

DDInteract™

A Novel Drug-Drug Interaction
Tool for Patients Taking
Oral Anticoagulants



WHAT IS DDI_{INTERACT}?



- A tool for clinicians for patients who take oral anticoagulants including apixaban, dabigatran, edoxaban, rivaroxaban, and warfarin
 - Shows the risk of gastrointestinal bleeding when these patients take NSAIDs and/or antidepressants
 - Utilizes current medications and diagnosis information to calculate risk for gastrointestinal bleeding
 - Available in EPIC as on-demand (Does not replace current DDI alerts)
-



Anticoagulant Drug Interactions

Bleeding Risk for Antidepressant and Pain Medications

[Provide Feedback](#)

[Print Summary](#)

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Shared Decision-Making Tips

Step 1: Review Patient Profile

Patient currently on: Pradaxa 20

MG Oral Pellet

Start Date: 02/07/2024

Patient Age: 63

NSAIDs: None

Select Antidepressants: None

Risk Factors

- Previous GI bleed
- On Aspirin
- On Clopidogrel
- On Oral Corticosteroid
- On Proton Pump Inhibitor

[HAS BLED Calculator](#)

Click to see more information on patient prescription.

Step 2: Consider Treatment Alternatives

Pain

Antidepressants

Compare Pain Management Options

Lower Risk _____ Higher Risk

Select	Name	Cost	Risk Ratio for GI Bleeding
<input type="checkbox"/>	Celecoxib (Celebrex)	\$\$	1.01
<input type="checkbox"/>	Difunisal (Dolobid)	\$	1.31
<input type="checkbox"/>	Nabumetone (Relafen)	\$	1.31
<input type="checkbox"/>	Ibuprofen (Motrin)	\$	1.34
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.56
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.56
<input type="checkbox"/>	Fenoprofen (Nalfon)	\$\$\$	3.12
<input type="checkbox"/>	Naproxen (Aleve / Naprosyn)	\$	3.12
<input type="checkbox"/>	Oxaprozin (Daypro)	\$	3.12
<input type="checkbox"/>	Meloxicam (Mobic)	\$\$	5.96
<input type="checkbox"/>	Etodolac (Lodine)	\$\$	6.52
<input type="checkbox"/>	Indomethacin (Indocin)	\$	6.52

Step 3: Evaluate Results

Estimated GI Bleeds in 100 Patients



3 Potential bleeds

97 People NOT expected to have bleeds

3 GI bleeds per 100 patients

[More Information](#)

A STEP-BY-STEP OVERVIEW

Step 1: Review Patient Profile

DDInteract

REIMAGINE

DDInteract
REIMAGINE

Anticoagulant Drug Interactions

Bleeding Risk for Antidepressant and Pain Medications

[Provide Feedback](#)
[Print Summary](#)
[Copy To Note](#)

Shared Decision-Making Tips

Step 1: Review Patient Profile

Patient currently on: WARFARIN
Start Date: 09/01/2023
Patient Age: 60
MSAIDs:
08/30/2023 - ibuprofen 400 MG / oxycodone hydrochloride 5 MG Oral Tablet
24 HR naproxen 375 MG Extended Release Oral Tablet
Select Antidepressants:
24 HR venlafaxine 75 MG Extended Release Capsule (Effexor)
venlafaxine 75 MG Oral Tablet

Risk Factors

- Previous GI bleed
- On Aspirin
- On Clopidogrel
- On Oral Corticosteroid
- On Proton Pump Inhibitor

[HAS BLED Calculator](#)
Click to see more information on patient prescription.

Step 2: Consider Treatment Alternatives

Pain | **Antidepressants**

Compare Pain Management Options

Lower Risk | Higher Risk

Compare	Name	Cost	Risk Ratio for GI Bleeding
<input type="checkbox"/>	Celecoxib (Celebrex)	\$	1.01
<input type="checkbox"/>	Diflunisal (Dolobid)	\$	1.31
<input type="checkbox"/>	Nabumetone (Relafen)	\$	1.31
<input checked="" type="checkbox"/>	Ibuprofen (Motrin)	\$	1.34
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.56
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.56
<input type="checkbox"/>	Fenoprofen (Nalfon)	\$	3.12
<input type="checkbox"/>	Naproxen (Aleve / Naproxen)	\$	3.12
<input type="checkbox"/>	Oxaprozin (Opavrin)	\$	3.12
<input type="checkbox"/>	Meloxicam (Mobic)	\$	5.96
<input type="checkbox"/>	Etoricoxib (Lodine)	\$	6.52
<input type="checkbox"/>	Indomethacin (Indocin)	\$	6.52
<input type="checkbox"/>	Sulindac (Clinoril)	\$	6.52
<input type="checkbox"/>	Tolmetin (Tolectin)	\$	6.52
<input type="checkbox"/>	Acetaminophen (Tylenol)	\$	6.52

Step 3: Evaluate Results

Estimated GI Bleeds in 100 Patients

Taking: Ibuprofen (Motrin), Venlafaxine (Effexor) and A Proton Pump Inhibitor

6 Potential bleeds with Ibuprofen (Motrin), Venlafaxine (Effexor) And A Proton Pump Inhibitor

94 People NOT expected to have bleeds

These estimates include the reduction in risk when using a proton pump inhibitor (PPI).

Ibuprofen (Motrin), Venlafaxine (Effexor) and A Proton Pump Inhibitor 6 GI bleeds per 100 patients

[More information](#)

STEP 1: REVIEW PATIENT PROFILE

DDInteract uses patient-specific EHR information to calculate risk of GI bleeding for patients taking NSAIDs and/or antidepressants

Step 1: Review Patient Profile

Patient currently on: WARFARIN

Start Date: 09/01/2023

Patient Age: 60

NSAIDs:

08/30/2023 - ibuprofen 400 MG /
oxycodone hydrochloride 5 MG
Oral Tablet

24 HR naproxen 375 MG
Extended Release Oral Tablet

Select Antidepressants:


24 HR venlafaxine 75 MG
Extended Release Capsule
[Effexor]

venlafaxine 75 MG Oral Tablet

Risk Factors

- Previous GI bleed
- On Aspirin [?]
- On Clopidogrel
- On Oral Corticosteroid
- On Proton Pump Inhibitor [?]

[HAS BLED Calculator](#) 

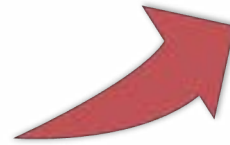
 Click to see more information on patient prescription.

DDInteract

REIMAGINE EHR

STEP 1: REVIEW PATIENT PROFILE

- Displays patient information retrieved from the electronic health record, including age and concomitant medications
- Lists any current NSAIDs and antidepressants the patient is taking



Step 1: Review Patient Profile

Patient currently on: WARFARIN

Start Date: 09/01/2023

Patient Age: 60

NSAIDs:

08/30/2023 - ibuprofen 400 MG /
oxycodone hydrochloride 5 MG
Oral Tablet

24 HR naproxen 375 MG
Extended Release Oral Tablet

Select Antidepressants:

24 HR venlafaxine 75 MG
Extended Release Capsule
[Effexor]

venlafaxine 75 MG Oral Tablet

Risk Factors

Previous GI bleed

On Aspirin [?]

On Clopidogrel

On Oral Corticosteroid

On Proton Pump Inhibitor [?]

[HAS BLED Calculator](#) [?]

[?] Click to see more information on patient prescription.

DDInteract

REIMAGINE

STEP 1: REVIEW PATIENT PROFILE

Incorporates the following risk factors:

- Age
- Previous GI Bleed
- On Aspirin
- On Clopidogrel
- On Oral Corticosteroids
- On Proton Pump Inhibitor (PPI)

Clinicians can toggle risk factors on and off to update the information

Link to HAS BLED calculator at bottom

Step 1: Review Patient Profile

Patient currently on: WARFARIN

Start Date: 09/01/2023

Patient Age: 60

NSAIDs:

08/30/2023 - ibuprofen 400 MG /
oxycodone hydrochloride 5 MG
Oral Tablet

24 HR naproxen 375 MG
Extended Release Oral Tablet

Select Antidepressants:


24 HR venlafaxine 75 MG
Extended Release Capsule
[Effexor]

venlafaxine 75 MG Oral Tablet

Risk Factors

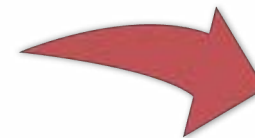
- Previous GI bleed
- On Aspirin ?
- On Clopidogrel
- On Oral Corticosteroid
- On Proton Pump Inhibitor ?

[HAS BLED Calculator](#) 

 Click to see more information on patient prescription.

DDInteract

REIMAGINE



A STEP-BY-STEP OVERVIEW

Step 2: Consider Treatment Alternatives

DDInteract

REIMAGINE

Shared Decision-Making Tips ?

Step 1: Review Patient Profile

Patient currently on: WARFARIN
 Start Date: 09/01/2023
 Patient Age: 60
 NSAIDs:
 08/30/2023 - ibuprofen 400 MG /
 oxycodone hydrochloride 5 MG
 Oral Tablet
 24 HR naproxen 375 MG
 Extended Release Oral Tablet
 Select Antidepressants:
 24 HR venlafaxine 75 MG
 Extended Release Capsule
 [Effexor]
 venlafaxine 75 MG Oral Tablet

Risk Factors

- Previous GI bleed
- On Aspirin
- On Clopidogrel
- On Oral Corticosteroid
- On Proton Pump Inhibitor

[HAS BLED Calculator](#)

Click to see more information on patient prescription.

Step 2: Consider Treatment Alternatives

Pain Antidepressants

Compare Pain Management Options

Lower Risk Higher Risk

↓ Risk Ratio for GI Bleeding

Compare	Name	Cost	Risk Ratio for GI Bleeding
<input type="checkbox"/>	Celecoxib (Celebrex)	\$3	1.01
<input type="checkbox"/>	Diflunisal (Dolobid)	\$	1.31
<input type="checkbox"/>	Nabumetone (Relafen)	\$	1.31
<input checked="" type="checkbox"/>	Ibuprofen (Motrin)	\$	1.34
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.56
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.56
<input type="checkbox"/>	Fenoprofen (Nalfon)	\$33	3.12
<input type="checkbox"/>	Naproxen (Aleve / Naprosyn)	\$	3.12
<input type="checkbox"/>	Oxaprozin (Daypro)	\$	3.12
<input type="checkbox"/>	Meloxicam (Mobic)	\$3	5.96
<input type="checkbox"/>	Etoricoxib (Lodine)	\$3	6.52
<input type="checkbox"/>	Indomethacin (Indocin)	\$	6.52
<input type="checkbox"/>	Sulindac (Clinoril)	\$3	6.52
<input type="checkbox"/>	Tolmetin (Tolectin)	\$3	6.52
<input type="checkbox"/>	Acetaminophen (Tylenol)	\$4	6.52

Step 3: Evaluate Results

Estimated GI Bleeds in 100 Patients

Taking: Ibuprofen (Motrin), Venlafaxine (Effexor) and A Proton Pump Inhibitor



6 Potential bleeds with Ibuprofen (Motrin), Venlafaxine (Effexor) And A Proton Pump Inhibitor

94 People NOT expected to have bleeds

These estimates include the reduction in risk when using a proton pump inhibitor (PPI).

Ibuprofen (Motrin), Venlafaxine (Effexor) and A Proton Pump Inhibitor 6 GI bleeds per 100 patients

[More Information](#)

STEP 2: CONSIDER TREATMENT ALTERNATIVES

Contains two main tabs:

1. Pain Management Options
2. Antidepressant Options

Three sub-menu tabs show treatment alternatives from lower to higher risk

Step 2: Consider Treatment Alternatives

Pain

Antidepressants

Compare Pain Management Options

Lower Risk _____ Higher Risk

Non-Drug

Other Medicine

Oral NSAID

Select	Name	Cost	↓ Risk Ratio for GI Bleeding
<input type="checkbox"/>	Celecoxib (Celebrex)	\$\$	1.01
<input type="checkbox"/>	Diflunisal (Dolobid)	\$	1.31
<input type="checkbox"/>	Ibuprofen (Motrin)	\$	1.31
<input type="checkbox"/>	Nabumetone (Relafen)	\$	1.31
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.48
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.48

STEP 2: CONSIDER TREATMENT ALTERNATIVES

DDInteract

REIMAGINE

Pain Management Options (3 tabs)

- **Non-Drug Options:** Lists alternatives that do not involve medication such as acupuncture and biofeedback

Step 2: Consider Treatment Alternatives

Pain | **Antidepressants**

Compare Pain Management Options

Lower Risk _____ Higher Risk

Non-Drug | Other Medicine | Oral NSAID

- Acupuncture
- Biofeedback
- Electrical Stimulation
- Exercise/Stretching
- Massage Therapy
- Meditation
- Physical Therapy
- Positive Psychology/Spiritual/Meaningfulness
- Psychotherapy
- Relaxation Therapy
- Sleep Habits
- Surgery (specific cases)
- Weight Loss (specific cases)

STEP 2: CONSIDER TREATMENT ALTERNATIVES

Pain Management Options

- **Other Medicine:** Lists medications that do not increase GI bleeding risk, such as Tylenol and topical medications

Step 2: Consider Treatment Alternatives

Pain

Antidepressants

Compare Pain Management Options

Lower Risk _____ Higher Risk

Non-Drug

Other Medicine

Oral NSAID

	Name	Cost
<input type="checkbox"/>	Acetaminophen (Tylenol)	\$
<input type="checkbox"/>	Lidocaine (Lidoderm) 5% Patch	\$\$\$
<input type="checkbox"/>	Diclofenac (Voltaren) 2% Gel	\$\$
<input type="checkbox"/>	Oxycodone (Roxicodone)	\$

* These medications are not known to affect GI bleeding risk.

STEP 2: CONSIDER TREATMENT ALTERNATIVES

Pain Management Options

- **Oral NSAIDs:** Displays a list of NSAIDs with their cost and risk ratios for GI bleeding

Step 2: Consider Treatment Alternatives

Pain Antidepressants

Compare Pain Management Options

Lower Risk _____ Higher Risk

Select	Name	Cost	↓ Risk Ratio for GI Bleeding
<input type="checkbox"/>	Celecoxib (Celebrex)	\$\$	1.01
<input type="checkbox"/>	Diflunisal (Dolobid)	\$	1.31
<input type="checkbox"/>	Ibuprofen (Motrin)	\$	1.31
<input type="checkbox"/>	Nabumetone (Relafen)	\$	1.31
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.48
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.48
<input type="checkbox"/>	Fenoprofen (Nalfon)	\$\$\$	3.10

STEP 2: CONSIDER TREATMENT ALTERNATIVES

Pain Management Options

- **Oral NSAIDs:** Displays a list of NSAIDs with their cost and risk ratios for GI bleeding

Can sort list by:

- Generic product name
- Cost
- GI bleeding risk

Step 2: Consider Treatment Alternatives

Compare Pain Management Options

Lower Risk _____ Higher Risk

Non-Drug Other Medicine Oral NSAID

Select	Name	Cost	Risk Ratio for GI Bleeding
<input type="checkbox"/>	Celecoxib (Celebrex)	\$\$	1.01
<input type="checkbox"/>	Diflunisal (Dolobid)	\$	1.31
<input type="checkbox"/>	Ibuprofen (Motrin)	\$	1.31
<input type="checkbox"/>	Nabumetone (Relafen)	\$	1.31
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.48
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.48
<input type="checkbox"/>	Fenoprofen (Nalfon)	\$\$\$	3.10

STEP 2: CONSIDER TREATMENT ALTERNATIVES

Pain Management Options

- **Oral NSAIDs:** Displays a list of NSAIDs with their cost and risk ratios for GI bleeding

Selection column:

- Compare up to 2 medications, showing the GI bleeding risk for selected medications

Step 2: Consider Treatment Alternatives

Pain **Antidepressants**

Compare Pain Management Options

Lower Risk _____ Higher Risk

Select	Name	Cost	↓ Risk Ratio for GI Bleeding
<input checked="" type="checkbox"/>	Celecoxib (Celebrex)	\$\$	1.01
<input type="checkbox"/>	Diflunisal (Dolobid)	\$	1.31
<input checked="" type="checkbox"/>	Ibuprofen (Motrin)	\$	1.31
<input type="checkbox"/>	Nabumetone (Relafen)	\$	1.31
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.48
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.48
<input type="checkbox"/>	Etoricoxib (Nalfon)	\$\$\$	2.10

STEP 2: CONSIDER TREATMENT ALTERNATIVES

Antidepressant Options

Allows sorting of lists by

- GI bleeding risk
- Product name
- Cost

Selection column:

- Compare up to 2 medications, showing the GI bleeding risk for selected medications

Step 2: Consider Treatment Alternatives

Pain		Antidepressants	
Compare Antidepressant Options			
Select	Name	Cost	↓ Risk Ratio for GI Bleeding
<input type="checkbox"/>	Bupropion (Wellbutrin)	\$	1.00
<input type="checkbox"/>	Mirtazapine (Remeron)	\$	1.08
<input checked="" type="checkbox"/>	Duloxetine (Cymbalta)	\$	1.24
<input type="checkbox"/>	Fluvoxamine (Luvox)	\$	1.25
<input type="checkbox"/>	Sertraline (Zoloft)	\$	1.29
<input type="checkbox"/>	Desvenlafaxine (Pristiq)	\$\$	1.37
<input type="checkbox"/>	Venlafaxine (Effexor)	\$\$	1.37
<input checked="" type="checkbox"/>	Escitalopram (Lexapro)	\$	1.44
<input type="checkbox"/>	Paroxetine (Paxel)	\$	1.45
<input type="checkbox"/>	Citalopram (Celexa)	\$	1.61
<input type="checkbox"/>	Fluoxetine (Prozac)	\$	1.62

STEP 3: EVALUATE RESULTS

Shared Decision-Making Tips ⓘ

Step 3: Evaluate Results

Estimated GI Bleeds in 100 Patients ⓘ

Taking: Meloxicam (Mobic), Venlafaxine (Effexor) and A Proton Pump Inhibitor
Compared To: Ibuprofen (Motrin), Venlafaxine (Effexor) and A Proton Pump Inhibitor



23 Potential bleeds with Meloxicam (Mobic), Venlafaxine (Effexor) And A Proton Pump Inhibitor

17 Fewer bleeds with Ibuprofen (Motrin), Venlafaxine (Effexor) And A Proton Pump Inhibitor

77 People NOT expected to have bleeds

These estimates include the reduction in risk when using a proton pump inhibitor (PPI).

Ibuprofen (Motrin), Venlafaxine (Effexor) and A Proton Pump Inhibitor decrease potential GI bleeds by 17 per 100 patients.

More Information

- Visually presents the estimated GI bleeding risk for 100 patients based on the selected medication options
- The screen compares the risk between two medications, showing how the choice affects patient outcomes when a Proton Pump Inhibitor (PPI) is also considered

STEP 3: EVALUATE RESULTS

Color Coding:

- **Red figures** show the number of patients expected to experience GI bleeding with the first medication
- **Green figures** represent the reduction in bleeds when switching to a safer second medication
- **Grey figures** show the number of patients not expected to bleed

Step 3: Evaluate Results



STEP 3: EVALUATE RESULTS

Color Coding:

- **Purple Figures** represent the increase in bleeds when switching to a higher-risk medication





Anticoagulant Drug Interactions

Bleeding Risk for Antidepressant and Pain Medications

[Provide Feedback](#)
[Print Summary](#)
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Shared Decision-Making Tips

Step 1: Review Patient Profile

Patient currently on: WARFARIN

Start Date: 09/01/2023

Patient Age: 60

NSAIDs:

08/30/2023 - ibuprofen 400 MG /
oxycodone hydrochloride 5 MG
Oral Tablet

24 HR naproxen 375 MG
Extended Release Oral Tablet

Select Antidepressants:

24 HR venlafaxine 75 MG
Extended Release Capsule
[Effexor]

venlafaxine 75 MG Oral Tablet

Risk Factors

- Previous GI bleed
- On Aspirin
- On Clopidogrel
- On Oral Corticosteroid
- On Proton Pump Inhibitor

[HAS BLED Calculator](#)

Click to see more information on patient prescription.

Step 2: Consider Treatment Alternatives

Pain

Antidepressants

Compare Pain Management Options

Lower Risk Higher Risk

Compare Name Cost Risk Ratio for GI Bleeding

Compare	Name	Cost	Risk Ratio for GI Bleeding
<input checked="" type="checkbox"/>	Ibuprofen (Motrin)	\$	1.34
<input type="checkbox"/>	Mefenamic Acid (Ponstel)	\$	1.48
<input type="checkbox"/>	Diclofenac (Voltaren)	\$	1.56
<input type="checkbox"/>	Fenoprofen (Nalfon)	\$\$	3.10
<input type="checkbox"/>	Oxaprozin (Daypro)	\$	3.10
<input type="checkbox"/>	Naproxen (Aleve, Naprosyn)	\$	3.12
<input checked="" type="checkbox"/>	Meloxicam (Mobic)	\$\$	5.96
<input type="checkbox"/>	Indomethacin (Indocin)	\$	6.52
<input type="checkbox"/>	Etodolac (Lodine)	\$\$	6.70
<input type="checkbox"/>	Sulindac (Clinoril)	\$\$	6.70
<input type="checkbox"/>	Tolmetin (Tolectin)	\$\$	6.70
<input type="checkbox"/>	Ketoprofen (Orudis)	\$\$	6.91
<input type="checkbox"/>	Piroxicam (Feldene)	\$\$	11.59
<input type="checkbox"/>	Ketorolac (Toradol)	\$\$	22.51

Step 3: Evaluate Results

Estimated GI Bleeds in 100 Patients

Taking: Ibuprofen (Motrin), Venlafaxine (Effexor) and A Proton Pump Inhibitor

Compared To: Meloxicam (Mobic), Venlafaxine (Effexor) and A Proton Pump Inhibitor



6 Potential bleeds with Ibuprofen (Motrin), Venlafaxine (Effexor) And A Proton Pump Inhibitor

17 More bleeds with Meloxicam (Mobic), Venlafaxine (Effexor) And A Proton Pump Inhibitor

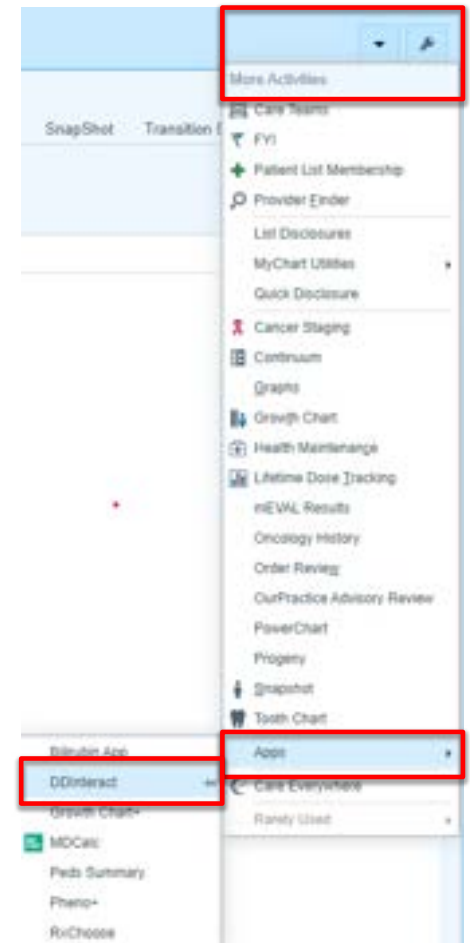
77 People NOT expected to have bleeds

These estimates include the reduction in risk when using a proton pump inhibitor (PPI).

Meloxicam (Mobic), Venlafaxine (Effexor) and A Proton Pump Inhibitor increase potential GI bleeds by 17 per 100 patients.

HOW TO ACCESS DDINTERACT

- Log in to EPIC
- Navigate to the **'More Activities'** menu:
 - At the top-right corner of the screen, click the dropdown arrow that shows additional options under 'More Activities'
- Locate **'Apps'** under the **'More Activities'** dropdown
- Select **'DDInteract'** from the list of Apps



DDINTERACT LIMITATIONS



Medication Dose

- DDInteract does not consider the specific dose of a medication when assessing risk
 - Existing literature fails to provide the risk for each product at the dose level
-

LIMITATIONS



Timing of the interaction

- DDInteract does not incorporate time to GI bleeding event
- Only 20% of the studies included time to event data, preventing us from incorporating time across all studies
- Harm from DDIs most commonly occurs early in the course of therapy, making the initial period particularly critical



LIMITATIONS



Focus on Specific Interactions:

- DDInteract does not encompass all possible drug-drug interactions
 - Does not replace existing alerts
 - **Targeted Selection:** focus on interactions between medications with known GI bleeding risks when used with oral anticoagulants
 - **Prioritizing High-Risk Interactions:** addresses the most clinically significant risks that could impact patient safety
-

LIMITATIONS



Why do we just focus on gastrointestinal bleeding?

- Gastrointestinal bleeding is a common adverse event for patients taking oral anticoagulants
 - This outcome is frequently studied because it is more common than other anatomical locations (such as intracranial)
 - The evidence is more extensive for this outcome compared to other outcomes – and some medications like NSAIDs are well-known for their effect on gastric mucosa
-

Summary



DDInteract: Personalized Risk Prediction for GI Bleeding

- Dynamic shared decision-making tool for assessing GI bleeding risk in patients on oral anticoagulants who use medicines for pain and depression
- Leverages patient-specific data from the EHR
- Focuses on common and clinically relevant drug-drug interactions with oral anticoagulants

Try DDInteract outside of Epic: <https://prueba.bmi.utah.edu/ddinteract/>



RISK MODEL DEVELOPMENT

DDInteract

REIMAGINEEHR



Comprehensive Review:

- **Over 500 studies were reviewed** to obtain accurate estimates of GI bleeding risk associated with each risk factor
- These studies provided the necessary data to ensure the **risk model is based on robust and well-supported evidence**

Prediction Model:

- Developed using the logarithm of the odds ratio (OR), similar to logistic regression, for each identified risk factor
- Designed to **provide an overall risk estimate for an individual patient's GI bleeding**



RISK MODEL DEVELOPMENT

DDInteract

REIMAGINEEHR

Model Calibration:

The model was calibrated to predict GI bleeding events in patients receiving oral anticoagulants (OACs), even when no additional risk factors were present



OTHER RISK FACTORS NOT INCLUDED: COMORBIDITIES

DDInteract

REIMAGINEEHR

Expert panel developed the algorithms used in DDInteract

Comorbidities such as renal and liver impairment, diabetes, and hypertension were not included in the algorithm



OTHER RISK FACTORS NOT INCLUDED: SMOKING AND ALCOHOL

DDInteract

REIMAGINEEHR



Smoking and alcohol use are potential risk factors for GI bleeding, but historically were not routinely documented in electronic health records (EHRs)

Risk of GI bleeding will vary depending on amount consumed.

