SAVE THE DATE

MASCC/ISOO
Annual Meeting on Supportive Care in Cancer

www.mascc.org/meeting

Follow us on Twitter: @CancerCareMASCC #MASCC19
Apps for Anticoagulation

Judy Phillips, DNP, FNP-BC, AOCN
Cancer Care of Western North Carolina
Lenoir Rhyne University
Each year, blood clots affect up to 900,000 Americans — and a third of people who have a blood clot will experience another in the next 10 years.
Anticoagulants are one of the 3 high-priority drug classes targeted in the National Action Plan for Adverse Drug Event Prevention (ADE Action Plan).

A large study based on national emergency department (ED) data found that anticoagulants contribute to 17.6 percent of ED visits.
Electronic Devices

• Smartphones and electronic tablets are now ubiquitous devices.
• They create unique opportunities to transform medicine and improve quality of care.
• They have: ease of use, smartness, accessibility, mobility and connectivity.
INR log
(for patient/family use)
Select Therapeutic Range

Select the upper limit and lower limit of the therapeutic range.

Touch the INR value to change

Upper limit: 3.0
Lower limit: 2.0

Save
Your warfarin dose for today

Thursday

5mg

1 x

Due at 6.00pm

Click when dose taken

Your INR test is overdue

Enter new INR reading
### Latest result

<table>
<thead>
<tr>
<th>Test date</th>
<th>INR</th>
<th>Next test</th>
<th>weekly dose</th>
</tr>
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<tbody>
<tr>
<td>19 May 2023...</td>
<td>2.5</td>
<td>19 May 2023...</td>
<td>35mg</td>
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</tbody>
</table>

- **Edit latest result**
- **Show graph**

### Previous results

<table>
<thead>
<tr>
<th>Test date</th>
<th>INR</th>
<th>weekly dose</th>
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<tbody>
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</tbody>
</table>
It is time to take your warfarin.
INR log was developed by

Dr Paul Harper  MD, FRCP, FRACP.
Consultant Haematologist
for HealthObs Ltd © 2014

HealthObs also provide INR Online:
Warfarin management software for clinicians and pharmacists.
www.inronline.net

If you have any questions or comments about this app please contact us at help@inronline.net
or visit us on Facebook www.healthobs.com
Download the NEW CDC ANTICOAGULATION Manager app!
Anticoagulation Apps

• Recently, the Centers for Disease Control and Prevention (CDC), in partnership with the Georgia Institute of Technology, released the Anticoagulation Manager mobile app — and it’s now free to download.
The Anticoagulation Manager application is a clinical decision support tool designed to guide clinicians as they make decisions about prescribing anticoagulants — and to decrease errors in administration and laboratory testing.

Prescribing the right anticoagulant for patients is key to preventing these adverse events.
MAQ12 Anticoagulation Toolkit App

Developed by the University of Michigan from the American Heart Association, the European Society of Cardiology and the CHEST guidelines.
Anticoagulation Toolkit

A consortium-developed app for anticoagulation management

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### Periprocedural Guide

#### INTERRUPT?
- **Likely interrupt**
  - Use clinical judgement, insufficient data, consult proceduralist.

#### BRIDGE?
- **Do not bridge**

<table>
<thead>
<tr>
<th>Anticoagulant</th>
<th>Warfarin</th>
<th>DOAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indication</td>
<td>AF</td>
<td>VTE</td>
</tr>
<tr>
<td>Patient Clot Risk</td>
<td>Low</td>
<td>Mod</td>
</tr>
<tr>
<td>Patient Bleed Risk</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Procedure Bleed Risk</td>
<td>Min</td>
<td>Low</td>
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</tbody>
</table>
ASH Pocket Guide
Adapted from Antithrombotic Therapy and Prevention of Thrombosis, American College of Chest Physicians Evidence-Based Clinical Practice Guidelines.
Antithrombotic Drug Dosing and Management of Antithrombotic Drug-Associated Bleeding Complications in Adults

Mary Cushman (University of Vermont), Wendy Lim (McMaster University), Neil A. Zakai (University of Vermont)

Published February 2014

ANTICOAGULANT DOSING

Subcutaneous Heparin Dosing for Treatment of Acute Venous Thromboembolism

Initial Warfarin Dosing for Venous Thromboembolism or Atrial Fibrillation in Ambulatory Outpatients, Target INR 2.0-3.0

Chronic Warfarin Dose Adjustment in Non-Bleeding Patients
Anticoagulant Dosing

Initial Warfarin Dosing for Venous Thromboembolism or Atrial Fibrillation in Ambulatory Outpatients, Target INR 2.0-3.0

Chronic Warfarin Dose Adjustment in Non-Bleeding Patients

Chronic Warfarin Dose Adjustment in Non-Bleeding Patients

Dabigatran Dosing to Prevent Stroke and Systemic Embolism in Nonvalvular Atrial Fibrillation

Rivaroxaban Dosing to Prevent Stroke and Systemic Embolism in Nonvalvular Atrial Fibrillation and to Treat Venous Thromboembolism

Apixaban Dosing to Prevent Stroke and Systemic Embolism in Nonvalvular Atrial Fibrillation
Anticoagulant Dosing

Rivaroxaban Dosing to Prevent Stroke and Systemic Embolism in Nonvalvular Atrial Fibrillation and to Treat Venous Thromboembolism

Apixaban Dosing to Prevent Stroke and Systemic Embolism in Nonvalvular Atrial Fibrillation

ANTICOAGULANT REVERSAL

General Principles of Management of Anticoagulant-Associated Bleeding

Agents to Stop Bleeding

Reversal of Warfarin (Coumadin®, Jantoven®)

Reversal of Low-Molecular-Weight Heparins [Dalteparin (Fragmin®), Enoxaparin (Lovenox®), Tinzaparin (Innohep®)] and Fondaparinux (Arixtra®)
Anticoagulant Dosing

Reversal of Low-Molecular-Weight Heparins [Dalteparin (Fragmin®), Enoxaparin (Lovenox®), Tinzaparin (Innohep®)] and Fondaparinux (Arixtra®)

Protamine Dose for Reversal of Heparin and LMWH

Reversal of Dabigatran, Rivaroxaban or Apixaban

Converting Between Anticoagulants

ANTIPLATELET AGENT REVERSAL

General Considerations

Reversal of Antiplatelet Agents

ABOUT

About this Clinical Quick Reference Guide
### Converting Between Anticoagulants

<table>
<thead>
<tr>
<th>Conversion</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warfarin (INR 2-3) → Dabigatran or Apixaban</strong></td>
<td>Discontinue warfarin and start dabigatran or apixaban when INR &lt;2.0</td>
</tr>
<tr>
<td><strong>Warfarin (INR 2-3) → Rivaroxaban</strong></td>
<td></td>
</tr>
<tr>
<td><strong>LMWH or Heparin → Dabigatran</strong></td>
<td>Start dabigatran 0-2 hours before administration of last LMWH/Heparin dose, or at same time as discontinuation of infusional heparin.</td>
</tr>
<tr>
<td><strong>LMWH or Heparin → Rivaroxaban or Apixaban</strong></td>
<td></td>
</tr>
</tbody>
</table>
American College of Cardiology: Manage Anticoag
Plan Periprocedural Interruption and Bridging

Address an Acute Bleed

Determine Anticoag Restart

Reference key concepts from the tools above

Quick Reference

The information in this app is based on content in the ACC's Expert Consensus Decision Pathways. Refer to the Resources section for full references.
Restarting Anticoagulation Suggested

• Choose OAC agent

Consider switching agent if a reversible cause related to the OAC agent contributed to the bleed. For instance, a patient on warfarin with a history of labile INR values who had a hemorrhagic complication with an elevated INR may benefit from a DOAC, or a patient with a decrement in renal function who had a bleeding complication on a DOAC may benefit from a change to warfarin. However, it is beyond the scope of this app to recommend specific agents for individual patients.

• Note: In most cases of GI bleeding, the writing committee favors reinitiation of anticoagulation in patients with an indication for OAC once bleeding has been controlled (including patients in whom no discrete source of bleeding was identified) and adequate time has elapsed to allow for healing. This will depend on the nature and type of the bleeding lesion. See full source document for more details.
Restarting Anticoagulation Suggested

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Address an Acute Bleed

Which anticoagulant is your patient taking?
- Apixaban
- Dabigatran
- Edoxaban
- Rivaroxaban
- VKA

What is the bleed severity?
- Major
Guidance for Administering Reversal Agents

In a life-threatening or critical site bleed, or in situations in which bleeding cannot be controlled with other measures, reversal of OACs may be required. This section provides guidance for administering reversal agents.

- **VKA (warfarin)**
- **DTI (dabigatran)**
- **FXa Inhibitor (apixaban, edoxaban, rivaroxaban)**

Note: While andexanet alfa is FDA approved in the U.S., it may not be available at every institution. Please refer to the product locator on the manufacturer's website to determine availability: [https://www.andexxa.com/](https://www.andexxa.com/)
On up-to-date, this app is thought of as one of the best.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylsalicylic Acid (ASA)</td>
<td>To provide information on the use of acetylsalicylic acid in the prevention of vascular thromboembolic events.</td>
</tr>
<tr>
<td>Air Travel-related Thrombosis</td>
<td>To summarize the available literature on the risk of venous thromboembolism (VTE) during air travel, and provide recommendations for preventative measures while travelling long distances.</td>
</tr>
<tr>
<td>Apixaban (Eliquis®)</td>
<td>To provide an overview of the mechanism of action, licensed indications, dosing regimens, and side-effect profile of apixaban.</td>
</tr>
<tr>
<td>Cancer and Thrombosis</td>
<td>To assist healthcare professionals in the management of cancer-associated thrombosis (CAT).</td>
</tr>
<tr>
<td>Central Venous Catheter-Related Deep Vein Thrombosis</td>
<td>To provide guidance on the diagnosis, treatment and prevention of central venous catheter-related deep vein thrombosis (DVT).</td>
</tr>
<tr>
<td>Cerebral Venous Thrombosis</td>
<td>To assist healthcare professionals in the management of cerebral venous thrombosis (CVT).</td>
</tr>
<tr>
<td>Clopidogrel (Plavix®)</td>
<td>To describe the clinical pharmacology and therapeutic application of clopidogrel, and to discuss drug dosing, duration of therapy, genetic polymorphisms affecting drug metabolism, and potential drug interactions with proton pump inhibitors.</td>
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