

Too much data. Too little time. Today more than ever, healthcare professionals need easy access to drug information. Within their normal workflow. One of the industry's most widely used sources of drug information, First DataBank's National Drug Data File (NDDF™) Plus is the first commercial knowledge base to offer users more efficient ways of navigating to exactly the information they need for the task at hand. For more informed decision making. Fewer medication errors. And increased patient safety. It's the right drug information from every perspective. All from a single source.

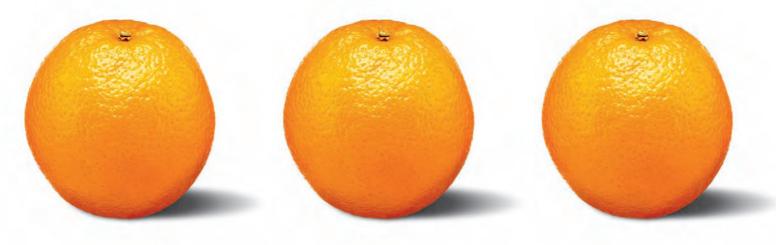
#### Any environment. Any application.

**Any user.** In today's fast-paced healthcare environment, it's critical for every user to be able to access drug information easily. And share it effortlessly. Having exactly the right knowledge-right at the point of need-decreases the risk of adverse drug events and saves precious time. The success of emerging healthcare applications such as CPOE, EMR and e-prescribing often depends on moving beyond "cookie-cutter" approaches to accessing and presenting drug content. By combining a comprehensive set of drug data elements and clinical information with multiple types of unique drug identifiers, NDDF Plus offers an exceptionally flexible set of tools and techniques to represent drugs and health conditions, enhancing usability and clinical decision support. This set of tools accommodates the varied perspectives of users across the healthcare continuum: from physician practices to hospitals; retail pharmacies to drug manufacturers; formulary management to claims processing. It starts with granular data that allows critical drug knowledge to be seamlessly shared between users and across applications. And enables you to expand applications for new and emerging markets.

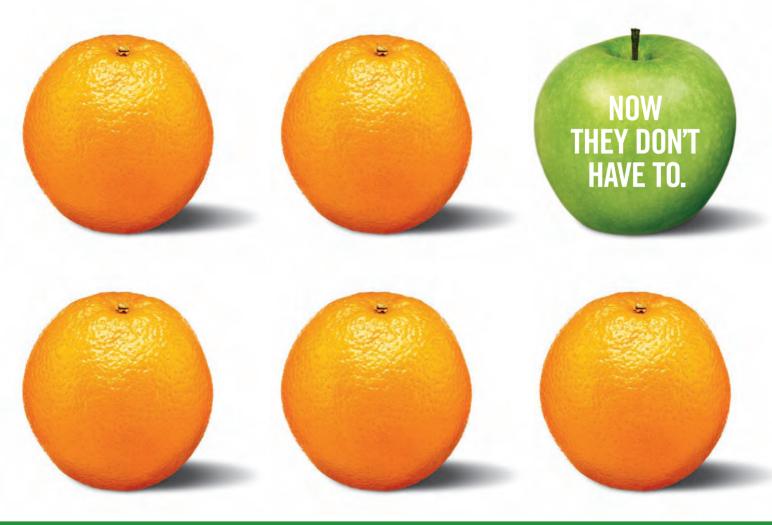
# The right level of information. Right away.

NDDF Plus gives you easy access to exceptionally "fine-grained" data, enabling you to tailor information to any health organization's needs. While some drug databases are derived from "re-purposed" information, NDDF Plus was designed from the ground up to provide content that's executable. Drugs and their attributes are represented at multiple levels, allowing specific applications to search for, store and display drug information as broadly or narrowly as called for.

For where your customers are. And where they want to be. NDDF Plus will work with the IT systems your customers have in place now. And years from now. Specifically designed to accommodate today's rapidly changing healthcare environment, its flexibility lets you adapt solutions to "real world" situations. With databases that are constantly updated for immediate access to the latest, up-to-the-minute knowledge. For over 30 years, First DataBank has partnered with system developers to optimize drug information. So you can count on us to help you meet your customers' needs now and in the future.



# NO TWO USERS VIEW DRUG INFORMATION THE SAME WAY.



The appropriate level of drug information varies with different tasks and user applications. For some, a short, simple alert may be all that's needed. Others may require a full-text explanation. With NDDF Plus, both individual users and organizations can decide if and when they require more in-depth information. This enhances productivity, protects healthcare professionals from information overload and unwanted messaging alerts, and helps reduce the possibility of medication errors.

Protecting clinicians from message overload. When busy clinicians are interrupted by too many alerts, they may decide to override all messages and risk overlooking a potentially important interaction. NDDF Plus allows organizations to define the type and number of alerts to be presented to the user, as well as the level of information detail. And, we help guide to correct choices that minimize alerts. When our OrderView Med Knowledge Base™ is implemented into CPOE applications, the prescriber can select from valid doses and frequencies, rather than having to deal with multiple alerts after the fact.

Focused clinical content. To respond to the continually changing information needs of healthcare professionals, NDDF Plus encompasses a wide selection of clinical database modules developed for use directly in the workflow. Content is presented in a way that's relevant to each user according to the level of detail needed, as well as the context. For example, a clinician can quickly consider the essence of a drug interaction, distilled for the ordering environment, and drill down to a deeper level of information if needed. Or, for more precise alert generation, the First DataBank Medical Lexicon™ identifies the context of a particular term as either a side effect. medical condition or indication.

Full decision support even with minimal specification. NDDF Plus provides the prescriber with reliable clinical decision support, without requiring users to specify more information than they need. For example, Routed Med™ access to drugdrug interactions frees physicians from having to enter all order specifics to find potential interactions. With fewer steps, clinicians can progress to the full order more quickly.

Reliable clinical checking using accessible patient data. Our solutions for checking drug information work with systems your customers have in place now, and with future applications. Recognizing that electronic patient data may not always be available in codified form, NDDF Plus keeps the required patient parameters to a minimum. When checking a dosage range, if the system has an indication for the patient's medical condition, a very specific check can be done on the medication dosage. However, if that information is unavailable, NDDF Plus can perform a broader safety check against all common indications for the drug.



# Flexibility in degree of detail to display.

Now users can

navigate easily from top-level screening data to in-depth drug reference information. Without interrupting workflow. By providing choices in how much information is displayed, NDDF Plus enables busy healthcare professionals to quickly drill down to the information they need-from specific drug interaction summaries to full-text monographs from the American Society of Health System Pharmacists® (ASHP). There's no need to switch between systems, or master multiple user interfaces.



Fewer steps to complete an order.

**Our OrderView Med Knowledge Base may** be integrated into either an inpatient order entry system or outpatient prescription writing application. With OrderView, the prescriber is prompted with a pick list of common orders specific to a drug and patient age. Saving steps for physicians. Creating a dosing safety net. And enabling developers to focus more time and resources on building optimal applications.

# Our unique identifiers pinpoint the information you need.

With more healthcare professionals using drug knowledge in a wider variety of settings, the need for user-relevant drug identification has increased dramatically. With NDDF Plus, system developers have a powerful database to enhance drug information access for a variety of uses. Unlike conventional, "one-size-fits-all" drug vocabularies, Multiple Access Points™ (MAPs™) encompass virtually every logical way

As applications grow more complex and electronic drug information is utilized in more settings, this flexibility is increasingly critical.

**Keep it relevant with good vocabulary.** MAPs conform to the principles of "good vocabulary practice," characterized by features such as:

#### Retirement and Replacement Status.

First DataBank's MAPs concepts are represented by stable numeric identifiers. And MAPs have a built-in

MAPs provide the building blocks necessary to create next-generation applications rapidly and economically. From CPOE to electronic medical records, e-prescribing and pharmacy dispensing, it's a whole new level of flexibility and improved information exchange for everyone.

to think about a drug, enabling users to navigate, store and display drug information as broadly or narrowly as called for.

They include a set of medication concepts and descriptions, "orderables" from OrderView, plus First DataBank's proprietary Enhanced Therapeutic Classification™ (ETC™) system and medical lexicon. This variety of access points allows developers to create more precise user-specific applications.

mechanism to support retirement and replacement of codes, following good vocabulary practice. This allows system developers to more easily track and manage the changes that inevitably occur in how drugs need to be represented. This ensures stability for user files. Once these identifiers are retired or replaced, they are never used again. So database developers can confidently rely on recorded information, reducing the burden of change management.

#### Random ("Dumb") Numbers.

Best practices dictate that numbers used for representing concepts do not have meaning built into them. This approach ensures that numbers carry no significance beyond their literal values, and do not need to be continually updated to keep up with drug information that is constantly changing. Following this methodology translates into stability and helps users minimize the change management headaches created when there are changes to a specific value or position that has meaning associated with it.

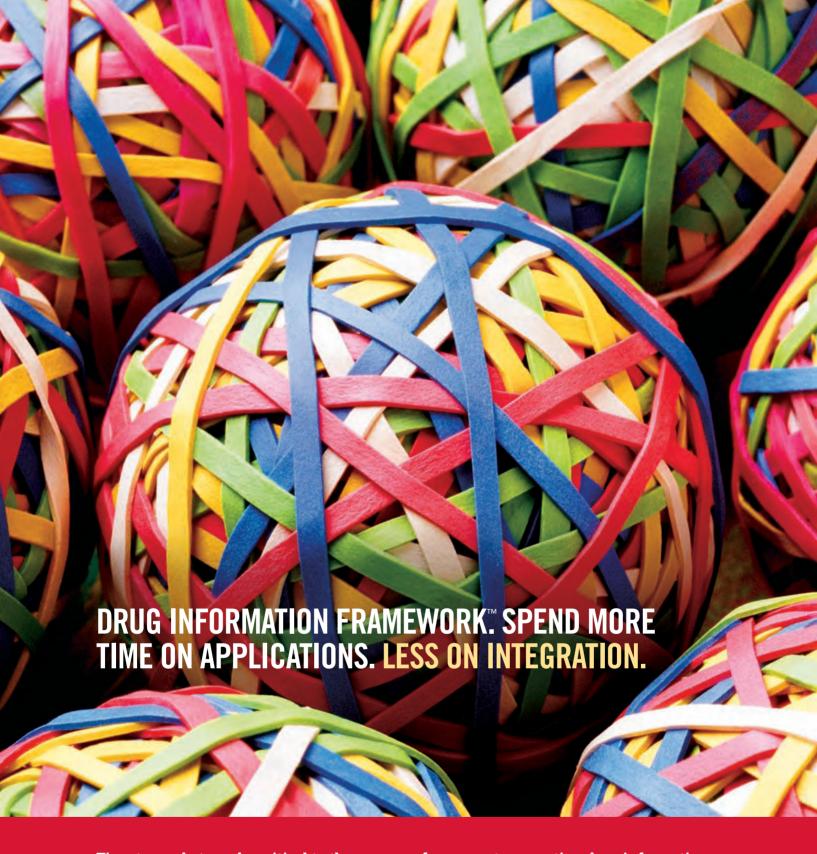
Enhanced therapeutic classification eases formulary tasks. With the number of drugs increasing dramatically, drug classification has become more complex and costly. To facilitate formulary management as well as clinical outcomes studies, First DataBank's Enhanced Therapeutic Classification system allows drugs to reside in multiple therapeutic classes, with links to drug concepts at any level of the therapeutic class hierarchy. It links to other Multiple Access Points, and uses a wide variety of medication concept identifiers to support multiple use-case scenarios. A major advance in drug classification, ETC enables easy development of applications that handle formulary maintenance, drug selection, presentation of pick lists, cost-benefit analyses and competitive analyses.



Medical conditions can be identified by anyone. To enhance clinical decision support across the healthcare continuum. First DataBank offers a specialized medical lexicon of Disease Identifiers (DxIDs). They uniquely represent disease conditions and health-related terms, including diagnoses, symptoms, medical conditions and drug side effects. Created for interpretation in multiple contexts, each identifier is linked to various textbook names and preferred professional names, as well as layman's terms. For example, with simpler disease identification, patients can easily access reliable information about their medical conditions. For navigation and alert generation, these disease identifiers are linked to each other in a "semantic network" structure that enables applications to generate hits and alert messages that are more comprehensive, yet precise, than with traditional hierarchical approaches.

## Granularity. The right foundation for every application.

When it comes to content for integration directly into the workflow, First DataBank offers users and developers greater flexibility in viewing and manipulating data. We start with extremely fine-grained data that integrates easily into your healthcare IT systems. And remains consistent among applications and between departments. This is critical to enabling everyone within the healthcare system-providers, payers, and medical suppliers-to communicate more effectively.



Time to market can be critical to the success of your next-generation drug information solutions. Yet working under constraints like accelerated schedules, cost containment and scarce development resources can inhibit your productivity. With First DataBank's Drug Information Framework, you can encapsulate our knowledge bases into end-user health information systems quickly and economically. Now you can get to market faster. And focus on what you do best.

# Minimize development time. Maximize resources.

The Drug Information Framework™ enables developers to build healthcare applications faster, using First DataBank's time-tested knowledge bases and clinical decision-support modules. By encapsulating NDDF Plus drug content in a highly flexible suite of intuitive, integrated software components, the Drug Information Framework gives you the comprehensive functionality you need to present drug information in ways that suit your needs. And those of your customers. These components eliminate the details of database access and processing, shortening development time and simplifying system implementation.

### Easily adapts to any environment.

The Drug Information Framework gives developers a choice of technology, RDBMS and access layers for easy adaptability to most platforms, operating systems and development tools. Whether you're deploying on the Internet, your own network, a desktop or even a wireless device, the Drug Information Framework supports your application architecture of choice.

You can easily differentiate your systems by quickly implementing our extensive set of standard functions or adapting your own. Its customization layer lets the developer tailor many of the clinical modules in the Drug Information Framework database, without compromising knowledge base content or risking it being overwritten during updates.

Validated for accuracy and reliability. Each release of the Drug Information Framework undergoes extensive and rigorous validation testing by our team of quality assurance analysts, and is validated for both accurate content and reliable operation. You need to validate only that you're achieving the expected results in your application with the provided OC protocol.



# Customize without corruption.

Recognizing that most healthcare organizations have different clinical preferences, the **Drug Information** Framework's customization layer allows the developer to categorize content in the database to accommodate each user's needs. By implementing this layer, the developer ensures that userdefined content integrates seamlessly into the Framework, without the risk of corrupting it during database updates.



For decades, First DataBank has worked side-by-side with system developers to help make drug knowledge more accessible and relevant. We've delivered and supported thousands of drug information databases across the healthcare continuum, utilizing content that works on virtually any platform-stand-alone, network, Internet or mobile. As the industry's most comprehensive and in-depth drug knowledge base, NDDF Plus provides drug content and clinical decision support information you can trust implicitly. A critical component in thousands of real-world installations, it's proven day after day in diverse applications, and continues to deliver unprecedented results. At First DataBank, we know your needs. Your customers. Your markets. When it comes to ensuring your success, nothing beats a seasoned partner.

# A WORLD OF DRUG KNOWLEDGE. NDDF Plus is one of the

healthcare industry's most widely used sources of up-to-date 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.

#### **DESCRIPTIVE INFORMATION**

**NDCs** 

Brand and Generic Names

Generic Cross References

Therapeutic Classifications

Bioequivalency Ratings

Label Names

Package Descriptions

Package Sizes

CMS Drug Product Information

TallMan Lettering

#### **UNIQUE IDENTIFIERS**

Med Names

Enhanced Therapeutic Classification

Disease Identifier

Formulation

Ingredient List

Ingredient

National Drug Code

Orderable Meds (OrderView)

### **DYNAMIC PRICING**

Average Wholesale Price

Suggested Wholesale Price

Wholesale Acquisition Cost

Medicaid Maximum Allowable

Costs (MAC)

CMS Federal Upper Limits Price

Direct Price

Historical Pricing Data

#### **CLINICAL DECISION SUPPORT**

#### **Dosing Information**

Dosage Range Check

Dose Checking for Neonates and Infants

Minimum/Maximum Dosing Ranges

Renal and Hepatic Dose Adjustments

OrderView Med Knowledge Base

Prescriber Order Entry Module

## **Drug-Disease Information**

Drug Indications

Drug-Disease Contraindications

Side Effects

#### Drug Identification

Drug Imprints

Drug Images

Drug Color

Drug Shape

#### **Drug Interactions**

**Duplicate Therapy** 

Drug-Drug Interactions

Drug-Food Interactions

Drug-Allergy Detection

#### **Alternative Therapies**

Drug-Alternative Therapy Interactions

Patient Education

#### **Lab Conflicts**

Drug-Lab Interference

#### **Patient Education**

Patient Education Module

Counseling Messages

Prioritized Label Warnings

MedTeach™ Monographs from ASHP

Drug-Drug Interactions (for

consumers)

Drug-Food Interactions (for consumers)

#### Full-text Reference Information

AHFS Drug Information® Monographs

#### REIMBURSEMENT/BILLING

Medicare

Medicaid

HCPCS

#### **CONSULTING SERVICES**



### SALES

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#### OTHER LOCATIONS

Indianapolis, Indiana St. Louis, Missouri Exeter, England First DataBank, a subsidiary of Hearst Corporation, drives patient safety and healthcare quality by providing drug databases that are used within information systems that touch every aspect of healthcare. For 30 years, we have partnered with system developers to integrate and optimize our drug information to improve user workflow and enhance clinical decision making by those entrusted with treating patients at the point-of-need. Together with our development partners, First DataBank helps reduce the incidence of medication errors and adverse drug events, which promises to lower healthcare costs and improve patient care.