HQIC Patient Safety:

Welcome!

• All lines are muted, so please ask your questions in the Chat panel.
• For technical issues, chat to “All Panelists.”
• Please actively participate in polling questions that pop up on the lower right-hand side of your screen near the end of the presentation.

We will get started shortly!
Hospital Quality Improvement

Welcome from all of us!

COLLABORATORS:
Alabama Hospital Association
Alliant Health Solutions
Comagine Health
Georgia Hospital Association
KFMC Health Improvement Partners
Konza
Adverse Drug Event Co-Leads

Carol Snowden, RN, BSN
Carol has over 20 years of experience in clinical nursing and quality improvement. She joined the Alabama Hospital Association as the quality director in March 2021.

Contact: csnowden@alaha.org

Jennifer Massey, PharmD
Jennifer has 15 years of health care experience, including clinical pharmacy in the acute care hospital setting and various roles at Alliant Health Solutions working on the CMS contract for the Quality Innovation Network-Quality Improvement Organization (QIN-QIO). She currently serves as the SME for Opioids and Adverse Drug Events for HQIC.

Contact: Jennifer.Massey@allianthealth.org
Darren Triller, PharmD, is director of strategic initiatives at the Anticoagulation Forum. He is a clinical pharmacist with over 30 years of experience in drug safety and quality improvement. Prior to joining Anticoagulation Forum, he spent 10 years as a senior program director for IPRO, the CMS-designated QIN-QIO for New York State. In that capacity, he created and led the New York State Anticoagulation Coalition, a multi-disciplinary collaborative of over 150 anticoagulation service providers, government agencies and professional organizations. Through the coalition, he conceptualized and led the publication of a pivotal paper, *Features of electronic health records necessary for the delivery of optimized anticoagulant therapy: consensus of the EHR Task Force of the New York State Anticoagulation Coalition* (Annals of Pharmacotherapy, 2015). He also led the design and dissemination of the Management of Anticoagulation in the Peri-Procedural Period app (MAPPP), currently available on both Apple and Android smartphone platforms.
Agenda

• Welcome & Introductions
• Perspective on anticoagulation-related harms
• About the Anticoagulation Forum
• Review of available resources
• Opportunities for engagement
• Q&A
Perspective on Anticoagulation-Related Harms

• Class of drugs most frequently associated with adverse drug events (ADEs) prompting emergency department visits and hospitalization

• Errors and avoidable harms are common in acute and residential facilities

• Care transitions are risk-prone

• Quality measures and administrative oversight requirements are suboptimal

• Use of anticoagulants and complexity of regimens is increasing

• Organized services improve care, but are not widespread
Four medications or medication classes were implicated alone or in combination in 67.0% (95% CI, 60.0 to 74.1) of hospitalizations: warfarin (33.3%), insulins (13.9%), oral antiplatelet agents (13.3%), and oral hypoglycemic agents (10.7%).
**Table 4. National Estimates of Medications Commonly Implicated in Emergency Hospitalizations for Adverse Drug Events in Older U.S. Adults, 2007–2009.**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Annual National Estimate of Hospitalizations (N = 99,628)</th>
<th>Proportion of Emergency Department Visits Resulting in Hospitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no.</td>
<td>% (95% CI)</td>
</tr>
<tr>
<td>Most commonly implicated medications†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warfarin</td>
<td>33,171</td>
<td>33.3 (28.0–38.5)</td>
</tr>
<tr>
<td>Insulins</td>
<td>13,854</td>
<td>13.9 (9.8–18.0)</td>
</tr>
<tr>
<td>Oral antiplatelet agents</td>
<td>13,263‡</td>
<td>13.3 (7.5–19.1)</td>
</tr>
<tr>
<td>Oral hypoglycemic agents</td>
<td>10,656</td>
<td>10.7 (8.1–13.3)</td>
</tr>
<tr>
<td>Opioid analgesics</td>
<td>4,778</td>
<td>4.8 (3.5–6.1)</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>4,205</td>
<td>4.2 (2.9–5.5)</td>
</tr>
</tbody>
</table>
In this cross-sectional nationally representative sample that included 60 US EDs between 2017 and 2019, annual estimates of the most frequent medication types and intents of use associated with ED visits attributed to medication harms (adverse events) were therapeutic use of anticoagulants (4.5/1000 population) and diabetes agents (1.8/1000 population) for patients aged 65 years or older; therapeutic use of anticoagulants (0.6/1000 population) and diabetes agents (0.8/1000 population) for patients aged 45 to 64 years; nontherapeutic use of benzodiazepines (1.0/1000 population) and prescription opioids (0.7/1000 population) for patients aged 25 to 44 years; and unsupervised medication exposures (2.2/1000 population) and therapeutic use of antibiotics (1.4/1000 population) for children younger than 5 years.
<table>
<thead>
<tr>
<th>Drug product</th>
<th>ED visits for medication harms overall</th>
<th>Proportion of ED visits for medication harms attributed to therapeutic use, nationally weighted, % (95% CI)</th>
<th>ED visits for medication harms overall, estimated annual ED visits per 1000 individuals (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of cases</td>
<td>Nationally weighted, % (95% CI)</td>
<td></td>
</tr>
<tr>
<td>Warfarin</td>
<td>5706</td>
<td>20.7 (17.9-23.5)</td>
<td>99.8 (99.7-100.0)</td>
</tr>
<tr>
<td>Insulin</td>
<td>3146</td>
<td>11.1 (9.0-13.2)</td>
<td>99.3 (98.9-99.7)</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>3057</td>
<td>10.9 (7.8-14.0)</td>
<td>99.8 (99.6-100.0)</td>
</tr>
<tr>
<td>Apixaban</td>
<td>2507</td>
<td>8 (6.0-10.1)</td>
<td>99.8 (99.6-100.0)</td>
</tr>
<tr>
<td>Rivaroxaban</td>
<td>1764</td>
<td>6.3 (5.0-7.5)</td>
<td>99.9 (99.8-100.0)</td>
</tr>
<tr>
<td>Metformin</td>
<td>729</td>
<td>3.0 (2.4-3.6)</td>
<td>98.8 (97.6-100.0)</td>
</tr>
<tr>
<td>Aspirin</td>
<td>621</td>
<td>2.6 (0.6-4.6)</td>
<td>97.8 (96.4-99.2)</td>
</tr>
<tr>
<td>Lisinopril</td>
<td>639</td>
<td>2.4 (1.8-3.1)</td>
<td>96.7 (94.9-98.6)</td>
</tr>
<tr>
<td>Glipizide</td>
<td>445</td>
<td>1.7 (1.3-2.1)</td>
<td>99.9 (99.7-100.0)</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>370</td>
<td>1.4 (1.0-1.7)</td>
<td>69.2 (62.6-75.8)</td>
</tr>
</tbody>
</table>
Perspective on Anticoagulation-Related Harms

• Class of drugs most frequently associated with adverse drug events (ADEs) prompting emergency department visits and hospitalization
• Errors and avoidable harms are common in acute and residential facilities
• Care transitions are risk-prone
• Quality measures and administrative oversight requirements are suboptimal
• Use of anticoagulants and complexity of regimens is increasing
• Organized services improve care, but are not widespread
Increasing Complexity

• Four unique DOACs
• Expanding indications for AC use (e.g., PAD)
• Expanding use of implanted devices (valves, LVAD, LAAODs)
• Complex patient characteristics (obesity, dialysis, etc.)
• Multiple reversal agents, strategies
• COVID
• Exploding and evolving medical evidence/guidance
# Anticoagulation Stewardship: Evidence of Impact

Anticoagulants are essential yet high-risk medications. Anticoagulation-related errors and inappropriate use result in devastating bleeding and thrombotic events. Dedicated anticoagulation management programs have been shown to improve the quality and safety of anticoagulant use and improve clinical outcomes. (All findings presented are statistically significant).

## Inappropriate DOAC Dosing:

<table>
<thead>
<tr>
<th>Quality Gap</th>
<th>Stewardship Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 in 3 DOAC doses inappropriate</td>
<td>93% of DOAC doses appropriate in outpatients</td>
</tr>
<tr>
<td>Under-dosing</td>
<td>44-68% improvement in hospital dosing errors</td>
</tr>
<tr>
<td>Risk CV hospitalization (26%)</td>
<td>43% ↓ in major bleeding</td>
</tr>
<tr>
<td>Stroke / systemic embolism (22%)</td>
<td>53% ↓ in death</td>
</tr>
<tr>
<td>Death (24%)</td>
<td>Over-dosing</td>
</tr>
<tr>
<td>No reduction in bleeding</td>
<td>2X mortality</td>
</tr>
<tr>
<td>Major bleeding (30-100%)</td>
<td></td>
</tr>
</tbody>
</table>

## Suboptimal DOAC Adherence:

<table>
<thead>
<tr>
<th>Quality Gap</th>
<th>Stewardship Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>33% of patients on DOACs for atrial fibrillation are non-adherent resulting in a 40% ↑ rate of strokes</td>
<td>91%-97% adherence rates achieved</td>
</tr>
</tbody>
</table>

## Inappropriate Aspirin – Anticoagulant Combination:

<table>
<thead>
<tr>
<th>Quality Gap</th>
<th>Stewardship Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>34%-60% of patients on anticoagulant therapy use aspirin without a clear indication</td>
<td>34%-87% ↓ in inappropriate aspirin use among anticoagulated patients</td>
</tr>
</tbody>
</table>

## Suboptimal Warfarin Control:

<table>
<thead>
<tr>
<th>Quality Gap</th>
<th>Stewardship Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTR &gt;65% needed to derive any benefit from warfarin</td>
<td>TTR to 70%</td>
</tr>
<tr>
<td>2/3 of warfarin patients have a mean TTR of only 54%</td>
<td>39% ↓ in supratherapeutic INR</td>
</tr>
<tr>
<td>These patients are at ↑ risk for strokes and ↓ risk for major bleeding</td>
<td></td>
</tr>
</tbody>
</table>

## Bleeding Management and Utilization of Clotting Factors and Antidotes:

<table>
<thead>
<tr>
<th>Quality Gap</th>
<th>Stewardship Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major bleeding events from anticoagulants carry a mortality rate of up to 20% within 30 days</td>
<td>HIT is a rare (≤1%) but potentially devastating disease</td>
</tr>
<tr>
<td>Reversal strategies are costly at $4,000 to $50,000 per episode</td>
<td>Up to 64% of HIT patients experience thrombocytopenic complications requiring treatment with alternate anticoagulants</td>
</tr>
<tr>
<td>56% of orders for reversal agents are inappropriate</td>
<td>HIT tests are inappropriate 50%-75% of the time</td>
</tr>
</tbody>
</table>

## Suboptimal Management of Heparin-Induced Thrombocytopenia:

<table>
<thead>
<tr>
<th>Quality Gap</th>
<th>Stewardship Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIT can be costly by $20,000 and length of stay by 16 days</td>
<td>HIT in suspected</td>
</tr>
</tbody>
</table>

## Anticoagulation Centers of Excellence

- HQIC: Hospital Quality Improvement Contractors
- ALLIANT: Quality Improvement & Innovation Group
The Joint Commission National Patient Safety Goal for Anticoagulation

**R³ Report** Requirement, Rationale, Reference

A complimentary publication of The Joint Commission

Published for Joint Commission-accredited organizations and interested health care professionals, R³ Report provides the rationale and references that The Joint Commission employs in the development of new requirements. While the standards manuals also may provide a rationale, R³ Report goes into more depth, providing a rationale statement for each element of performance (EP). The references provide the evidence that supports the requirement. R³ Report may be reproduced if credited to The Joint Commission. Sign up for email delivery.

**National Patient Safety Goal for anticoagulant therapy**

Effective July 1, 2019, eight new elements of performance will be applicable to all Joint Commission-accredited hospitals, critical access hospitals, nursing care centers, and medical centers (accredited under the ambulatory health care program). These new requirements are at NPSG.03.05.01 in the "National Patient Safety Goals" chapter.

For years, this NPSG has played an important role in improving the safety of patients receiving anticoagulation therapy. However, there has been a rise in adverse drug events associated with direct oral anticoagulants (DOACs), and The Joint Commission believes that relevant updates to this NPSG to address DOACs may help reverse that trend.
About the Anticoagulation Forum

• Largest nonprofit organization of anticoagulation specialists in North America

• Mission
  • Improve the quality of care for patients on antithrombotic medications
  • Educate and empower current healthcare providers
  • Advance the training of future experts
  • Advocate for clinical best practices
  • Promote Inclusion, Diversity, Equity and Allyship (IDEA)
Unique Organizational Design

• Multidisciplinary by design—physicians, pharmacists, nurses
• Active board of nationally recognized experts
• Free membership
• Free continuing education credits
• All resources free of charge except the conference and bootcamp events
Available Resources

• Website and membership
• Anticoagulation Centers of Excellence
• Anticoagulation Stewardship
Website and Membership

• **Expert guidance documents**
• **Order sets**
• Live and enduring **webinars**/educational **programs** (with free CE)
• **Searchable Resource Center** and topical **Rapid Resources**
• Dynamic **literature website** and **Rapid Recaps**
• **Newsletter**
Anticoagulation Centers of Excellence (ACE)

- Free self-assessment measuring excellence in anticoagulation practices
- Pass the assessment and become a “Center of Excellence” with three-year recognition
- Free to enroll & assessment serves as a roadmap to implementing best practices
- Over 150 practices have been recognized as a “Center of Excellence”
- Once you become an ACE practice, you’re invited to join the “Innovation Circle” every-other-month discussion group & list-serve tackling cutting-edge topics, sharing resources & engaging in QI projects

Download a PDF of assessment
Anticoagulation Stewardship
HHS has called for Anticoagulation Stewardship Model Advancement

The US Department of Health and Human Services’ National Action Plan for Adverse Drug Event Prevention identified anticoagulants as a drug class warranting systematic improvements to prevent drug-related harm, stating:

“Federal partners should lead efforts to promote the concept of ‘anticoagulation stewardship’ to reduce anticoagulant ADE burden.”

Other agencies and organizations have also prioritized anticoagulation safety and quality

<table>
<thead>
<tr>
<th>The Centers for Disease Control and Prevention</th>
<th>The Food and Drug Administration</th>
<th>The Veterans Health Administration</th>
<th>The Joint Commission</th>
<th>The National Quality Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td>have identified anticoagulants as the most frequent contributors to Emergency Department Visits and Hospitalization</td>
<td>has Funded the Development of Anticoagulation Stewardship Model</td>
<td>has Implemented National Standards for Anticoagulation Management</td>
<td></td>
<td>is Developing a Playbook to Guide Stewardship Implementation</td>
</tr>
<tr>
<td>Studies by the CDC have shown anticoagulants to be the drug class most frequently associated with adverse drug events causing ED visits and hospitalizations, particularly among the elderly, and many are considered preventable.2-5</td>
<td>The FDA contracted with the Anticoagulation Forum to develop the Core Elements of Anticoagulation Stewardship Programs Guide.6</td>
<td>“It is VHA policy that every VA medical facility must maintain a centralized evidence-based anticoagulation management program. The program must provide coordinated processes and procedures ensuring Veterans are appropriately treated and monitored, to ensure safety of anticoagulation therapy through transitions of care.”7,8</td>
<td>National Patient Safety Goal 03.05.01 was updated in 2018 to reduce avoidable patient harms related to suboptimal anticoagulant use, including care transitions, peri-procedural management, bleeding management, and other key aspects of patient care.9</td>
<td>NQF has partnered with Anticoagulation Forum to develop a comprehensive guide on implementation of Anticoagulation Stewardship in hospitals.</td>
</tr>
</tbody>
</table>

The Anticoagulation Forum welcomes your support in advancing Anticoagulation Stewardship across care settings.
Anticoagulation Stewardship

- Strategic initiative to "move the needle"
- Goal to improve the safety and quality of patient care and reduce adverse drug events associated with anticoagulants
- One-year project funded by FDA
- Developed:
  - Core Elements of Anticoagulation Stewardship Programs Guide
  - Checklist for hospitals to assess level of stewardship implementation
  - Administrative Oversight Gap Analysis

Access at: [https://acforum.org/web/education-stewardship.php](https://acforum.org/web/education-stewardship.php)
Anticoagulation Stewardship Checklist

- Used to systematically assess key elements and actions that are integral to successful stewardship efforts & high-quality patient care

- Guide to determine if essential support, resources, and initiatives are in place for optional management of patients on anticoagulant medications
CORE ELEMENTS OF ANTICOAGULATION STEWARDSHIP

Secure administrative leadership commitment: Dedicating necessary human, financial, and technology resources

Establish professional accountability and expertise: Appointing a single leader responsible for program outcomes, supported by at least one clinician with expertise in anticoagulation management

Engage multidisciplinary support: Involving key specialists and disciplines to obtain perspective from all domains of the care delivery system

Perform data collection, tracking, and analysis: Defining the population, objectively evaluating performance, and guiding decision-making

Implement systematic care: Implementing sustainable, efficient, evidence-based action(s) at the system level to assure the safety and quality of anticoagulation management

Facilitate transitions of care: Creating systems to optimize communication and ensure safe transitions between care settings

Advance education, comprehension, and competency: Assuring that clinicians, patients, and others have the knowledge and skills necessary to optimize outcomes
The MIDAS Program

- Mentored Implementation & Dissemination of Anticoagulation Stewardship (MIDAS)
- Demonstrate feasibility of Core Elements of Anticoagulation Stewardship Programs
- Two-year project funded by FDA
  - Year 1 – Mentorship program at five hospitals
  - Year 2 – Develop and disseminate Implementation Playbook
- Implementation Playbook will provide guidance and resources for hospitals to independently establish a stewardship program
Project Leadership

Jack Ansell, MD, MACP

Geoff Barnes, MD, MSC, FACC, FAHA, FSVM
University of Michigan

Andy Bland, MD, MSc
Base Camp Health

Allison Burnett, PharmD, PhC, CACP
University of New Mexico

Nathan Clark, PharmD, BCPS, FCCP
Kaiser Permanente Colorado

Steve Deitelzweig, MD, MMM, SFHM, FACP, FACC
Ochsner Medical Center

David Garcia, MD
University of Washington

Scott Kaatz, DO, MSc, FACP, SFHM
Henry Ford Hospital

Darren Triller, PharmD
Anticoagulation Forum

Dan Witt, PharmD, BCPS, FCCP
University of Utah College of Pharmacy
Hospital Sites

The Brooklyn Hospital Center
Brooklyn, NY

CHRISTUS ST. Vincent
Regional Medical Center
Santa Fe, NM

University of Alabama
at Birmingham
Birmingham, AL

Ochsner Medical Center
New Orleans, LA

University of California,
San Francisco
Moffit–Long Hospital
San Francisco, CA
Implementation Playbook

• Under development by the National Quality Forum (available Sept 2022)
• Leverages familiar and successful antimicrobial stewardship model
• Provides guidance and resources for hospitals to institute an anticoagulation stewardship program, without individual mentorship
• Developed by a large team of multidisciplinary subject matter experts
• Disseminated through AC Forum’s 12,000+ members and partner organizations upon completion
Opportunities for Engagement

• Membership and newsletter
• Live and recorded webinars as source of CE for clinicians
• Send staff to boot camp and conferences
• Pursue Center of Excellence Status
• Initiate stewardship program
• Share new ideas for collaboration
Ask and Offer

• Ask: A single high-level clinician to join the AC Forum from each hospital.
• Offer: AC Forum will do a presentation on a topic of PSO interest in the future.
Thank you for Your Valuable Input

For more information on resources and opportunities to improve the quality and safety of anticoagulation management, contact Darren Triller: dtriller@acforum.org
HQIC Goals

**Behavioral Health Outcomes & Opioid Misuse**
- Promote opioid best practices
- Decrease high dose opioid prescribing and opioid adverse events in all settings
- Increase access to behavioral health services

**Patient Safety**
- Reduce risky medication combinations
- Reduce adverse drug events
- Reduce *C. diff* in all settings

**Quality of Care Transitions**
- Convene community coalitions
- Identify and promote optical care for super utilizers
- Reduce community-based adverse drug events
Making Health Care Better Together

Hospital Quality Improvement

Thank you for joining us! How did we do today?

This material was prepared by Alliant Health Solutions (AHS), the Hospital Quality Improvement Contractor (HQIC) under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services (HHS). Views expressed in this document do not necessarily reflect the official views or policy of CMS or HHS, and any reference to a specific product or entity herein does not constitute endorsement of that product or entity by CMS or HHS. Publication No. 125GW-AHSQIN-QIO TO3 - HQIC - 1680-03/14/22