract from attending to the patient's comfort[19].

It may simply be that the current clinical standard is not appropriate for the setting in which we were auditing. The institution policy is for "all areas" of the institution, which extends beyond palliative care to Rheumatology, Rehabilitation, Extended Care services etc. As a result, the standard itself may not be appropriately tailored to the palliative care setting and further review of it could prove useful.

Audit Standard 4: If patient has symptoms of orthostatic hypotension: BP should be measured supine/sitting and again standing to test for OH.

There were 7 incidents of falls during the admission period. Following their fall, 5 of the patients had their BP measured while 2 did not. Only 1 of the 7 patients who fell had OH measured.

There were 8 episodes of PD during the 7 days after admission. Of these patients, 6 had their BP measured following the incident and only 3 had their OH tested. Of the 8 episodes of PD, two patients had no BP assessment.

There was a low incidence of BP and OH measurement post-episodes of falls and postural dizziness. According to institutional policy, following a fall or symptom of OH a full Falls Risk Assessment Tool should be repeated. This clinical audit has found that it was met in only a small number of cases; 4 out of 15 patients. There are numerous possible explanations for non-completion, but none were recorded in the charts.

Audit Standard 5: If patient is on antihypertensive medication, then BP should be measured and symptoms should be monitored.

62 patients were on anti-hypertensive medications. 8 patients on anti-hypertensives did not have their BP measured at all. The link between hypertension, anti-hypertensives and OH has been established[19]. It may be more appropriate in a palliative care setting to taper drugs, especially anti-hypertensives, as a patient declines[3].

Any instance of tapering medication would require frequent monitoring (of BP in the case of anti-hypertensives) and a multidisciplinary approach.

Limitations of the Research

Limitations include: the limited time frame, missing charts, missing forms, incomplete healthcare records, admissions procedures variations and the quality and detail of medical records within the chart. Only assessing the first seven days following admission is a significant limitation of the information available in the entire chart.

Due to limited human resources charts were only reviewed by one researcher. Finally, the research relied on documented evidence, rather than what was actually done; only what was documented can be audited.

Clinical Implications

The tools would benefit from reformatting and clarification, which could significantly improve compliance and completion rates. Standards that require 100% adherence

of BP to be documented on the vital signs chart on admission may need revision. Nuances of normal, appropriate clinical judgement cannot be captured on some of the forms in their current form. This limitation could explain the large number of non-completions and the impression from the research team that it may have been "not appropriate" in a palliative context to measure BP on admission.

Research Implications

A prospective study could observe the clinical teams in the palliative care wards to actively monitor and document their use of the Falls Risk and vital signs tools.

CONCLUSIONS

Patients in a palliative care setting with a cancer diagnosis are at significant risk of falls and thus their BP and OH should be measured as standard. After auditing the clinical standards the research team can conclude:

1. Clinical assessment and measurement of BP and OH, routinely and following a fall could improve.

2. Some of the document formatting can be ambiguous and can result in misinterpretation. To further increase compliance, we recommend that standards could benefit from review and revisions.

3. BP is not always measured on admission, notably in cases where the patient is on anti-hypertensives. Policies should be reviewed and tailored for a palliative context.

4. Following incidents of falls and postural dizziness, there is a failure to follow up with BP measurements and a test for OH in the majority of these cases, as currently required by the institutional policy.

5. Further research, especially prospective studies, could be performed in order to gauge current practice more accurately.

Results were presented locally at Grand Rounds and the institutional Falls Committee, an MDT committee addressing institutional policies regarding falls prevention, requested our data and conclusions.

WORD COUNT: 1988

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