

FDB MEDKNOWLEDGE™

Advancing Medication Decision Support Through Intuitive, Configurable and Actionable Drug Knowledge

Knowledge Bases

FDB MedKnowledge (formerly NDDF Plus) is the healthcare industry's most widely used source of drug information utilized at the point of care. Encompassing every drug approved by the FDA, it combines descriptive drug information, unique identifiers and pricing data with an extensive array of clinical decision support modules. **FDB MedKnowledge** helps pharmacists, physicians, nurses and other medical professionals avoid medication errors, prevent adverse drug events, reduce drug-related expenses and improve the quality of patient care.

For your convenience, FDB MedKnowledge is comprised of packages designed to suit the application and need. There are 3 separate options available:

- Core Package
- Enhanced Package
- Premium Modules

Available modules and packages may differ, depending on customer marketplace and intended use. Also, available modules and packages differ between FDB MedKnowledge Canada, FDB MedKnowledge Framework™, and the FDB Cloud Connector™.

CORE PACKAGE

Drug Pricing

Drug Pricing Information

FDB drug product pricing data covers prescription drugs and bulk chemicals. In addition, pricing information is presented for some of the most common non-prescription products, medical devices, herbals, and nutritional supplements. Available drug pricing categories include: Wholesale Acquisition Cost (WAC), Direct Price, Federal Financing Participation Upper Limits (FFPUL), Suggested Wholesale Price (SWP), and National Average Drug Acquisition Costs (NADAC).

For decades, FDB has been a leading publisher of drug pricing information used by organizations including health plans and insurers, pharmacy benefit managers and hospital systems in connection with claims adjudication and processing, formulary management, and bill review and auditing. We work with both the public and private sector to gather and publish additional drug pricing data elements as they

become available, and are working to facilitate the establishment of sustainable drug reimbursement benchmarks. Our drug pricing editorial policy is available at fdbhealth.com.

Additional pricing benchmarks for Medicare Part B and state Medicaid programs (Medicare Part B Payment Allowance Limit (PAL) Pricing, Medicaid State Maximum Allowable Cost (MAC), and State Average Acquisition Cost (AAC)), are available through separate Premium Modules.

FDB Foundations

FDB Enhanced Therapeutic Classification™ System

The FDB Enhanced Therapeutic Classification System is an advanced drug classification system with virtually unlimited levels of specificity, for easy formulary maintenance and drug selection. It allows drugs to reside in multiple therapeutic classes, with links to drug concepts at any level of the hierarchy.

FDB Medical Test Lexicon™

The FDB Medical Test Lexicon is a controlled vocabulary developed by FDB for the specific purpose of supporting the population of drug-lab

Core Package continued:

interference records in the Drug-Lab Interference Module. Hospitals, pharmacies, physicians and clinical laboratories use the Medical Test Lexicon in conjunction with the Drug-Lab Interference Module to identify drugs that may falsely alter laboratory test results.

Multiple Access Points™

FDB's drug vocabulary encompasses virtually every logical way to think about a drug, enabling you to search for, store and display drug information as broadly or narrowly as called for. These "multiple access points" (MAPs) allow developers to create more precise, user-specific applications.

As healthcare information systems grow more complex and drug databases are utilized in more settings, this flexibility becomes increasingly critical. MAPs follow good vocabulary practices and include a set of medication name identifiers, traditional FDB identifiers, plus enhanced therapeutic classifications and medical conditions.

SCRIPT Mappings

FDB Dosage Form to SCRIPT Quantity Unit of Measure mappings provide navigation between various FDB Dosage forms to the NCPDP Quantity Unit of Measure values. These values are specified in the electronic prescribing data exchange standards for SCRIPT 8.1 ("Quantity Qualifier") and SCRIPT 10.6 ("Potency Unit Code" or "NCiT").

Tall Man Plus™

Tall Man Plus provides alternating uppercase and lowercase spellings of drug names to visually distinguish look-alike and sound-alike medication names. Tall Man Plus contains potential problem drug names based on recommendations from the FDA and ISMP, plus an expanded list developed by FDB.

Clinical Modules

Counseling Messages Module™

The Counseling Messages Module is a set of brief, prioritized counseling messages to assist the healthcare provider in counseling the patient, with a corresponding set for the professional. It serves as both a reminder and a reliable reference resource for clinicians with only important information highlighted. This content is not intended as a substitute for the Patient Education Module monographs, nor is it a substitute for oral counseling by a clinician.

Also offered in Spanish and French as Premium Modules.

Drug Allergy Module™

The Drug Allergy Module enhances the ability of clinicians to identify and consolidate information about drugs known to cause significant allergic reactions, cross-sensitivities, and drug intolerances by identifying and helping to avert drug-allergy issues. Drug-allergy screenings also look at certain inactive medication ingredients such as latex and peanuts. A specially developed Allergen Pick List streamlines workflow by giving the user a convenient way to quickly and easily record a patient's allergy, enabling fast and convenient allergy profiling.

Drug-Drug Interaction Module™

The Drug-Drug Interaction Module helps clinicians identify and prevent clinically-significant drug interactions. It includes drug interaction information for prescription drugs, OTC drugs, alternative therapies, and inactive ingredients. Management of alerts is achieved through superior configurability; by offering specific categories of interactions, users can fine tune alerts using severity levels and subcategories such as "conflicting evidence exists."

A version targeted to the consumer is available as a Premium Module.

Drug-Food Interaction Module™

The Drug-Food Interaction Module alerts clinicians of potential interactions that may occur between certain drugs and foods and provides the capability of generating precautions or other advisory specific to each potential drug-food interaction. The results support a two-line message intended for prescription label printing, as well as access to the appropriate full-text monographs.

A version targeted to the consumer is available as a Premium Module.

Drug-Lab Interference Module™

A drug can falsely alter a laboratory test result by causing an analytic interference in a laboratory test. The Drug-Lab Interference Module identifies drugs that may falsely alter laboratory test results. This module can be used by clinicians to screen patient lab and drug therapy data, and to look up reference information on in-vitro drug-lab conflicts.

Duplicate Therapy Module™

The Duplicate Therapy Module helps clinicians prevent patients from receiving duplicate drug therapies through the deployment of a highly-specific clinical screening of duplicate drug therapies with clinical relevance. The module helps detect potentially problematic duplications—not simply two drugs in the same therapeutic class, which may be valid

Core Package continued:

to be prescribed together. For further refinement, a customizable field indicates how many drug duplicates are acceptable for a specific grouping.

Min/Max Dose Modules™

Min/Max Dose Modules provide drug-dosing information to clinicians on the most frequently prescribed drugs. This five-module set offers an easy-to-implement resource for quick-check information on the usual range of daily doses for adult, pediatric, and geriatric patients.

Patient Education Module™

The Patient Education Module encompasses an extensive collection of drug monographs in consumer language. The monographs are concise summaries of the important information patients need to know about drugs. Though not intended to be a replacement for patient-specific counseling by a clinician, the module can serve as a counseling adjunct and a useful tool for patient reference. Monographs include information on the risks and benefits of a drug product and may promote patient compliance.

Also offered in Spanish and French as Premium Modules.

Prioritized Label Warnings Module™

The Prioritized Label Warnings Module provides auxiliary labels and establishes label priority for a particular drug product based on the relative clinical importance of the message for that particular clinical formulation. These label warnings enable clinicians to provide patients with essential information by affixing the labels to the medication vial, or printing them separately for reference.

Also offered in Spanish and French as Premium Modules.

ENHANCED PACKAGE

Includes the Core Package, plus the following:

FDB Foundations

FDB Medical Lexicon™

The FDB Medical Lexicon (FML) is a specialized medical vocabulary relating drug products to various diagnoses and health-related concepts in numerous FDB disease decision support and dosing modules. Each Disease Identifier (DxID) in the FML is linked to various textbook names, as well as preferred professional names and synonyms; layman names and synonyms; and standard abbreviations.

Cross-references are also made between DxIDs and ICD-9-CM, ICD-10-CM and ICD-10-PCS coding systems. Use of FML “semantic networks” enables applications to generate more comprehensive—yet precise—hits and alert messages, when compared to traditional approaches to navigating hierarchical medical vocabularies.

Clinical Modules

Drug-Disease Contraindications Module™

The Drug-Disease Contraindications Module creates warnings concerning the use of certain drugs in patients with specific conditions and diseases, or patients who have had certain procedures or diagnostic tests. Clinicians may use these warnings to make informed decisions about altering a patient’s drug therapy when these conditions exist.

Dosage Range Check Module™

The Dosage Range Check Module helps clinicians monitor the appropriateness of drug dosing. It uses age, route of administration, indications, and organ function data to identify safe dosage levels based on certain patient-specific parameters. It provides renal dose screening, hepatic adjustment indicators, and lifetime maximum dose. Dosing information also accommodates the narrow therapeutic window for neonates and infants.

Geriatric Precautions Module™

The Geriatric Precautions Module provides clinicians access to relevant geriatric drug warnings, including a descriptive narrative, the severity level, and specific organ systems associated with the precaution information. Sources include: NCQA’s HEDIS® National Drug Code Lists, Potentially Harmful Drug-Disease Interactions in the Elderly, Use of High-Risk Medications in the Elderly, Beers’ Criteria and Screening Tool of Older Persons’ Potentially Inappropriate Prescriptions (STOPP).

Indications Module™

The Indications Module is as a tool for assessing the appropriateness of drug therapy for a specific medical condition, based on current medical evidence. This module aims to help clinicians make informed decisions regarding medication therapy and may also be used to help identify potentially inappropriate drug treatment for a given disease. The module includes both FDA-approved and certain “off-label” indications substantiated by primary medical literature.

Intravenous Module™

The Intravenous Module can help clinicians avoid the compatibility problems frequently encountered in the compounding and dispensing of IV preparations, decrease the time spent investigating compatibilities manually, and eliminate speculation and costs associated with wasted solutions. Content is derived from the *Handbook on Injectable Drugs™*, maintained by the American Society of Health-System Pharmacists® (ASHP).

Also, with drugs-in-solution, total parenteral nutrition (TPN), Y-site, and drugs-in-syringe data, this module offers users extensive information on IV-drug compatibility.

Lactation Precautions Module™

The Lactation Precautions Module provides warnings about the use of specific drugs in nursing mothers and whether the drug is passed into the breast milk and the potential for harm to the infant.

Pediatric Precautions Module™

The Pediatric Precautions Module recognizes that pediatric patients can have increased sensitivity to particular effects of drug therapy, especially within specific age ranges. This module provides clinicians with valuable safety information or monitoring guidelines for minimizing adverse effects and the ability to generate brief messages should a problem or concern exist.

Pregnancy Precautions Module™

The Pregnancy Precaution Module enables clinicians to recognize drug therapy that may not be appropriate for pregnant women or female patients of childbearing age and provides information, when available, on the teratogenic risk, adverse effect(s), carcinogenicity and/or mutagenicity or a drug in the human or fetus. Information is provided, when available, on adverse effects of a drug on the mother during gestation, labor or delivery.

Prescriber Order Entry Module™

The Prescriber Order Entry Module (POEM) is a database of commonly predefined inpatient medication orders and outpatient prescriptions for adults, with clinically-validated, drug-specific doses and frequencies. These features are designed to protect clinicians against prescribing errors that are the most common causes of adverse drug events.

Side Effects Module™

The Side Effects Module addresses the problem of drug side effects and drug-induced illness. As a reference tool, detailed lists of drug side effects can be generated for use by clinicians in patient monitoring and counseling. As a screening tool, clinicians can check the potential for additive drug side effects between two or more medications.

PREMIUM MODULES

(each licensed separately)

AHFS Consumer Medication Information Monographs

The American Hospital Formulary Service Consumer Medication Information (AHFS CMI) - formerly known as ASHP MedTeach - is a database of patient education information that allows clinicians to provide easy-to-use written instructions on drug therapy. Developed by the American Society of Health-System Pharmacists (ASHP), the AHFS CMI® Monographs use a question-and-answer format to provide concise information on uses, side effects, storage, precautions, dietary instructions, and missed doses.

AHFS Drug Information® Monographs

The American Hospital Formulary Service® Drug Information (AHFS DI) from the ASHP provides an evidence-based foundation for safe and effective drug therapy. These full-text monographs have been officially designated as a federal standard on drug therapy, based on accepted medical practice, and are used by pharmacists, physicians, nurses, and other clinicians in a wide range of healthcare environments.

Daily Product Update

The Daily Product Update is a set of standard pricing and descriptive files, along with FDB's Enhanced Therapeutic Classification System, made available on a daily basis. This daily feed enables users to stay current with comprehensive drug and pricing information, based on their specific business requirements. In addition, the Daily Product Update data files are synchronized with standard FDB weekly or monthly configurations, to streamline file management.

Premium Modules continued:

Drug-Drug Interaction Module for Consumers™

The Drug-Drug Interaction Module for Consumers includes monographs on potential drug interactions to assist clinicians in educating the consumer about potential interactions that may occur between certain drugs.

Drug-Food Interaction Module for Consumers™

The Drug-Food Interaction Module for Consumers includes monographs on potential drug-food interactions to assist clinicians in educating the consumer about potential interactions that may occur between certain drugs and foods.

Drug Images Module™

The Drug Images Module is an extensive database of high-resolution drug images of prescription and over-the-counter drugs to help users identify and reconcile drugs prescribed with drugs dispensed. This visual identification helps to protect patient safety throughout the medication dispensing and administration process. Users have access to thousands of drug images including solid oral drug products, tablets and capsules. Also included are dosage forms such as liquids, wrapped suppositories, ampoules, vials, ointment tubes, patches, and unit doses. The database can be linked to any 11-digit National Drug Code (NDC) file, including those provided by FDB.

Drug Imprints Module™

The Drug Imprints Module provides drug imprint descriptions for prescription and over-the-counter drugs. It helps verify drugs by physical details during the medication dispensing and administration processes. It helps clinicians and patients avoid medication errors by identifying drug products that are unpackaged, unlabeled, or unknown, compare the drug prescribed with the drug dispensed, and reconcile the differences. Multiple descriptors are provided including tablet and capsule descriptions, dosage form, coating, color(s), imprint(s), “score” marks, and shape. For liquids, the description includes color, flavor, and clarity. Several thousand drug imprints are included and are linked to 11-digit National Drug Code (NDC) files.

FDB High Risk Medication Module™

The FDB High Risk Medication Module provides Risk Evaluation and Mitigation Strategy (REMS) and boxed warning information of prescription drugs directly within the user’s workflow. FDB reviews REMS and boxed warnings, captures important and actionable content and presents it in a format that is flexible and easy to integrate, eliminating the manual effort it takes to monitor REMS and boxed warning changes from the manufacturer. FDB also maintains historical information to support retrospective analysis or audit functions. This module helps ensure patient safety and regulatory compliance set forth by the FDA by presenting actionable messages to the right user at the right time. For example, a physician at the time of prescribing may see a message that they must “Inform patient about pregnancy risks and contraception. Document the two chosen forms of contraception.” While the pharmacist at dispensing might see a message, “Limit days supply of the drug, no more than a 30 day supply.” For medications with REMS that require a Medication Guide, this module works seamlessly with the FDB MedGuides Module.™

FDB Interoperability Module™

The FDB Interoperability Module provides cross references between FDB MedKnowledge vocabulary concepts and Federal Medication Terminologies including the National Library of Medicine® (NLM®) RxNorm vocabulary and the Centers for Disease Control and Prevention immunization code sets to enable medication management interoperability. Interoperable drug knowledge is of vital importance to EHR adoption and effective use as it supports the portability of patient medication, immunization, and allergy history among disparate healthcare information systems. Use of interoperable drug knowledge enables clinical information exchange, electronic prescribing, the calculation of clinical quality measures, immunization and medication allergen decision support, and streamlines clinical information reconciliation. The extension of FDB MedKnowledge to standardized vocabularies is essential for organizations striving to meet the increased vocabulary interoperability requirements set forth in the EHR Certification 2014 Edition (formerly Meaningful Use Stage 2) Criteria.

FDB MedGuides Module™

The FDB MedGuides Module is a convenient source for all currently available Medication Guides submitted by manufacturers through the FDA Structured Product Label (SPL) file and subsequently posted to the National Library of Medicine's (NLM) "Daily Med" website. Through validated links to the National Drug Code (NDC) in FDB MedKnowledge, the module provides a notification to pharmacists when a Medication Guide is required for a drug product and provides automated access to all electronic Medication Guides filed with the FDA, in PDF and XML.

FDB Medicare Part D Module™

The Medicare Part D Module provides NDC-based information pertaining to various CMS Medicare Part D coverage and quality-of-care drug lists. Designed specifically in support of Medicare Part D, it also addresses drug lists applicable to non-Part D applications. Included in the module are the NDCs of acetaminophen-containing products and the milligrams of acetaminophen per dosage unit, the NDCs of opioid-containing products and the equivalent amount of milligrams of morphine—both features support patient safety issues involving accidental overdose and patient safety monitoring. Multiple drug-related quality measurements using PQA, NCQA, and CMS sources are included and enhanced to facilitate CMS Star Ratings and Quality Display Measures used in Part D, ACO, and other quality measurement programs. Other Part D Criteria included: Brand/generic determination data used by Part D and Short Cycle Dispensing indicators for use in Long Term Care settings. This module is designed to be used with FDB's MedKnowledge Suite of products, as well as in concert with any NDC-based drug file.

FDB OrderKnowledge™

FDB OrderKnowledge is a computerized prescriber order entry (CPOE)-ready drug knowledge base designed for medication ordering and prescribing. FDB OrderKnowledge is the first commercial product prebuilt to help make CPOE systems more user-friendly, including content that supports the user in completing an order in just two clicks. FDB OrderKnowledge extends CPOE capabilities and promotes accuracy by providing validated dose and frequency selections proactively. Prebuilt medication orders are tailored to physician workflow and support considerations like PRN reasons, special instructions, dose adjustments for organ impairment, mg/kg calculations, rounding increments, and pediatric and discharge orders.

FDB State and Federal Controlled Substances Module™

The FDB State and Federal Controlled Substances Module provides controlled substance schedules for the federal Drug Enforcement agency (DEA), the 50 U.S. states, the District of Columbia, and five U.S. territories. This drug knowledge enables FDB customers and other industry stakeholders to easily and efficiently comply with myriad state and federal laws aimed at reducing the fraud, waste, and abuse associated with controlled substances from a single, convenient source. The module also provides a list of drugs specific to each state that are required to be monitored by the state's Prescription Drug Monitoring Program (PDMP). The FDB State and Federal Controlled Substances Module provides the required information from state schedules that, when used within the electronic prescribing workflow, can invoke mandated DEA electronic prescribing of controlled substances (EPCS) safeguards, ensuring prescriptions are compliant with state-specific standards and delays in patient care are minimized.

French Language Package

This package includes French language patient education monographs, counseling messages and prioritized label warnings.

Medicaid Module™

The Medicaid Module includes pricing information for 43 state Medicaid programs that reimburse drugs on a fee-for-service basis including published state Medicaid Maximum Allowable Costs (MACs) and Average Acquisition Costs (AAC). The module enables pharmacies and system vendors to facilitate Medicaid revenue projection, enable online pre-adjudication, billing, and processing of Medicaid claims, and avoid costly claims rejections. This drug information can be easily integrated into programmable claims administration systems, enabling fast, accurate, and efficient data processing.

Medicare Module—HCPCS Select™

The Medicare Module accelerates and simplifies the billing, processing, and review of Medicare Part B drug administration and drug product reimbursement. The drug content includes Medicare Part B Healthcare Common Procedure Coding System (HCPCS) billing codes and prices, and can be easily integrated into the claims processing and billing systems of both payers and providers, enabling quick access to information on oral and injectable drugs covered by Medicare Part B.

Spanish Language Package

This package includes Spanish language patient education monographs, counseling messages and prioritized label warnings.

Universal System of Classification

The Universal System of Classification (USC) code is the standard classification used to differentiate drug products by the markets in which they are traditionally sold. The USC is maintained by its copyright owner, IMS Health Incorporated. FDB provides links from the NDC and the GCN_SEQNO to the USC code.

FDB Consulting Services

To obtain maximum performance and value from the use of FDB drug knowledge, FDB Consulting Services is available to those who would like access to an expert team of professionals for special implementation projects or training.

FDB Consulting Services is a customized program focused on meeting specific customer needs, and can range from simple telephone support to onsite assistance. Technical training activities can be arranged for individuals or groups—onsite, at FDB or via web conferencing.

For more information, contact Sales today at 800.633.3453 or visit fdbhealth.com

FDB (First Databank), part of the Hearst Health network, is the leading provider of drug knowledge that helps healthcare professionals make precise medication-related decisions. With thousands of customers worldwide, FDB enables our information system developer partners to deliver a wide range of valuable, useful, and differentiated solutions. As the company that virtually launched the medication decision support category, we offer more than three decades of experience in transforming drug knowledge into actionable, targeted, and effective solutions that improve patient safety and healthcare outcomes.

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