

Hiding in Plain Sight: A Pharmacotherapy Workup Uncovering Overlooked Drug Therapy Problems in a Man with Advanced Prostate Cancer, Hypertensive Heart Disease and Urosepsis

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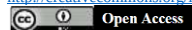
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ABSTRACT

Up to 70–80% of men with prostate cancer carry concurrent hypertension or hypertensive heart disease, and advancing disease frequently brings castration-resistant progression, cancer-associated thrombosis, transfusion-dependent anaemia and infection — a pharmacotherapeutic burden that multiplies the opportunities for drug therapy problems in a single admission. A 67-year-old man with a six-year history of hypertension and known prostate cancer (post bilateral orchidectomy, 2020) was transferred to the surgical ward after a sudden collapse, with general weakness and abdominal pain. He was found to have advanced, castration-resistant prostate cancer with hypertensive heart disease, severe anaemia (hae-moglobin 9.1 g/dL), gastroenteritis and urosepsis, and was started on an eleven-drug regimen spanning androgen-axis therapy, empiric antibiotics, anticoagulation, analgesia and transfusion support. Applying the Pharmacists' Patient Care Process/Pharmacotherapy Workup to this regimen surfaced ten discrete drug therapy problems, including an apparent absence of the corticosteroid co-therapy mandated for abiraterone, a guideline-discordant anticoagulant choice for cancer-associated thrombosis, a clinically significant NSAID–anticoagulant combination, additive orthostatic-hypotension risk from tamsulosin and tizanidine, a cardiac-unfavourable analgesic choice, and — most strikingly — a post-transfusion haemoglobin trend that moved in the wrong direction. Pharmacist-led separation of oral iron and zinc restored their intended therapeutic effect, pain from gastroenteritis and metastatic disease was adequately controlled, blood-pressure monitoring was intensified around the tamsulosin–tizanidine combination, and the patient reported marked humanistic benefit from routine pharmacist follow-up; the anticoagulant-selection and corticosteroid-adequacy questions are carried forward as unresolved recommendations for the treating team. A single, complex oncology-surgical admission can conceal several clinically important, evidence-supported drug therapy problems within a medication list that looks unremarkable at first read; a structured pharmacotherapy workup — rather than opportunistic review — is what actually surfaces them.

1. Introduction

Prostate cancer is an adenocarcinoma of the glandular epithelium of the prostate, accounting for over 99% of prostatic malignancies, and its risk is shaped by age, race, genetic predisposition, hormonal exposure and lifestyle factors [1]. Because it is predominantly a disease of older men, it rarely occurs in isolation: clinical comorbidity is the rule rather than the exception, and the single most frequent comorbid burden — present in an estimated 70–80% of patients — is concurrent hypertension and hypertensive heart disease, alongside bone health complications and urogenital or sexual dysfunction [2]. When disease progresses despite castration (surgical or medical), it is termed castration-resistant prostate cancer (CRPC), and management shifts to androgen-axis-targeted agents such as abiraterone acetate, a CYP17A1 inhibitor that blocks residual extragonadal androgen synthesis [3].

Each element of this comorbid picture — androgen-axis blockade, cardiovascular disease, anaemia requiring transfusion, cancer-associated thrombosis, and superimposed infection — is managed pharmacologically, and each pharmacological layer interacts with the others in ways that are not always visible from a single-day medication chart. Abiraterone's mechanism obligates concomitant corticosteroid therapy to prevent a predictable mineralocorticoid excess syndrome [4,5]; anticoagulant selection for cancer-associated thrombosis is now a guideline-driven decision with specific agents preferred and others explicitly not recommended [6,7]; and androgen-deprivation-related urinary symptoms are frequently treated with alpha-blockers whose haemodynamic effects can combine unpredictably with other antihypertensive or centrally acting agents [8]. A structured pharmacotherapy workup is what makes these interacting risks visible to the bedside team before, rather than after, harm occurs.

This report applies the Pharmacists' Patient Care Process (Collect, Assess, Plan, Implement, Monitor/Follow-up) [9,10], structured for reporting according to the CARE case-report guidelines [11,12], to the in-patient management of a man with advanced, castration-resistant prostate cancer complicated by hypertensive heart disease, severe anaemia, gastroenteritis and urosepsis. The aim is to demonstrate, with reference to current evidence, how a deliberate drug-therapy-problem review can surface issues — an apparently missing mandatory co-therapy, a guideline-discordant anticoagulant, a clinically significant analgesic-cardiac mismatch, and an unexplained laboratory trend — that a purely descriptive medication list does not, by itself, reveal.

2. Case Presentation

2.1 Patient Information

The patient, Mr Z, was a 67-year-old retired federal civil servant, married with five children, resident in Bayelsa State, Nigeria. He had a six-year history of hypertension and a pre-existing diagnosis of prostate cancer, for which he had undergone bilateral orchidectomy in 2020 to reduce metastatic progression. He remained under periodic review at two facilities for his prostate condition and was reported to be adherent to his antihypertensive medication, although neither he nor his relatives could recall the specific names of the prostate-cancer medications he was taking elsewhere at the time of admission — itself a medication-reconciliation vulnerability discussed further below. He did not smoke or drink alcohol.

He was transferred to the male surgical ward from the urology clinic following a sudden collapse with transient loss of consciousness; on regaining consciousness he complained of general body weakness and abdominal pain.

2.2 Clinical Findings and Course

On the day of presentation he was febrile (temperature up to 39.6 °C) and hypotensive (blood pressure 70/50 mmHg), with a pulse rate of 86 beats/min and oxygen saturation of 99% on room air. Table 1 summarises the recorded vital-sign trend over the admission (the first recorded date is transcribed here as 03/09/2026, correcting an apparent single-digit transcription error in the source chart, which read 2027).

Table 1. *Vital-sign trend over the admission.*

Date	Temp. (°C) (ref. 36–37.2)	Pulse (bpm) (ref. 60–100)	Blood pressure (mmHg)	SpO ₂ (%) (ref. 95–100)
03/09/2026	39.6, 38.5	86	70/50	99
04–05/09/2026	38.3, 39.0	88, 88	100/60, 110/60	95
06–07/09/2026	37.1, 37.6	88	110/70	99
08/09/2026	38.0, 36.3	92	90/60, 110/70	98
09/09/2026	37.1, 36.9	78	120/80, 120/80	99

Blood pressure normalised progressively from an initial hypotensive reading (consistent with septic/hypovolaemic physiology at presentation) to within a hypertensive-treated range by the final recorded observation. Haemoglobin was 9.1 g/dL on admission; following transfusion of one unit of sedimented packed red cells, the recorded haemoglobin was 8.9 g/dL — a laboratory trend discussed in detail in Section 5.5, since it runs contrary to the expected post-transfusion increment.

2.3 Diagnostic Assessment

The chief complaints were general body weakness and abdominal pain. The clinical team's working diagnoses were: (i) advanced prostate cancer secondary to hypertensive heart disease with severe anaemia; (ii) gastroenteritis; and (iii) castration-resistant prostate cancer with urosepsis.

2.4 Therapeutic Intervention

The in-patient regimen comprised eleven concurrently prescribed medicines together with supportive infusions, summarised with their documented clinical rationale in Table 2.

Table 2. *In-patient medication regimen and documented clinical rationale.*

Medicine (as charted)	Documented rationale
Tab Fesolate (ferrous sulfate) 200 mg + Tab Vitamin C 100 mg	Correction of severe anaemia; vitamin C to enhance non-haem iron absorption.
Tab Zinc sulphate 20 mg	Adjunctive therapy intended to reduce recurrence of diarrhoea.
Tab Celecoxib 200 mg	Analgesia for pain attributed to gastroenteritis.
Tab Tamsulosin 0.4 mg	Improvement of urinary difficulty.
IM Pentazocine 30 mg; IM Paracetamol 300 mg	Analgesia for cancer- and infection-related pain.
IV Metronidazole 500 mg/100 mL; IV Ceftriaxone 1 g	Empiric treatment of suspected intra-abdominal/urosepsis-related bacterial infection.
IM Alpha-beta arteether 150 mg/2 mL	Treatment of concurrent malaria.
Inf. Normal saline 0.9% 500 mL; IV Hydrocortisone 100 mg; IV Promethazine 50 mg; IM Paracetamol	Fluid resuscitation and standby prophylaxis/management of transfusion reactions.
Tab Tizanidine 2 mg	Treatment of muscle tightness/spasm.
Tab Abiraterone acetate 500 mg	Androgen-axis therapy for castration-resistant prostate cancer.
Tab Dabigatran (Pradaxa) 110 mg, 2 tablets daily — i.e., 110 mg twice daily, 220 mg/day total	Prevention/treatment of cancer-associated thrombosis (CAT).
Tab Vitamin B-complex	General nutritional supplementation.

2.5 Follow-up and Outcome

Vital signs progressively stabilised (Table 1) and gastroenteritis symptoms resolved with supportive and antimicrobial therapy. Pain was reported as adequately controlled with the intravenous/intramuscular analgesic regimen used. On the patient's account, the resolution of his gastrointestinal symptoms and the routine attention from the pharmacy team were the aspects of his admission he valued most (Section 2.6).

2.6 Patient Perspective

On direct conversation with the patient, he expressed profound relief once his gastroenteritis had resolved, and personally thanked the pharmacy unit for the consistent provision of medicines and the routine check-ins extended to both himself and his wife during the admission.

2.7 Informed Consent and Ethical Considerations

Written informed consent for the anonymised use and publication of this patient's clinical details was obtained from the patient [to be confirmed and formally documented by the submitting authors prior to journal submission, per CARE guideline item 13 and the target journal's ethics policy] [11]. The patient is identified only by a single initial in this manuscript, and no hospital record number, exact residential address or other identifying detail has been included.

3. Methodological Framework

As in comparable pharmaceutical-care case reports, pharmaceutical care here was structured using the Pharmacists' Patient Care Process (Collect, Assess, Plan, Implement, Monitor/Follow-up), operationalised through Cipolle, Strand and Morley's Pharmacotherapy Workup and seven-category drug-therapy-problem (DTP) taxonomy: unnecessary drug therapy, need for additional drug therapy, ineffective drug selection, dosage too low, adverse drug reaction, dosage too high, and non-adherence/convenience [9,10]. Reporting follows the CARE guideline structure for case reports [11,12].

4. Application of the Pharmacotherapy Workup

4.1 Collect

Data gathered comprised: demographics and comorbidity history; a documented but incomplete history of the patient's chronic prostate-cancer medications (names not recollected by the patient or relatives); vital-sign and laboratory trends (Table 1; haemoglobin trend); the complete in-patient medication list (Table 2); and psychosocial information on the patient's usual adherence pattern and care-seeking behaviour across two facilities.

4.2 Assess — Drug Therapy Problem Identification

Systematic application of Cipolle's DTP taxonomy identified ten discrete issues, summarised in Table 3 and discussed with their supporting evidence in Section 5.

**Table 3.** Drug therapy problems identified using Cipolle's Pharmacotherapy Workup taxonomy.

#	DTP category (Cipolle)	Issue identified	Pharmacist assessment/action
1	Need for additional drug therapy	Abiraterone acetate charted without a co-prescribed low-dose oral corticosteroid (e.g., prednisone). The only glucocorticoid on the chart, IV hydrocortisone 100 mg, is dosed and routed as a stress/premedication dose for transfusion-reaction cover, not as the mandatory maintenance co-therapy required to suppress ACTH-driven mineralocorticoid excess.	Recommended explicit confirmation of an oral prednisone (or equivalent) maintenance regimen alongside abiraterone, given this patient's pre-existing hypertensive heart disease, which raises his vulnerability to abiraterone-induced fluid retention, hypokalaemia and worsening hypertension [3–5].
2	Ineffective drug selection	Dabigatran selected for cancer-associated thrombosis (CAT). Current ASCO/ISTH/NCCN guidance does not recommend dabigatran for CAT because of an absence of comparative efficacy/safety data against LMWH; preferred agents are LMWH, apixaban, rivaroxaban or edoxaban.	Recommended review of anticoagulant choice against current CAT-specific guidance, particularly given this patient's genitourinary malignancy and associated bleeding-risk profile [6,7].
3	Adverse drug reaction (renal/accumulation risk)	Dabigatran is renally eliminated (~80%); urosepsis-related dehydration and nephrotoxic-antibiotic exposure (ceftriaxone, metronidazole) create risk of acute kidney injury, which would raise dabigatran exposure and bleeding risk. The prescribed dose (110 mg twice daily) is the lower of the two labelled strengths, which is itself a reasonable precaution, but is not a substitute for confirming renal function directly.	Commended the choice of the 110 mg (rather than 150 mg) twice-daily strength as a prudent precaution, and additionally recommended baseline and repeat creatinine clearance estimation before and during dabigatran therapy, with interruption if CrCl falls toward the 30 mL/min threshold [13,14].
4	Adverse drug reaction	Concomitant celecoxib (NSAID) and dabigatran (anticoagulant). Pooled evidence shows co-administration of NSAIDs with oral anticoagulants, including DOACs, significantly increases the risk of any bleeding and gastrointestinal bleeding.	Recommended reassessment of celecoxib necessity, consideration of a non-NSAID analgesic alternative, and gastrointestinal-bleeding vigilance for the duration of concurrent use [15,16].
5	Adverse drug reaction	Tamsulosin (alpha-1 antagonist) combined with tizanidine (alpha-2 agonist), both of which lower blood pressure independently; additive risk of orthostatic hypotension in a patient already presenting with haemodynamic instability.	Advised the physician of the risk of a catastrophic blood-pressure drop and recommended multiple-times-daily blood-pressure monitoring while both agents are co-prescribed [8].
6	Adverse drug reaction (cardiac-unfavourable analgesic choice)	Pentazocine used for analgesia in a patient with hypertensive heart disease. Unlike morphine, pentazocine raises aortic pressure, left-ventricular end-diastolic pressure and pulmonary-artery	Recommended cautious use with cardiovascular monitoring, and consideration of a mu-agonist opioid with a more favourable haemodynamic profile if analgesia needs intensify [17,18].



#	DTP category (Cipolle)	Issue identified	Pharmacist assessment/action
		pressure via a sympathomimetic mechanism, increasing cardiac workload.	
7	Need for additional drug therapy	Significant fluid and electrolyte losses from infection-induced gastroenteritis without a dedicated rehydration product on the initial chart.	Recommended oral rehydration therapy (ORT), a <i>Saccharomyces boulardii</i> preparation, or Ringer's lactate infusion as clinically appropriate.
8	Ineffective drug selection (evidence-scope mismatch)	Zinc sulphate 20 mg charted specifically to reduce recurrence of diarrhoea. The WHO/UNICEF zinc-for-diarrhoea recommendation, and the supporting trial evidence, is specific to children under five in low- and middle-income settings; robust efficacy evidence in adult acute diarrhoea is not established.	Noted the evidence-scope mismatch for the treating team; zinc supplementation is not harmful and may still serve a general nutritional-repletion purpose, but should not be relied upon as the primary antidiarrhoeal strategy in this adult patient [19,20].
9	Adverse drug reaction / effectiveness (drug-nutrient interaction)	Fesolate (ferrous sulfate) and zinc sulphate charted for simultaneous administration; zinc and iron compete for shared intestinal transporters, and simultaneous dosing measurably inhibits iron absorption.	Advised nursing staff to separate administration of fesolate and zinc by at least three hours, restoring the intended therapeutic effect of both agents [21].
10	Adverse drug reaction (unexplained) / incomplete medication history	(a) Haemoglobin fell from 9.1 to 8.9 g/dL after transfusion of one unit of packed red cells, whereas an increment of approximately 1 g/dL per unit is expected in a non-actively-bleeding adult. (b) Patient/relatives could not name the prostate-cancer medicines taken at outside facilities, precluding full medication reconciliation.	(a) Recommended urgent evaluation for occult bleeding (tumour-related haematuria, NSAID/anticoagulant-related gastrointestinal bleeding), haemolysis, or dilutional/measurement-timing artefact, rather than treating the transfusion as adequate. (b) Recommended contacting the outside facility/pharmacy for dispensing records or requesting the patient's take-home medicine containers to complete reconciliation [22,23].

4.3 Plan

Goals of therapy were agreed with the surgical/urology team as: (a) confirmation and, if absent, initiation of adequate corticosteroid co-therapy with abiraterone; (b) an anticoagulant regimen for cancer-associated thrombosis aligned with current guideline evidence, adjusted for renal function; (c) pain and infection control without avoidable bleeding or cardiovascular risk; (d) correction of fluid, electrolyte and haematinic deficits with each agent given the opportunity to work as intended; (e) blood pressure stabilised within a safe range despite multiple blood-pressure-lowering co-prescriptions; and (f) an explained, rather than assumed, response to transfusion.

4.4 Implement

The pharmacist directly implemented two interventions during the admission: advising the physician of the orthostatic-hypotension risk from concomitant tamsulosin and tizanidine, with a recommendation for intensified blood-pressure monitoring; and instructing nursing staff to separate fesolate and zinc administration by at least three hours to preserve the therapeutic effect of both agents. The remaining recommendations in Table 3 (corticosteroid adequacy, anticoagulant choice, NSAID

review, pentazocine caution, rehydration therapy, and investigation of the post-transfusion haemoglobin trend) are carried forward in this report as evidence-based recommendations for the treating team's ongoing consideration, consistent with transparent case reporting [11].

4.5 Monitor/Follow-up — Clinical, Humanistic and Economic Outcomes

Outcomes were mapped to the Economic, Clinical and Humanistic Outcomes (ECHO) framework of Kozma, Reeder and Schulz [24], summarised in Table 4.

Table 4. *Pharmaceutical care outcomes mapped to the ECHO model [24].*

ECHO domain	Observed outcome
Clinical	Separation of fesolate and zinc restored the intended pharmacological effect of both agents; gastroenteritis- and cancer-related pain were adequately controlled with the intravenous/intramuscular analgesic regimen used; blood pressure trended toward a stable, treated range over the admission (Table 1).
Humanistic	The patient reported marked relief following resolution of his gastroenteritis and expressed direct appreciation for the pharmacy unit's routine engagement with himself and his wife throughout the admission.
Economic	The patient was enrolled in the National Health Insurance Scheme (NHIS), which covered the full cost of most treatments and medicines; medicines outside NHIS coverage were paid for directly by the patient. Correcting the iron–zinc administration-timing problem avoided the economic waste of two ineffective supplements being continued without benefit.

5. Discussion

5.1 Abiraterone without confirmed corticosteroid co-therapy

Abiraterone acetate inhibits CYP17A1, blocking synthesis of testosterone precursors but also of cortisol; the resulting fall in cortisol drives compensatory ACTH secretion, which in turn stimulates upstream mineralocorticoid precursors (corticosterone, deoxycorticosterone), producing a syndrome of fluid retention, hypokalaemia and hypertension that mimics congenital 17-alpha-hydroxylase deficiency [3,4]. This is not a rare idiosyncratic reaction but a predictable, mechanism-based effect present in the majority of patients who receive abiraterone without glucocorticoid replacement, which is why regulatory approval and every major randomised trial paired abiraterone with prednisone, most commonly 5 mg twice daily [3–5]. The only glucocorticoid identified on this patient's chart, IV hydrocortisone 100 mg, is a stress/premedication dose consistent with transfusion-reaction cover rather than the low, twice-daily oral maintenance dose that abiraterone specifically requires; without confirmation that a maintenance corticosteroid was in fact prescribed elsewhere on the chart or being taken as one of the unrecalled home medicines, this patient — who already carries a hypertensive heart disease diagnosis — is at meaningfully elevated risk of abiraterone-induced hypertensive decompensation. This is precisely the kind of mechanism-based, guideline-anchored problem that a structured DTP review is designed to catch, and it is easy to miss on a chart where a corticosteroid already appears to be present for another reason.

5.2 Anticoagulant selection for cancer-associated thrombosis

The current ASCO clinical practice guideline update for venous thromboembolism in cancer states plainly that apixaban and dabigatran lack published comparative data against low-molecular-weight heparin (LMWH) in the therapeutic cancer setting and are, on that basis, not recommended until such data become available; edoxaban and rivaroxaban have trial-based support, and apixaban has since been added on the strength of newer randomised evidence, but dabigatran has not [6,7]. Contemporary antithrombotic guidance for cancer-associated thrombosis converges on LMWH, apixaban, rivaroxaban or edoxaban as preferred options, particularly outside the presence of high bleeding-risk gastrointestinal lesions [6,7]. Dabigatran's continued use for this indication in this case is therefore a guideline-

discordant choice — an "ineffective drug selection" DTP in Cipolle's taxonomy — not because dabigatran is unsafe in general, but because it is specifically unproven for this indication when better-evidenced alternatives exist.

5.3 Renal-clearance dependence of dabigatran in the context of urosepsis

Dabigatran is approximately 80% renally eliminated — the highest renal-clearance fraction of any currently marketed oral anticoagulant — and drug exposure rises roughly two- to six-fold as creatinine clearance falls from normal to severely impaired; dosing is contraindicated below a creatinine clearance of 30 mL/min in most jurisdictions [13,14]. This patient's urosepsis and gastroenteritis both carry a realistic risk of acute kidney injury through dehydration and nephrotoxic-antibiotic exposure; any resulting fall in renal clearance would raise dabigatran plasma levels and bleeding risk precisely at the moment the patient is most physiologically vulnerable. Baseline and repeat creatinine-clearance estimation, rather than a single admission creatinine value, is the appropriate safeguard here. It is worth crediting the prescribing team for charting the lower of dabigatran's two labelled strengths (110 mg twice daily, 220 mg/day total, rather than 150 mg twice daily); the RE-LY trial and subsequent labelling identify the 110 mg twice-daily regimen as the more cautious option for patients with heightened bleeding risk, advanced age, or borderline renal function, so this dose selection is itself evidence-concordant even though the underlying choice of drug class for cancer-associated thrombosis remains the separate concern raised in Section 5.2 [13,14].

5.4 NSAID–anticoagulant co-administration

A 2023 systematic review and meta-analysis of co-administered oral anticoagulants and NSAIDs found that concomitant use significantly increased the odds of any bleeding and of gastrointestinal bleeding specifically, an association demonstrated for both vitamin K antagonists and direct oral anticoagulants [15]. Celecoxib, a selective COX-2 inhibitor, carries a comparatively lower baseline gastrointestinal-bleeding signal than non-selective NSAIDs, but the combination with an oral anticoagulant remains a recognised bleeding-risk interaction requiring either substitution or close monitoring, particularly in a patient who also has an active genitourinary malignancy and thus an independent source of potential haematuria [15,16].

5.5 An unexplained transfusion trend deserves the same scrutiny as a prescribing error

A single unit of packed red blood cells is expected to raise haemoglobin by approximately 1 g/dL in an average-sized adult who is not actively bleeding; a smaller-than-expected rise, and certainly a fall, is a recognised marker of ongoing blood loss, haemolysis, dilution, or a measurement-timing artefact, and warrants explicit investigation rather than being absorbed into the general clinical picture [25–27]. In this patient, the observed fall from 9.1 to 8.9 g/dL after one unit is atypical, and its co-occurrence with two independently bleeding-risk-elevating prescriptions (celecoxib and dabigatran, Section 5.4) makes an occult gastrointestinal or genitourinary bleeding source a reasonable working hypothesis that should be actively excluded rather than left as an incidental laboratory finding. This is arguably the single most clinically consequential observation to emerge from applying a structured workup to this case: it was visible in the data the whole time, but only became actionable once the haemoglobin trend, the transfusion record and the concurrent medication list were assessed together rather than as separate line items.

5.6 Additive hypotension and a cardiac-unfavourable analgesic choice

Tamsulosin, an alpha-1 adrenergic antagonist used here for lower urinary tract symptoms consistent with AUA guideline practice [8], and tizanidine, a centrally acting alpha-2 agonist muscle relaxant, each independently lower blood pressure; their combination plausibly contributed to this patient's markedly hypotensive presentation (70/50 mmHg) noted in Table 1, and multiple-times-daily blood-pressure monitoring, as advised to the physician, is a reasonable minimum safeguard while both

remain co-prescribed. Separately, pentazocine's haemodynamic profile differs materially from that of morphine-class opioids: classic haemodynamic studies in patients with coronary artery disease found that, unlike morphine, pentazocine significantly raised mean aortic pressure, left-ventricular end-diastolic pressure and pulmonary-artery pressure, thereby increasing cardiac workload [17,18]. In a patient whose working diagnosis explicitly includes hypertensive heart disease, this is a relevant, evidence-based reason to prefer an opioid with a more favourable cardiovascular profile where clinically feasible.

5.7 Matching therapy to its evidence base: zinc, rehydration, and mineral–mineral interactions

The WHO/UNICEF recommendation for zinc supplementation in acute diarrhoea, and the great majority of the randomised evidence underpinning it, is specific to children under five years of age in low- and middle-income settings; systematic reviews restricted to children consistently show reduced diarrhoea duration and improved recovery, while equivalent adult evidence is far more limited and inconsistent [19,20]. This does not mean zinc was harmful for this 67-year-old patient, but it does mean the medicine was not doing the specific evidence-based job attributed to it in the chart, and oral rehydration therapy or an isotonic crystalloid infusion remains the primary, better-evidenced intervention for infection-induced fluid and electrolyte loss in an adult [28]. Separately, the well-characterised competitive inhibition between zinc and iron for shared intestinal transport means that co-administering fesolate and zinc sulphate at the same time measurably blunts iron absorption within the first thirty minutes of dosing; separating the two by several hours, as implemented here, is a simple, evidence-based, no-cost intervention that restores the intended benefit of both agents [21].

5.8 Incomplete medication history as a drug therapy problem in its own right

That neither the patient nor his relatives could name his chronic prostate-cancer medicines is not merely a documentation gap; in Cipolle's framework it is itself an adverse-event risk factor, since it prevents the treating team from confirming whether a corticosteroid, an alternative androgen-axis agent, or another anticoagulant was already being taken and could interact with the in-patient regimen. Structured medication reconciliation — contacting the outside facility, requesting take-home pill containers or pharmacy dispensing records — is a low-cost pharmacist-led intervention that would directly de-risk several of the DTPs identified above, and is a recommended next step for this patient's ongoing care [22,23].

6. Strengths and Limitations

This report's principal strength is that it traces ten distinct, evidence-anchored drug therapy problems from a single admission using a named, reproducible framework, several of which (the corticosteroid-adequacy question, the anticoagulant-guideline mismatch, and the unexplained transfusion trend) are not self-evident from the medication chart alone and required deliberate cross-referencing against current literature. As a single-patient case report, its findings are illustrative rather than generalisable, and several of the recommendations in Table 3 are carried forward as unresolved questions for the treating team rather than as interventions with documented resolution within the reporting period — a limitation inherent to reporting an admission in real time rather than retrospectively after full resolution. No formal causality-assessment instrument was applied to the DTPs described, and the true clinical significance of the abiraterone/corticosteroid and transfusion-trend observations can only be confirmed by the treating team's subsequent laboratory and clinical follow-up.

7. Conclusion

A single, ostensibly routine oncology-surgical admission — advanced, castration-resistant prostate cancer with hypertensive heart disease, severe anaemia, gastroenteritis and urosepsis — concealed at least ten distinct drug therapy problems once examined through a structured pharmacotherapy workup:

an apparently absent mandatory corticosteroid co-therapy, a guideline-discordant anticoagulant choice, a renally vulnerable anticoagulant in the setting of possible acute kidney injury, a clinically significant NSAID–anticoagulant combination, additive antihypertensive effects from two independently prescribed agents, a cardiac-unfavourable analgesic choice, an evidence-scope mismatch for an antidiarrhoeal supplement, a preventable mineral–mineral absorption interaction, and an unexplained, clinically important post-transfusion haemoglobin trend. Several of these were resolved directly at the bedside at negligible cost; others remain open recommendations precisely because they required a structured, literature-anchored review to surface at all. This case argues for the routine, rather than occasional, application of the pharmacotherapy workup on general surgical and oncology wards managing similarly complex, multimorbid patients.

Declarations

Ethics approval and consent to participate: This report describes the routine clinical and pharmaceutical care of a single patient and did not involve any deviation from standard institutional practice, experimental intervention, randomisation, or research procedure beyond usual clinical care. In accordance with the policy of the Federal Medical Centre, Yenagoa, and consistent with the position adopted by the International Committee of Medical Journal Editors (ICMJE) and the CARE guideline group, formal review and approval by the institution's Health Research Ethics Committee (HREC) was not required for the retrospective reporting of a single, anonymised clinical case describing standard-of-care management [11,12]. This exemption was confirmed with the HREC secretariat prior to manuscript preparation, and documentation of that confirmation can be supplied to the journal on request. Patient anonymity was preserved throughout: the patient is identified only by an initial, and no hospital record number, exact date of birth, or other potentially identifying detail is included in this manuscript.

Consent for publication: Written informed consent for publication of anonymised clinical details, including the medication history and clinical course described above, was obtained directly from the patient. A signed copy of the consent form is held by the corresponding author and is available to the Editor-in-Chief of the journal on request.

Availability of data and materials: The dataset supporting this case (in-patient clinical records, medication charts and laboratory reports) is held by the Surgical Ward Pharmacy Unit, Federal Medical Centre, Yenagoa, and is available from the corresponding author on reasonable request, subject to institutional data-governance approval.

Conflict of interest: The authors declare no conflict of interest.

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Author contributions: U.V.N provided direct pharmaceutical care, collected and analyzed the case data, performed the literature review, and drafted the manuscript. P.E and V.N.B, supervised the pharmaceutical care process and critically reviewed the manuscript. T.F.B provided the clinical care described, verified the accuracy of clinical details, and critically reviewed the manuscript. All authors approved the final version.

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