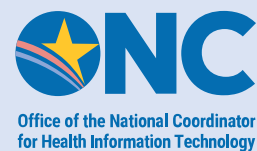


# Integration Taxonomy

Advancing PDMP-EHR Integration Project  
PDMP-EHR Integration Toolkit



This document was developed by Accenture Federal Services as the contractor leading the Advancing Prescription Drug Monitoring Programs - Electronic Health Record (PDMP-EHR) Integration Project under contract #GS-35F-540GA order # HHSP233201800327G. The project team from Accenture Federal Services served as a contractor to the Office of the National Coordinator for Health Information Technology (ONC). ONC served as the implementer partner to the Centers for Disease Control and Prevention (CDC). Funding for this contract award was provided by the CDC.

The PDMP-EHR Integration Toolkit was developed based on lessons learned by the Accenture team through collaborations with PDMP-EHR integration technical demonstration sites and Clinical Decision Support Proofs-of-Concept sites that participated in the Advancing PDMP-EHR Integration Project from 2018 - 2021. The PDMP-EHR Integration Toolkit is supplemented by the Integration Framework.

The findings and conclusions in this document are those of the authors and do not necessarily represent the official position of, the Centers for Disease Control and Prevention/the Agency for Toxic Substances and Disease Registry, the Office of the National Coordinator for Health Information Technology, or the other organizations involved, nor does the mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

## Table of Contents

Purpose .....	1
Background .....	1
Taxonomy.....	3
References.....	6

## List of Figures

Figure 1. The Five Key Components That Comprise Integration. ....	1
---	---

## Purpose

The Integration Taxonomy explores various components of and considerations for Prescription Drug Monitoring Program – Electronic Health Record (PDMP-EHR) Integration. This document was developed to inform health care systems of a variety of approaches that can be taken when integrating with the state PDMP and is based on observations collected from the technical demonstration sites in the Office of the National Coordinator for Health Information Technology/Centers for Disease Control and Prevention Advancing PDMP-EHR Integration Project. This is one of several documents within the PDMP-EHR Integration Toolkit.



It is important to note that the definition of integration varies across states and the term ‘integration’ can be applied to a wide variety of integration approaches. Health care systems, in collaboration with their state PDMP, should use this document to help inform discussions and facilitate decision-making as they explore how to approach their PDMP-EHR integration implementations.

## Background

We define integration as the ability to query prescription information from state-run PDMPs through an EHR system. Usually, though not universally, prescription information is transmitted in a format consumable by both the EHR system and the PDMP.

The goal of integration is to provide a more complete medical record through a single source to support clinical decision-making at the point of care (Pew Charitable Trusts, 2016).

In this document, integration is composed of five *key* components:

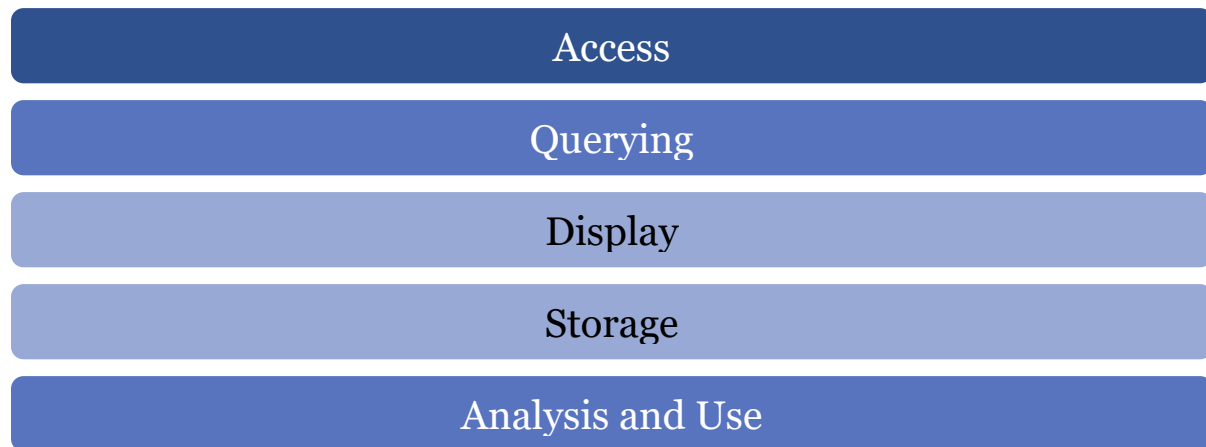


Figure 1. The Five Key Components That Comprise Integration

Each integration component is presented in tables below. Reading each table from left to right, integration components increase in complexity, as signaled by the shading of the boxes from lighter (less complex) to darker (more complex) and the numerical label at the top of the descriptions. Reading the tables from the top-down, the arrows indicate the dependencies of these components. For example, most PDMP data analyses depend on the data being stored as discrete data elements that are accessible to clinical decision support (CDS) tools or analytical software. Note that *storing* PDMP data are often independent of *displaying* PDMP data, but storage is dependent on PDMP access.

The numerical labels are a coordinate system and do not imply superiority among different integration approaches. Integration is heavily dependent on what is allowed under state policy and a health care system's needs and usage of PDMP data. In addition, as complexity increases, more resources must be devoted to maintaining network security and digital capabilities.

In reviewing the tables, it may be helpful for health care systems to work backwards, starting from desired capabilities (at the bottom) and working up towards their dependencies. Below the taxonomy are several common paths of integration denoted by coordinate labels.

Please note that inter-state/multi-state data are out of scope for this taxonomy. Differing state PDMP policies are often difficult to reconcile, particularly for integrations. For example, a health care system's home state may allow for the storage of PDMP data, but a bordering state does not. We have elected not to account for these differences here for simplicity.

Lastly, please note the following definitions:



Discrete Data Elements: Data that are stored in a database table at the smallest level of granularity. It is measurable, reportable, and can be used to conduct CDS or population-level analyses.



Clinical Decision Support: A wide variety of tools built to enhance decision-making in the clinical workflow. (Office of the National Coordinator for Health Information Technology, 2018) In this use case, all data points are drawn from a *single patient*. Discrete data may be stored at just the patient level (e.g., in the patient's medical profile) for certain CDS mechanisms to function.

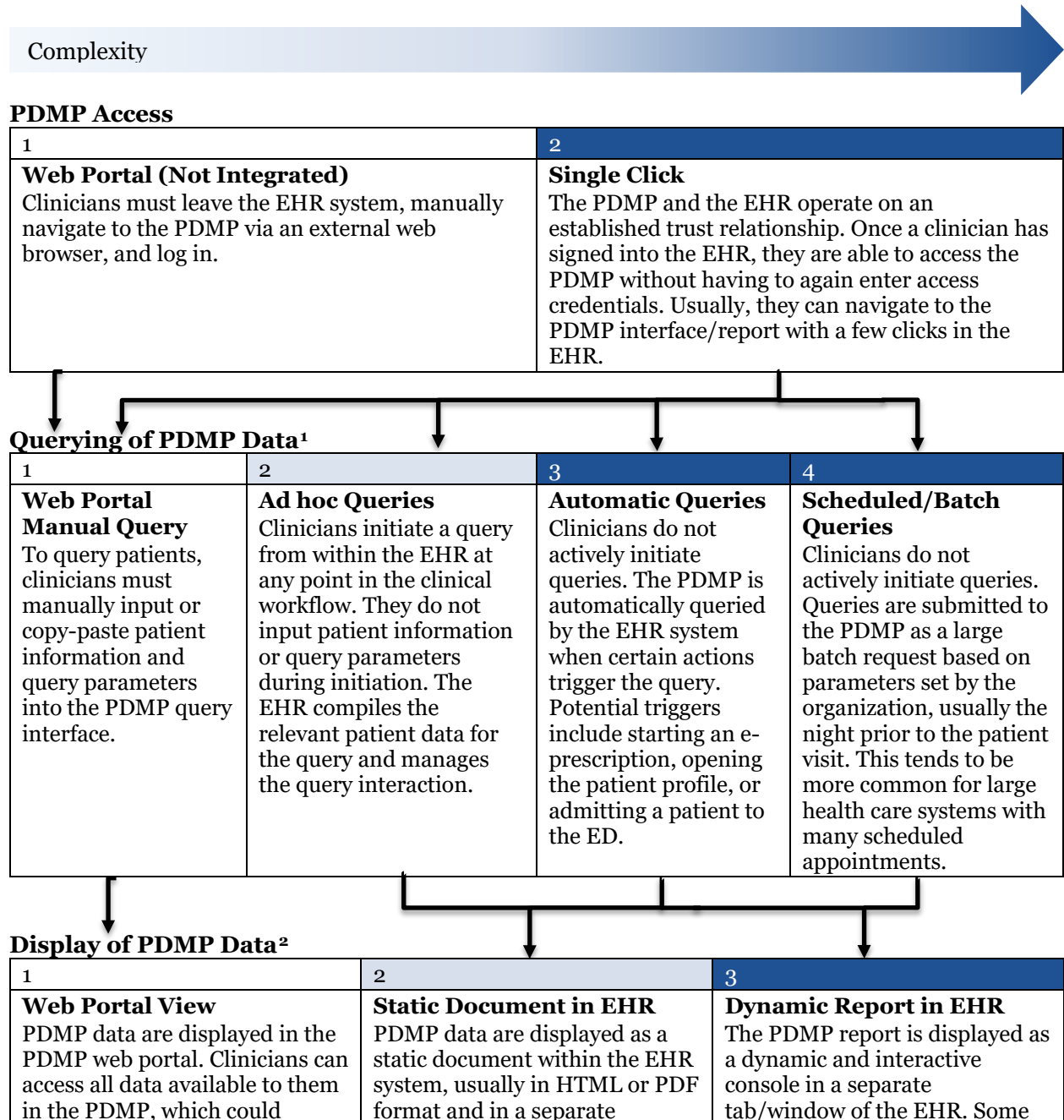


Population-Level Analyses: In this use case, analyses of any sort that draw from PDMP data across *multiple patients*. Discrete data must be stored in a database table that spans multiple patients.

# Taxonomy

Assumption: The integration works as intended, without any errors, bugs, or need to re-query data.

Please note that Option 1 for all components denote the non-integrated baseline for most states. Option 1 for all components remains available to users in almost all integrations.



<sup>1</sup> Query options above are not mutually exclusive. Systems may choose to allow only ad hoc queries or blend with additional approaches. Triggers, such as a certain action or a scheduled time, may exist in the same system.

<sup>2</sup> For some integrations, PDMP data may be reconciled and displayed along with pre-existing medication data in the EHR system (medication reconciliation). The ability to do so depends on state policy, health care system technical capabilities, and the vendor systems currently in use.

include relevant court records, interstate data, and patient overdose history (varies by state).	tab/window of the EHR. No user navigation to or within the PDMP web portal is involved. The report resembles those accessed via the PDMP web portal but its design may differ. EHR display of PDMP data does not always include all of the data accessible to clinicians within the PDMP web portal.	user navigation is involved. The data presentation is managed by either the EHR system or a third-party integration vendor. It may or may not resemble data presentations in the web portal. EHR display of PDMP data may not include all of the data accessible to clinicians within the PDMP web portal.
--	--	--

**Storage of PDMP Data<sup>3</sup>**

1	2	3	4
<b>No PDMP Data in EHR</b> PDMP data reside only within the PDMP and are not made available to the EHR.	<b>No Storage</b> PDMP data are made available to the EHR, but cannot be automatically or easily stored in the EHR. This may be due to technical and/or regulatory restrictions.	<b>Non-Discrete Storage</b> PDMP data can be stored as PDF, HTML, or other non-discrete data formats in the EHR system. This data may be overwritten by data from future queries. This may be an automatic process or may require minimal clinician initiative.	<b>Discrete Data Storage</b> PDMP data can be stored as discrete data elements in the EHR system. This is typically an automatic process. State statutes may restrict how this data may be stored or used.

**Analysis and Use of PDMP Data by Health Care Facility<sup>4,5</sup>**

1	2	3	4
<b>No Analysis/Use</b> PDMP data cannot be used for population-level analyses or for patient-level CDS within the EHR.	<b>Population-Level Analyses Only</b> PDMP data can be used for population-level analyses but not for patient-level CDS within the EHR.	<b>CDS Only</b> PDMP data can be used for patient-level CDS but not for population-level analyses within the EHR.	<b>CDS or Population-Level Analyses</b> PDMP data can be used for population-level analyses and for patient-level CDS within the EHR.

<sup>3</sup> Storage of the PDMP data are defined as the storage of the PDMP report or its data in a manner that is automatic/requires minimal end-user effort to incorporate it into the EHR, such as clicking on a save button. This section is not referring to manual efforts to store the report data, such as copying and pasting its contents in the EHR or by downloading a PDF of the report and then uploading it to the patient record. This component also does not include audit logging or meta-data storage. Please reference relevant state statutes.

<sup>4</sup> Some PDMPs or integration vendors may offer analyses/clinical decision support within the PDMP portal, which do not require health care system storage of PDMP data, and are unrelated to EHR CDS functionality. For this taxonomy, only CDS that runs on data in the EHR is considered, which may include PDMP data.

<sup>5</sup> In this taxonomy, if medication reconciliation of PDMP data has occurred within the EHR, it still considers the prescription data to be “PDMP data.” However, some state statutes may treat reconciled medication data in the EHR differently.

*Table 1. Common Types of Integration*

	Access	Querying	Display	Storage	Analysis & Use
Non-Integrated Baseline	1 – Web Portal	1 – Web Portal Manual Query	1 – Web Portal View	1 – No PDMP Data in EHR	1 – No Analysis/Use
Single Sign-On (SSO)	2 – Single Click	1 – Web Portal Manual Query	1 – Web Portal View	1 – No PDMP Data in EHR	1 – No Analysis/Use
Temporary View-Only Integration	2 – Single Click	Multiple Options May Apply	Multiple Options May Apply	2 – No Storage	1 – No Analysis/Use
Storable View-Only integration	2 – Single Click	Multiple Options May Apply	Multiple Options May Apply	3 – Non-Discrete Storage	1 – No Analysis/Use
Storable and Analyzable Integration	2 – Single Click	Multiple Options May Apply	Multiple Options May Apply	4 – Discrete Data Storage	Multiple Options May Apply



## References

1. *Improvements to Prescription Drug Monitoring Programs Can Inform Prescribing*. (n.d.). Retrieved October 7, 2021, from <https://pew.org/2KIPJEc>
2. *Clinical Decision Support* | *HealthIT.gov*. (n.d.). Retrieved October 7, 2021, from <https://www.healthit.gov/topic/safety/clinical-decision-support>