

FEATURES AND FUNCTIONS

ANVITA™ INSIGHT

The following are specific examples of **Anvita™ Insight analysis engine's** functionality. Please note that analyses are independent of mode of operation: They can be provided in real time (single patient analysis at the point of care) or population-wide in batch mode, and for subgroups.

Although the Anvita Insight engine provides an immense library of turn-key functionality, it is also a powerful framework for custom rules-authoring for health plans, PBMs, disease managers, PHRs, IDNs, and physicians using EMRs. Anvita Insight analyses are performed as middleware between a database of patient information and virtually any application (i.e., there is no end-user interface to the Anvita Insight engine).



Anvita Insight Analysis Engine Features and Functions

COMPREHENSIVELY EVALUATE MEDICATION AND DOSING SAFETY

Medication Safety Concerns: Identifies the following types of drug interactions and medication safety concerns:

- **Drug to Drug Interactions**
Example: Viagra 50 mg Tab + Nitroglycerin 0.4 mg Sublingual Tab is a contraindicated drug combination (CGMP Specific PDE Type-5 Inhibitors + Nitrates) and generally should not be dispensed or administered to the same patient.
- **Drug to Disease Interaction**
Example: Propranolol 40 mg Tab is contraindicated in patients with Bronchial Asthma.
- **Drug to Allergy Interactions**
Example: Amoxicillin 500 mg Cap could provoke a same allergen group reaction if administered to a patient who has a reported allergy to Penicillins. Both are members of the same allergen group: Penicillins
- **Drug to Procedure Interactions**
Example: Interferon Alfa-2B 10,000,000 unit/mL Injection is relatively contraindicated in patients with Pulmonary Disease. The following patient surgery may imply that this condition exists: Pneumonectomy, Total
- **Drug to Lab Value Interaction**
Example: Disease of the Liver has been inferred to exist due to the following lab result: Alanine Aminotransferase = 1059 U/L. Lipitor 80 mg Tab is contraindicated in patients with Diseases of the Liver.
- **Drug to Gender Interactions**
Example: YAZ 28 3 mg-20 mcg (24) Tab contains Ethinyl Estradiol which is typically prescribed only in females. Please verify that this prescription is intended for the present patient.
- **Drug to Age Interactions, Geriatric**
Example: Disopyramide 100 mg Cap is contraindicated in elderly patients, according to the Beers Criteria. Of all antiarrhythmic drugs, this is the most potent negative inotrope and therefore may induce heart failure in elderly patients. It is also strongly anticholinergic. Other antiarrhythmic drugs should be used.

- **Drug to Age Interactions, Pediatric**

Example: Aspirin 81 mg Chewable Tab is contraindicated in pediatric patients. The U.S. Surgeon General, the Food and Drug Administration, the Centers for Disease Control and Prevention, and the American Academy of Pediatrics recommend that aspirin and combination products containing aspirin not be administered to children under the age of 19 years old during episodes of fever-causing illnesses due to the association between the development of Reye's Syndrome.

- **Drug to Pregnancy Interactions**

Example: Altace 1.25 mg Cap is contraindicated in pregnant mothers. Ramipril has been classified by the United States Food and Drug Administration (FDA) as a Pregnancy Category D medication. Research studies in pregnant women have shown that there is a risk to the fetus.

- **Drug to Lactation Interactions**

Example: Lithium Carbonate 300 mg Cap is contraindicated in breastfeeding mothers. Use is not recommended. Use may result in lithium toxicity. Absolute contraindication (human data usually available to support recommendations). This drug should not be given to breastfeeding mothers.

- **Drug to Renal Interactions**

Example: Digoxin 125 mcg Tab requires a dosage adjustment for renal impairment. The patient's CrCl is 25 ml/min. Dosage adjustment required at a CrCl less than 50 ml/min. It is recommended for this patient to give 25-75% of the usual dose at an interval of q36h.

- **Duplicate Therapies**

Example: Caduet 5 mg-10 mg Tab represents a potential duplicate therapy of active ingredients and/or therapeutic class. The patient is already taking 1 drug of this class: Lipitor 20 mg Tab. It is generally recommended that patients not take more than one drug of this class.

- **Drug-Induced Side Effect Identification**

Example: Topamax has the possible side effect of Erectile Dysfunction, a known diagnosis in this patient. It is therefore possible that polypharmacy exists, and changing Topamax to an alternative therapy may prevent this side effect from occurring.

Dosing Safety Concerns: The Anvita Insight analysis engine identifies the following dosing safety concerns by comparing a proposed treatment regimen to acceptable regimens in terms of toxic and effectiveness thresholds:

- Toxic Daily Dose
- Maximum Individual Dose
- Maximum and Minimum Daily Dose
- Maximum and Minimum Frequency of Administration
- Adjustment required for Renal Disease
- Adjustment required for Creatinine Clearance (CrCl)
- Adjustment required for Hepatic Disease

Cumulative Radiation Exposure: Anvita Insight identifies from claims member cumulative radiation exposure (mean values) from five major radiological organizations.

PROSPECTIVELY IDENTIFY AND COMPARE TREATMENT OPTIONS

Prospective Medication Comparison by Actual Patient Co-pay and by Safety:

The Anvita Insight engine generates a list of medications that can be used to treat a specific diagnosis in a specific patient and ranks them by safety and affordability (based on actual cost to the patient, including co-pay when available from the plan). Prospective lists can be generated using index drug, indication (diagnosis), infectious organisms, or empiric treatment of an infected site.

Evidence-based Prescribing Guidelines for a Diagnosis

(Patient-specific): Treatment guideline monographs are available to help interpret a list of potential medications.

Example:

Recommendations for Bipolar Disorder

Acute episodes are treated with an antipsychotic such as haloperidol 5-20 mg PO qd or olanzapine 10-20 mg PO qd and a benzodiazepine such as clonazepam 1-2 mg PO bid or lorazepam 2 mg IM. Once control of the acute episode is achieved, long-term therapy with a mood stabilizer should be initiated. Mood stabilizers include: lithium 300 mg PO tid (maintain serum level at 0.8-1.2 mcg/ml) or valproic acid 250 mg PO tid (maintain serum level at 60-100 mcg/ml) or carbamazepine 200 mg PO bid (maintain serum level at 8-12 mcg/ml). Mania that is refractory to the usual therapies may be treated with clozapine, other antipsychotic agents, or electroconvulsive therapy.

Reference: Tierney LM, McPhee SJ, Papadakis MA, eds. CMTD 2007. 46th Edition. San Francisco; McGraw-Hill; 2007: 1100-1103.

EVALUATE ADHERENCE WITH INDUSTRY BEST PRACTICE GUIDELINES

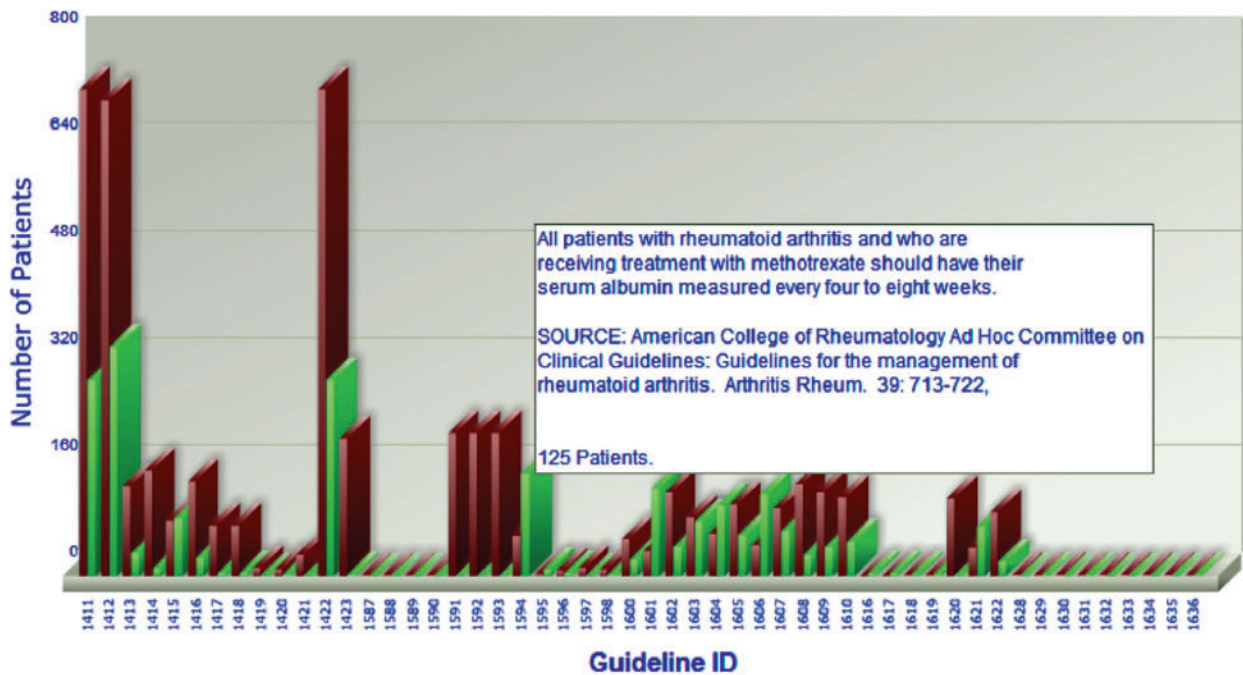
Identify Gaps in Care – Real time or in Batch Mode: This function of the Anvita Insight engine compares the patient’s medical history to industry standard Quality of Care guidelines in order to identify deviations from Class I guidelines. Anvita has incorporated more than 3,500 clinical performance measures from several dozen sources in almost 90 intervention categories, including prevention/screening.

Example: According to the National Committee for Quality Assurance (NCQA) all females age 30 and older should have and annual mammogram.

Example: According to the Centers for Medicare and Medicaid Services patients with diabetes who have had a hemoglobin A1c level of 7% or more in the last 90 days should have their hemoglobin A1c controlled to a level of 7% or less.

The figure below shows an example of a population analysis (for a physician group) on several dozen client-configurable rheumatoid arthritis performance measures:

Quality Guidelines Detail For Rheumatoid Arthritis (All Ranks)



Identification of Future Interventions: Rules can be also be configured to predict which future interventions will be coming due in the next 30, 60, 90 days for purposes of contacting patients who need forthcoming interventions. Users may choose a subset of rules from Anvita Insight’s existing rules library and/or develop custom rules.

Example: Anvita Insight can develop a custom rule to identify prescriptions that are being filled for the first time of a certain drug in order to determine which patients will require first fill counseling on known temporary side effects.

FUNCTIONALITY THROUGH PARTNERSHIP WITH RXHUB

Dispensed Medication History: This function extracts a patient's dispensed medication history for the preceding two years.

Pharmacy Eligibility and Formulary Status: Provides lookup functionality to determine a patient's pharmacy eligibility, formulary status (whether or not the medication is covered by the insurance plan), co-pay details (actual cost to the patient), and coverage restrictions for any medication from the PBM when available by the plan.

Examples:

- An office administrator can verify the pharmacy eligibility of the patient in real time, eliminating the need to contact the insurance provider to validate the level of coverage.
- When prescribing a new medication, the provider is able to use the formulary information and co-pay details to determine the most affordable medications for a patient based on his/her insurance plan.
- If a patient has more than a single eligibility (e.g., have multiple insurances) they can compare the cost of treatment options in real time to determine which coverage plan makes the most financial sense to use.

Electronic Transmission of Mail Order Prescriptions: Allows the provider to electronically submit prescription orders directly to the patient's mail order pharmacy via the leading PBMs.

ADDITIONAL FEATURES AND FUNCTIONALITY

Professional-to-Consumer Language Terminology Translation: Translates clinical information into layperson terminology with hyperlinks for consumer medical searching.

Example: Drug to Allergy Contraindication Warning

Professional Language: Amoxicillin Oral could provoke a same allergen group allergic reaction if administered to this patient, who has a reported allergy to Penicillins. Both are members of the same allergen group: penicillins.

Consumer Language: Amoxicillin Oral contains an ingredient which can cause a severe allergic reaction in individuals who are allergic to Penicillins. Amoxicillin Oral is a member of the same chemical family as Penicillins. You have reported that you are allergic to Penicillins, therefore you could have a severe allergic reaction to Amoxicillin Oral.

Utility Data Functions: The Anvita Insight engine has a comprehensive library of functions available to an integrating electronic medical record (EMR) or personal health record (PHR) that will meet any or all data look-up needs.

Search: These functions provide search by description or by ID. For example, what are all the dispensable medications that match the string 'Lipitor'? They also provide data translation functionality. For example, what are all the dispensable forms of Lipitor Oral?

Code Interoperability: Additional functionality includes semantic interoperability using the XML-based Anvita Health Thesaurus. This function allows for terminology interchange between disparate coding systems. Another feature of this utility is the ability to predict, in real time, Hierarchical Condition Classifications (HCC Codes) from a longitudinal health record for optimal reimbursement and health-risk adjustment.

Contact Anvita Health for a demonstration.

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