### Use Case 1: Hospital Pharmacist, Medication Reconciliation upon Admission

* **The modifying factors are unknown: Linezolid + SSRIs (sertraline)**

Beth is a hospital pharmacist who is reviewing the medications in the physician admission order for Bill. Bill is an 85-year-old male dementia patient who was transferred from a skilled nursing facility to the hospital after being diagnosed with a vancomycin-resistant *Enterococcus faecium* (VRE) infection. At the nursing home, Bill was prescribed sertraline to treat depression. Beth receives an alert that linezolid, which is being considered to treat the VRE infection, has a potential interaction with the sertraline that Bill is currently taking. Linezolid is a weak monoamine oxidase inhibitor, and has been shown to increase the risk of serotonin syndrome when taken concurrently with an SSRI such as sertraline. Beth would like to know the risks and benefits of continuing the sertraline and adding on the linezolid, the potential seriousness of the interaction’s clinical consequence, and recommended management options, such a selecting an alternative medication or discontinuing the sertraline. She would like to see the current evidence behind the interaction, so that she can determine if Bill has an increased risk of serotonin syndrome. In order to gather this information, she reviews Bill’s history, lab results, and allergies from the health records faxed by his skilled nursing facility, as well as his medication list upon admission. She reviews LexicompTM and the hospital’s intranet resources for additional information, but is having trouble finding information that is relevant to Bill’s situation. She does a literature search using PubMed in order to try to locate information about the frequency of adverse events in due to this potential interaction in other patients like Bill, but she does not have access to all of the articles in the search results.

### Use Case 2: Hospital Pharmacist, Medication Reconciliation upon Discharge

* **Can (and should) be contextualized for specific patients or clinical circumstances: KCL (potassium chloride) + K-sparing Diuretics (spironolactone)**

Beth is reviewing the physician’s discharge order for Maria. Maria is a 72-year old woman who was admitted to the hospital with acute decompensated heart failure. While reviewing Maria’s medications, Beth sees that Maria is being discharged with spironolactone, a potassium-sparing diuretic that could potentially interact with the potassium chloride that Maria had been taking to treat low potassium levels. Spironolactone may increase potassium levels in Maria’s blood, leading to hyperkalemia. Beth reviews Maria’s electronic health record in order to view her lab results and her other medications. She sees that Maria is also taking the ACE inhibitor lisinopril for heart failure, and since ACE inhibitors can also increase potassium levels, Beth would like to know how much this modifying factor has increased Maria’s risk of hyperkalemia due to the interaction between potassium chloride and spironolactone. Beth would like to know how likely it is that Maria will experience hyperkalemia, how serious hyperkalemia may be, and how to manage the interaction, such as by discontinuing one of Maria’s medications. Beth reviews the hospital’s intranet, as well as MicromedexTM, for recommendations. She would also like more information about the potassium chloride that Maria was taking as one of her home medications, so she will need to contact Maria’s community pharmacy in order to find out the strength of the medication and if the prescription was still current.

### Use Case 3: Consultant Pharmacist, Medication Reconciliation upon Readmission

* **The mechanism is known and is pharmacokinetic: Warfarin + 2C9 inhibitors (metronidazole)**

Patrick is a nursing home consultant pharmacist who is reviewing the medications of a readmitted patient, Nancy. Nancy is a 78 year-old woman who is being transferred back to her skilled nursing facility after a hospital admission for a *Clostridium difficile* (*C. diff*) infection; prior to the hospital admission, she was prescribed warfarin at the skilled nursing facility for deep vein thrombosis (DVT) treatment. Based on the hospital discharge summary, it appears that Nancy was taken off of the warfarin at the hospital due to an increased INR, and returned to the skilled nursing facility without an order for warfarin. Patrick sees that a potential interaction may occur with the warfarin that Nancy had been prescribed prior to her hospitalization, and the metronidazole now used to treat her infection, since metronidazole is a CYP2C9 inhibitor and may increase the plasma concentration of warfarin. A clinical consequence of this interaction would be an increased INR leading to an increased risk of bleeding. Patrick would like to gather management recommendations for this interaction prior to contacting Nancy’s physician. He is interested in Nancy’s duration of therapy for both the warfarin and the metronidazole, her current risk factors for a DVT, and if she is indicated for prophylactic therapy. Patrick also wants to know if and when warfarin should be restarted, and at what dose, in order to reduce the risk of bleeding due to the interaction. He would also like to know if metronidazole is the best option to continue treating Nancy’s *C. diff* infection, or if there is an alternative option that may not interact with warfarin. In order to gather this information, he reviews Nancy’s previous INR values, medication list, and history. He is also contacting the hospital in order to determine whether warfarin had been given at any point during Nancy’s stay, if the dosage had been adjusted, what other medications she was given, and if any of her other medications were discontinued. He also reviews his company’s intranet resources for additional information about the interaction and possible evidence-based recommendations. Patrick is also interested in the frequency of serious bleeding events in geriatric patients co-prescribed warfarin and metronidazole, and the literature surrounding the interaction.

# Appendix MEDRECNEEDS

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| **Tasks/Goals** | **User, Situation** | **Info Needs** | **Aspects of Info Users Value to Make a Decision** | **Barriers** |
| Medication Reconciliation | Hospital Pharmacist, Upon Admission; Hospital Pharmacist, Upon Discharge; Consultant Pharmacist, Upon Readmission | EHR/patient data  Patient History  Lab Results, Tests  Patient Medications (Drug, Dose, Frequency, Compliance)  Duration of Therapy  Potentially Interacting Drugs  Pharmacist Knowledge  Discontinuation Risks  IV to PO  Feeding Tube Interactions  Patient Education and Counseling  Knowledgebase  DDI Symptoms  Mechanism of Interaction  Potential Substitutes  Indications  Evidence | Conciseness  Grading of Evidence  Type of Evidence  Study Methods  Reliability and Accuracy  Frequency  Populations  Demographics  Risk Factors  Comorbidities  Seriousness  Patient Context/ Relevance  Compliance  Disease States  Risk Factors  Clinical Guidelines  Benefit to Risk Ratio  Medications to Continue  Harm if Discontinued  Potential Interactions | Incomplete Medication List, Allergies  Delayed Information  Irrelevant Alerts/ Lack of Evidence/ Not Graded  No Recommendations  Incomplete Information (e.g., Patient Compliance) |