

Review of quality indicators used to measure anticoagulation safety

Martin Canning¹, Aleena Lukose²

1. The Prince Charles Hospital, Metro North Health, Chermside, Queensland; 2. The University of Queensland, St Lucia, Queensland

Background

Quality indicators (also known as clinical indicators or key performance indicators) are routinely used within healthcare to measure and monitor safety. Quality indicators may measure process or outcome measures. They should define, measure and monitor meaningful metrics where outcomes or compliance may be modifiable to support improved patient outcomes.

Aims

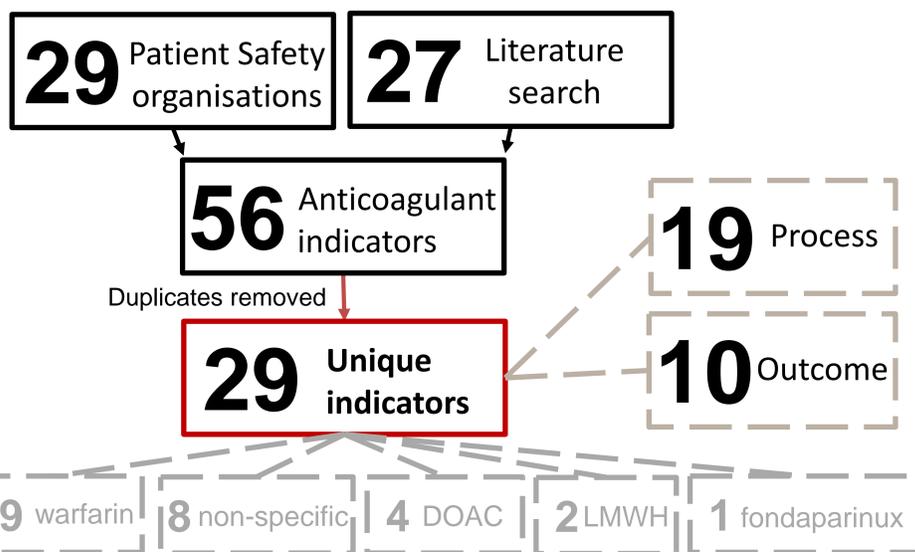
To identify anticoagulant medication safety indicators defined by key patient safety organisations and within peer-reviewed journals.

Methods

Key patient safety organisation websites were searched to identify any defined anticoagulant clinical indicators. These organisations included Australian Commission on Safety & Quality in Healthcare, NSW Therapeutic Advisory Group, National Institute of Health and Care Excellence, Australian Council on Healthcare Standards, Society of Hospital Pharmacists of Australia and Institute of Safe Medication Practice.

In addition, a literature search was conducted of the PubMed database using the following search terms: 'anticoagulants', 'anticoagulant safety', 'antithrombotic', 'quality indicator', 'clinical indicators', 'KPI', 'key performance indicator', 'quality Statement', 'quality Metric', 'heparin', 'warfarin', 'rivaroxaban', 'dabigatran', 'argatroban', 'bivalirudin', 'apixaban', 'fondaparinux', 'low molecular weight heparin', 'LMWH', 'dalteparin', 'enoxaparin', 'nadroparin', 'danaparoid', and 'vitamin K antagonist'. Only articles published in the last 30 years, available in full text were included. The titles and abstracts were reviewed and indicators defining a process or outcome were included.

Results



Of the 29 indicators identified, TPCH currently monitor two, with 10 previously monitored or assessed using ad hoc auditing processes. There were 19 indicators which have not routinely been measured at TPCH.

Conclusion

Key patient safety organisations and peer-reviewed literature define 29 unique anticoagulant clinical indicators across a variety of anticoagulants and clinical indications. Indicators identified define both process and outcomes. There were minimal studies which defined and validated anticoagulant clinical indicators. Implementation of an electronic medical record may be an enabler of defining and monitoring key anticoagulant clinical indicators to support improvement opportunities for best patient outcomes.

Results (cont.)

Table 1 – Anticoagulant quality indicators

Indicator	Anticoagulant	Process or outcome
Proportion of patients prescribed VTE prophylaxis appropriate to their VTE and bleeding risks in accordance with the locally approved guideline/policy	Not specified	P
Proportion of patients discharged on VTE prophylaxis that had a documented care plan that included the prescribed medicine(s), dose and duration of treatment	Not Specified	P
Percentage of patients prescribed enoxaparin whose dosing schedule is appropriate	enoxaparin	P
Percentage of patients prescribed hospital-initiated warfarin whose loading doses are consistent with a drug and therapeutics committee approved protocol	warfarin	P
Percentage of patients with an INR above 4 whose dosage has been adjusted or reviewed prior to the next warfarin dose	warfarin	P
Percentage of patients with atrial fibrillation and ischaemic stroke that are discharged on oral anticoagulants according to the appropriate guidelines (e.g. with a CHA2DS2-VASc score of 2 or more) and given a review within the preceding 12 months (stroke/VTE risk; bleeding risk; renal function, creatinine clearance, FBC, LFTs as appropriate, any adverse effects, compliance, choice of anticoagulant)	Not specified	P
Number of admissions for gastric bleed per 10,000 patients aged 18 or over currently prescribed an NSAID and concurrently proscribed an oral anticoagulant (warfarin or a direct oral anticoagulant (DOAC))	warfarin or DOAC	O
Patients aged 18 or over currently prescribed an NSAID and concurrently prescribed an oral anticoagulant (warfarin or a DOAC) and therefore potentially at increased risk of admission to hospital with a gastrointestinal bleed.	warfarin or DOAC	P
Patients aged 18 or over currently prescribed an oral anticoagulant (warfarin or a DOAC) with an anti-platelet and not concurrently prescribed a gastro-protective medicine and therefore potentially at increased risk of admission to hospital with a GI bleed.	warfarin or DOAC	P
Number of admissions for gastric bleed per 10,000 patients aged 18 and over in the month of prescription currently prescribed an oral anticoagulant (warfarin or DOAC) with an antiplatelet and not concurrently prescribed a gastro-protective medicine	warfarin or DOAC	O
Proportion of adults with atrial fibrillation taking a vitamin K antagonist who have their time in therapeutic range recorded at each visit for INR assessment	warfarin	P
Proportion of adults with poor anticoagulation control who have it reassessed	warfarin	P
Adults with atrial fibrillation on long term vitamin K antagonist therapy are supported to self-manage with a coagulometer	warfarin	P
The number of patients who had a haemorrhagic disorder due to circulating anticoagulants with an onset of an episode of admitted patient care	Not specified	O
Total number of INR greater than 5 readings	warfarin	O
The proportion of haemodialysis patients with atrial fibrillation with an INR variability that has more than 1 unit increase.	warfarin	P
The proportion of haemodialysis patients with atrial fibrillation whose time in therapeutic range was greater than 65%	warfarin	P
The proportion of haemodialysis patients with atrial fibrillation with an INR above 3	warfarin	P
The number of atrial fibrillation patients with heart failure, with an INR within the therapeutic range	warfarin	P
Proportion of INRs in range for patients on anticoagulation therapy	warfarin	P
The rate of haemorrhagic complications for patients with atrial fibrillation, mechanical valves and venous thromboembolic disease	Not specified	O
The rate of thromboembolic complications for patients with atrial fibrillation, mechanical valves and venous thromboembolic disease	Not specified	O
Percentage of patients discharged on warfarin who receive written information regarding warfarin management prior to discharge	warfarin	P
Percentage of patients receiving warfarin who experience a cerebral haemorrhage	warfarin	O
Percentage of patients receiving warfarin who die as a result of an adverse event	warfarin	O
Proportion of NSTEMI patients that received fondaparinux or LMWH as an anti-thrombotic during hospital	fondaparinux; LMWH	P
Proportion of patients that adhere to anticoagulation medications	not specified	O
Proportion of patients that have one-year adherence with warfarin after discharge	warfarin	P
Events of bleeding associated with percutaneous coronary intervention	not specified	O

Contact Us

Martin Canning, Safety & Quality Pharmacist, Martin.Canning@health.qld.gov.au
@canningmartin