

Keeping the blood flowing – Warfarin delivery



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Edgar Stephen's Ward

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The Background



- Edgar Stephen Ward (ESW)- 14 bed cardiology and cardiothoracic unit, at tertiary teaching hospital, The Children's Hospital Westmead
- Approximately 630 cardiothoracic/Cardiology admissions/yr



Why warfarin?



- Warfarin is an anticoagulant (blood thinner) that acts by inhibiting the synthesis of vitamin K-dependent coagulation factors
- 44 patients required warfarin therapy in 2007/2008



Identifies issues

- Incorrect charting
- Inconsistent administration techniques
- Poor medical/nursing communication



The literature

- INR (international normalised ratio) level needs to be closely monitored while on warfarin (Eby, 2007).
- INR has a narrow/specific therapeutic range (You, Chan, Wong & Cheng, 2005).



The literature

- Interactions – Food and medications → Unstable INR. (Glasheen, Fugit & Prochazka, 2005).
- To achieve or stabilise the INR level, it is recommended that warfarin is administered at the same time each day (Chamffman, 2001).



What was the driving force?

- Paediatric Practice Development conference in February 2007
- Able to make the connection between PD theory and clinical practice
- Identified methods to facilitate change within our workplace



Objective

- To challenge the current practice
- To improve the current warfarin charting and administration system
- To alleviate any unnecessary blood tests
- To provide cost effective care and reduce the length of stay in hospital



How did we engage stakeholders?

- Support was obtained
- Email distributed
- In service given to the nursing staff
- Poster displayed
- The medical team notified & new charting guideline education provided



Nursing role



- Flag patient group
- Negotiation of the administration method with the parent/caregiver
- Document



WARFARIN

Patient's name

This child is on oral warfarin.

MO please charts warfarin in regular medication chart before 5PM.

RN please gives warfarin at 6PM with

- Crushed tablet mix with (please document what the warfarin is given with) Apple gel / jelly/ ice cream / custard / others

- Whole tablet with
 - Water
 - Other



Charting guidelines

- Warfarin is to be charted before 5pm each day
- Warfarin is to be charted on the regular medication chart
- The dose is to be charted daily in *mg* above the given time
- The authorised medical officer signs under each dose prescribed
- The INR level is entered above dosage and a box drawn around it



REGULAR MEDICATIONS

B.S.A.

YEAR 20 <u>08</u>			DATE & MONTH \rightarrow							
DOCTORS MUST ENTER administration times \rightarrow			$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{3}$	$\frac{4}{3}$	$\frac{5}{3}$	$\frac{6}{3}$	$\frac{7}{3}$	$\frac{8}{3}$
Date	Medication (use Generic Name) Print		INR	1.2	3		1.8		2.2	
Route	Dose	Frequency & NOW enter times \rightarrow								
PO	VARIABLE DAILY DOSE									
Pharmacy / Additional Information			DOSE	3mg	3mg	2mg	2mg	2.5mg	2.5mg	0.5mg
TARGET INR LEVEL 2.0			MO	AM	AM	AM	AM	AM	AM	AM
Indication		Dose Calculation (eg mg/kg/dose)								
POST FONTAN										
Prescriber's signature	Print Name	Contact	1800	AM	AM	AM	AM	AM	AM	AM
AB	A. BELL	5056								

Discharge Required? Yes/No

Process

- It is time for warfarin
- Check the order



Process



For infants-

- Warfarin can be crushed
- Added to jelly, ice cream, custard or apple gel



Process

- Older children can swallow the tablet with water or food



Method: Swinging into action

- 3 months trial
- Multidisciplinary team, including all ESW nurses and the cardiac resident, registrar and fellows
- Two designated nurses entered the data in computer



Data collection: number crunching time



- 17 patients enrolled
- Age range 2 months - 17 years
- 4 Male and 13 female patients

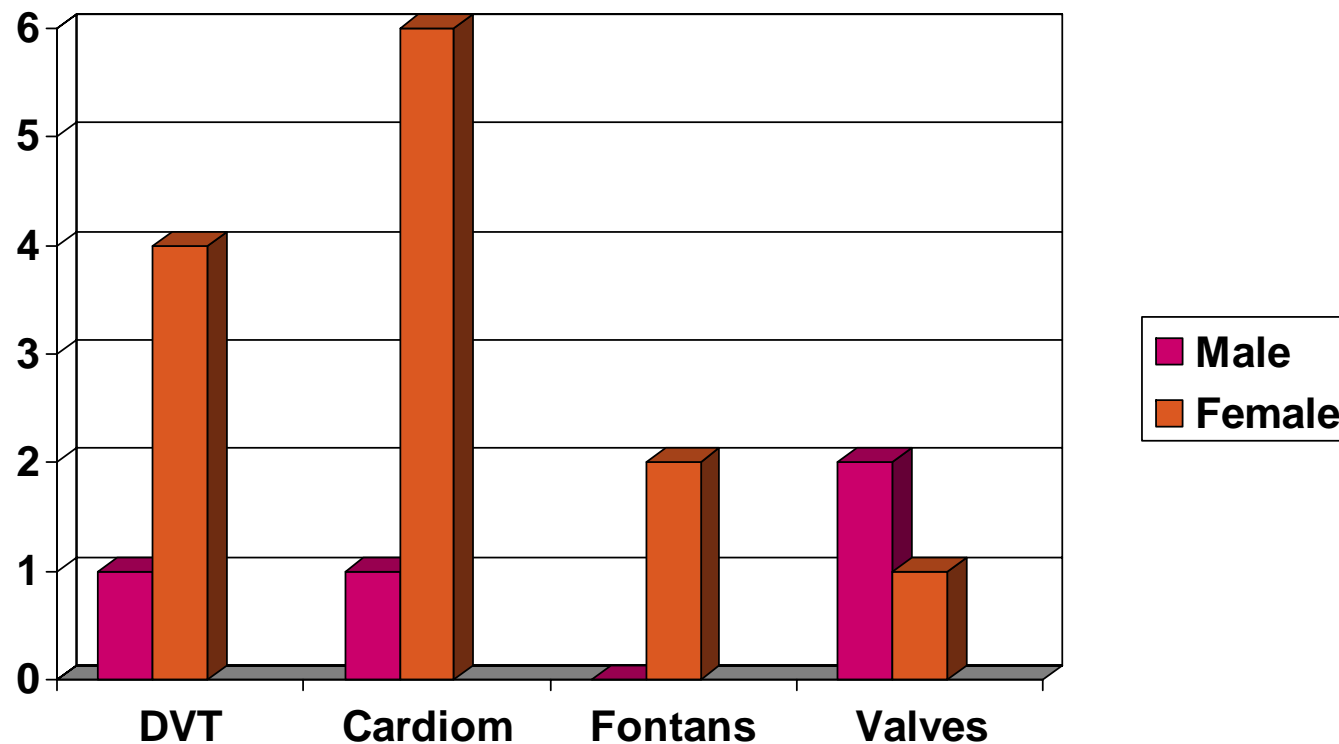


Data

- Occasions of charting - 175
- Occasions of administration -171
- Warfarin withheld on 4 occasions due to raised INR(> 3.8)
- Caution signs utilised 17 times



Cardiac conditions



The results-charting

- Warfarin was charted a total of 175 times
- Warfarin was **correctly charted 97%** of the time
- Warfarin was charted after 5pm on one occasion
- 5 charting errors occurred over the long weekend within the first week of the project



The results

- Since introducing a new method of charting and a caution chart, a **100% administration rate** of warfarin was achieved by nursing staff
- **Fewer blood samples** were required to test for INR level
- **No patient remaining hospitalised** solely for purpose of achieving therapeutic INR.



Feedback: the good & the bad

- Feedback was mostly positive and the project was well supported by staff
- One medical staff member disliked the method of charting
- Some nursing staff fed back that the INR level may be confused with the dosage



Limitations

- Nurse initiated project based within one ward at The Children's Hospital at Westmead
- Medical officers outside Edgar Stephen ward may not be familiar with new charting/administration method
- Medical team rotate frequently
- Parent education was not evaluated



What did we learn?



- How to initiate and implement a QI activity in the clinical setting
- Team effort and process of working together to change & improve practice
- The importance of being supported by colleagues and practice development unit.



Outcomes

- An audit has been completed (2008)
- This method of charting and administration has continued to be the standard practice on ESW
- Results will be utilised to develop hospital policy and standardise practice throughout The Children's Hospital at Westmead



Thank you



References

1. Ansell J, Hirsh J, Poller L, Jacobson A, Hylek E. The pharmacology and management of vitamin k antagonists. The seventh ACCP conference on antithrombotic and thrombolytic. Chest 2004; 126: 204S-233S.
2. Eby C. Individualized warfarin therapy: implications for laboratory testing: 14 . Clinical and Laboratory haematology June 2007; 29 (1): p12-13.
3. You JHS, Chan FWH, Wong RSM, Cheng G. Is INR between 2.0 and 3.0 the optimal level for Chinese patients on warfarin therapy for moderate-intensity anticoagulation? British Journal of Clinical Pharmacology 2005; 59 (5): 582-587.
4. Desai H, Farrington E. Anticoagulation with warfarin in Paediatrics. Paediatric nursing March-April 2000; 26 (2): p 199-203.
5. MIMS Warfarin information
http://mims.hcn.net.au/ifmx-nsapi/mims-data/?Mlval=2MIMS_abbr_pi&product_code=305&product_name=Coumadin
6. Glasheen J, Fugit R V, Prochazka A V. The risk of over anticoagulation with antibiotic use in outpatients on stable warfarin regimens. Journal of General Internal Medicine 2005; 20(7): p 653-656.
7. Glasheen J . Preventing warfarin-related Bleeding. Southern Medical Journal Jan 2005; 98 (1): p96-103.
8. Chamffman M. Anticoagulation in the Ambulatory Patient: Basic Principles and Current Concepts in Warfarin Therapy. Geriatric Rehabilitation Dec 2001; 17 (2): p18-37.
9. Moffett B S, Parham A, Caudilla C D, Mott A R, Gurwitch K D. Oral anticoagulation in a paediatric hospital: impact of a quality improvement initiative on warfarin management strategies. Quality & safe health care 2006; 15 (4): 240-243.

