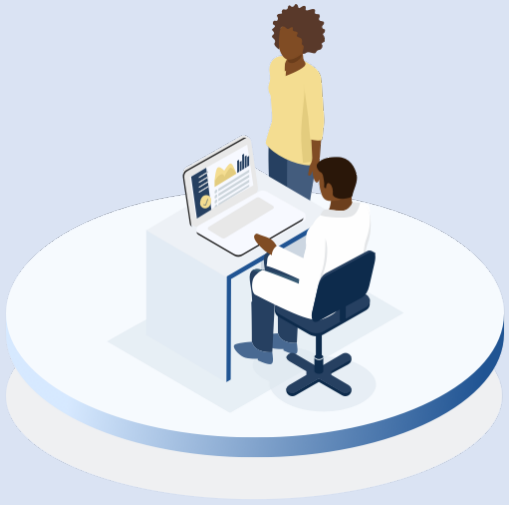
Testing Guidance

Advancing PDMP-EHR Integration Project

PDMP-EHR Integration Toolkit



CDC

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for Health Information Technology

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.

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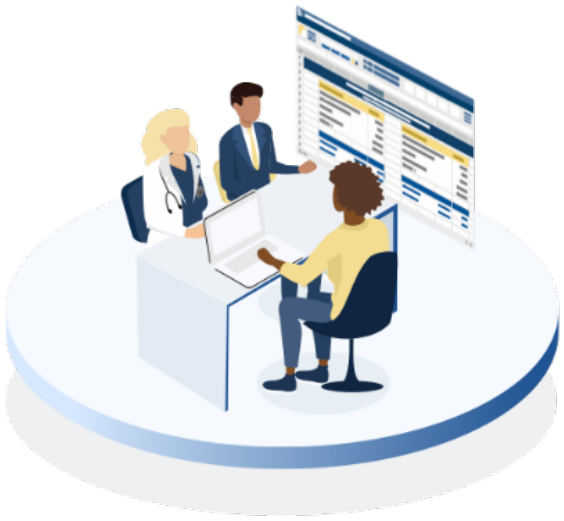
Purpose

The Testing Guidance translates lessons learned from the Office of the National Coordinator for Health Information Technology/Centers for Disease Control and Prevention (ONC/CDC) Advancing Prescription Drug Monitoring Program Electronic Health Record (PDMP-EHR) Integration Project into general guidance and suggested test scenarios for ongoing and future PDMP-EHR integration testing sessions. This guidance provides specific test scenarios and a list of data elements for integration sites to conduct robust testing prior to integration Go-Live and is one of several documents within the PDMP-EHR Integration Toolkit.



This document contains suggestions for testing based on activities helpful to the participants in the ONC/CDC Advancing PDMP-EHR Integration Project. The intended audience for this document and the accompanying Testing Templates workbook includes both state PDMP administrators and health care systems, as the testing is typically a collaboration activity involving both entities, as well as any applicable vendors. The Testing Guidance and the accompanying Testing Templates workbook are not intended to be fully comprehensive, and readers are encouraged to tailor this testing guidance for their specific integration testing activities.

General Guidance

Testing is an essential part of the PDMP-EHR process, to ensure that the functionality works correctly and displays accurate information. The integration should be thoroughly tested before the new functionality is activated for clinical users. Testing, including planning, conducting, and addressing issues, requires a collaboration between the PDMP and the health care system. While participating in testing sessions held by PDMPs and health care systems across multiple states, the Advancing PDMP-EHR Integration Project observed several best practices that contribute to effective and efficient integration testing sessions. This section provides a high-level summary of those learnings and best practices.

Prepare for Testing: Planning test scenarios and creating test patient and clinician data in advance maximizes testing session efficiency and ensures all facets of the integration are fully tested. The Testing Templates workbook provides a sample testing template to assist health care system and state PDMP testing representatives to plan and document their integration testing activities.

Include the Right People: Testing the PDMP-EHR integration is typically a collaboration between the state PDMP and the health care system. Depending on the technical solution, the PDMP may also conduct testing with integration vendors prior to or as part of the health care system integration test.

The health care system should engage clinicians to ensure testing teams fully understand how clinical workflows may be impacted by the integration and how the integration's end users will interact with the integration, so the testing team can refine test plans accordingly. Clinicians, particularly if there are clinician champions supporting the integration, can help to test the pieces of the interface they will use. It may also be helpful to have clinicians/testers from different settings, such as outpatient, inpatient, and emergency department, to test how the integration works for their different workflows.

Testing session efficiency can be improved by involving multiple people as active test participants. One person should facilitate the overall testing session, and a different person should be assigned to document testing activities and results (populate the test scenarios, document results, collect screenshots, record errors and desired resolutions, etc.). This delegation encourages efficiency and likely reduces errors, as it prevents one person from toggling between testing documentation and

interfaces. Note, this suggestion is geared towards organizations hoping to test and go live in a short period of time.

Conduct Thorough Testing and Document Results: Testing should confirm that the expected data elements are transmitting correctly, for a variety of test scenarios relevant to the health care system's workflow. See the Suggested Test Scenarios in Table 1 for a list of scenarios applicable to many health care systems, and the Data Elements tables showing common data elements that may be present in the query and response transactions. Readers should determine which scenarios are applicable for their clinical workflow and integration transactions and identify which data elements will be present within each scenario and need to be tested. All data elements should be thoroughly tested at least once.

After a full test of all data elements has been successfully completed, test scenarios can be checked with a condensed list of core data elements which, at a minimum, should contain the patient's first and last name, patient's date of birth, name of the clinician querying the PDMP, and number of prescription records.

Testing should also be conducted to explore functionality available to each applicable user role and profile. This step should confirm correct user permissions are implemented, and that only authorized user groups have access to the PDMP data. For any user roles that should not have access to PDMP data, testing should validate that those user roles' access is restricted.

Testing activities, their results, and any errors discovered should be well documented and tracked for remediation. This improves the team's ability to troubleshoot, resolve errors, avoid re-work, and check that all aspects of the integration are prepared for Go-Live. Health care systems and state PDMPs that do not already have an established process for tracking and documenting errors found in testing can utilize the sample error tracker template available in the Testing Templates workbook.

After testing the isolated PDMP integration functionality, test that the build can be migrated into production without affecting other EHR functionalities. Health care system sites may also need to test other systems (such as ePrescribing functionality, integrations with pharmacy systems or HIEs, etc.) to confirm that the PDMP-EHR integration did not impact other systems' functionality.

Ongoing testing needs: Even after the integration Go-Live, testing activities will likely need to be revisited to support ongoing maintenance. Testing should be performed after system changes, such as EHR system updates, integration vendor system updates (if applicable), statutory changes in prescribing permissions, and additions to the substances tracked by the PDMP. The parties involved in the integration should notify each other when changes or updates are made to ensure these changes do not affect other components of the integration.

Maintaining a list of core testing scenarios to execute in end-to-end testing after upgrades and updates ensures the system remains functional and helps identify the location of issues in a technology stack. Testers should update test scenarios as new functionalities are added to the integration.

Suggested Test Scenarios

The Suggested PDMP-EHR Integration Test Scenarios table below describes specific cases, circumstances, and details that should be tested. These scenarios describe basic functions, situations, or workflows that are beneficial to test prior to Go-Live for PDMP-EHR integrations, regardless of vendors used. For each scenario, the testers should validate that the information returned matches what is expected. For instance, the PDMP information displayed in the integrated report within the EHR should match the information available in the PDMP portal.

The test scenarios are listed sequentially in the table to align to general workflow sequences. The scenarios at the top of the table are the most overarching and foundational; scenarios towards the

bottom of the table are more granular and specific. This list is not comprehensive, and sites should add additional scenarios as needed or skip scenarios that are not applicable for their integration. Readers should tailor their test scenarios to the specific facility or interface being tested to avoid confusion. Testing scenarios may need site-specific customization to reflect the site's clinical workflow and to determine which data elements are relevant to each scenario.

Note: Multiple scenarios can be run in a single test or on a single test patient.

Table 1. Suggested PDMP-EHR Integration Test Scenarios

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Correct Role Mapping	Test that all clinician types are assigned to the correct PMIX role and that PMIX roles are implemented successfully.	There are 27 PMIX roles and a certain number of EHR roles, depending on the EHR system. Health care facilities need to ensure that all EHR roles are mapped to a PMIX role. Blank roles may unintentionally receive a fulfilled request, underscoring the need to map each EHR role. Facilities may need to create multiple test clinicians to test each unique EHR role.	The PMIX role mapped for each clinician type is the role being used by the integration. Testers may need to access XML code to validate these results. See *Correct Access Permissions* for further expectations.	Role mapping is vital for integration functionality. It is recommended that integrations perform end-to-end role mapping between the EHR system, the State PDMP (PMIX), and any third-party vendors *prior to testing*. Ensure that role mapping is in line with state statute. This test suggestion should be systematically performed for each clinician type.	Completed role mapping.
Correct Access Permissions: Authorized Users	Clinicians authorized to access the PDMP report query the integration. This should be systematically tested for each authorized clinician type.	Ensuring that authorized clinicians can query, receive, and use the integrated PDMP report is a core function of the integration. Authorized clinician specifications may vary by state.	The query is successfully executed, the PDMP report is received, and the authorized clinician can view the report in the EHR. The information in the report is accurate and as expected.	Ensure that role mapping, the list of authorized requestors, and the system's response (fulfill or deny) are in line with state statute. This test suggestion should be systematically performed for each relevant clinician type.	Successfully passing *Correct Role Mapping* is a precondition for performing *Correct Access Permissions*, as clinicians must be assigned to the correct PMIX role.

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Correct Access Permissions: Unauthorized Users	Clinicians not authorized to access the PDMP report query the integration. This should be systematically tested for each authorized clinician type.	Ensuring that unauthorized clinicians cannot query, receive, or use the integrated PDMP report is a core function of the integration, and is necessary to comply with state regulations and protect patient health information. Authorized clinician specifications may vary by state.	The query is successfully denied, the PDMP report is not returned, and an appropriate error message is displayed. Alternatively, the integration interface is not available in the EHR.	In the case that the EHR system stores the PDMP report in the patient's record, health care systems may want to test that unauthorized clinicians and other health care professionals are unable to *view* the PDMP report in the record (in addition to being unable to *request* a report).	Successfully passing *Correct Role Mapping* is a precondition for performing *Correct Access Permissions*, as clinicians must be assigned to the correct PMIX role.
Delegate Query	Designated delegate user queries the integration (applicable for states who allow delegation in statute).	Ensure delegates can successfully query the integration if the state allows for delegation.	The query is successfully executed and the PDMP report is returned. If the state allows delegates to view the PDMP report, the delegate can view the report in the EHR. If the state only allows delegates to submit a query on behalf of a clinician but not view the PDMP report themselves, the delegate is unable to view the PDMP report, and the PDMP report shows in the associated clinician's EHR.	This scenario will need to be customized to reflect the delegate policies applicable to the state and health care system. A delegate may be permitted integration access by the state but may not be able to access the integration due to EHR constraints. If this scenario arises, contact your EHR vendor to discuss your options.	Assign delegate to an authorized clinician, if applicable.

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Unregistered Clinician	Prescribing clinician not registered with the PDMP queries prescription information on a patient (only applicable for states where prescribers are required to register with the state PDMP)	Ensure that only registered clinicians have access to the state PDMP information, for compliance with state regulations, and to protect patient health information.	The state PDMP denies the query, the PDMP report does not show in the integrated view, and an appropriate error message displays.	This test should be systematically performed for each relevant clinician type.	
Patient with No History	A clinician queries a patient without any data/history in the PDMP.	Ensure that “no data found” messaging results as expected.	"No data found", "no records found," “no PDMP history,” or another message as designed/implemented by the integration team displays.	The phrasing of messaging should clearly communicate that no records were found for the patient. Ambiguous messaging may cause users to believe there was an error in the integration and subsequently re-query or report an issue.	

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Patient Matching	A clinician submits a query on a patient who is subject to one of the patient matching pitfalls (e.g., there is another test patient with a similar or identical name, the patient has records under their full name and their nickname, etc.)	Ensure that all necessary data elements are being transmitted to perform accurate patient matching. (See the *Data Elements to Check* section of this report for a list of possible data elements passed in an integrated query.) Accurate patient matching is necessary for accurate and complete PDMP reports.	Expected results vary based on patient matching procedures. Either: The query is successful and a correct PDMP report is returned for the intended patient. The patient is matched based on a differential data element such as middle name or address. OR The integration directs the clinician to the PDMP web portal to select the patient from a list of matching records.	Differences in patient matching between the integration and the state PDMP may cause differences in query results and report information. More specifically, an integration using an exact patient match may exclude relevant patient records. In this case, implementing more advanced patient matching is a suggested future enhancement to prioritize. In the meantime, clinicians should use their best judgment when querying these kinds of patients (i.e., patients with common names or with nicknames) and consider using the web portal in these instances.	Various test patient sets are created. Suggested test patient sets include patients with the same full name but different Dates of Birth (DoB), patients with the same first name, last name, and DoB, but different middle names, and patients with common nicknames (i.e., "Alex" and "Alexander").

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Accurate Look-Back Period	The clinician submits a query on a patient with PDMP data. Check the default look-back period of the integrated report. If a dynamic feature is available, change the look-back period of the returned report.	Ensure the look-back period of the integrated report complies with state or facility expectations for the report look-back period. Additionally, if applicable, ensure the change in the look-back period does not affect data accuracy.	The look-back period of the report matches expectations. Data on the report are accurate for the designated look-back period. If applicable, the clinician can change the look-back period (e.g., switch from seeing 3 months of information to 1 year of information) without errors and the information across the new timespan is accurate. The number of prescriptions displaying for that time period within the EHR's integrated report should match the number of prescriptions visible on the PDMP portal.	This scenario will need to be customized to reflect the look-back period/retention time policies applicable to the state and health care system. The look-back period is the period in which the returned or displayed PDMP data are contained, starting from the present and stretching back for a predetermined length of time. For example, a look-back period of 1 year would show dispense data from the past year.	

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Visual Appearance of PDMP Report	The clinician submits a query on a patient with PDMP data. Inspect and validate the visual appearance of the report.	State PDMPs may have guidelines on the presentation of PDMP data and general visual appearance.	The integrated report aligns with state PDMP expectations and shows all required components and no prohibited components.	EHR vendors may have legal restrictions on viewing access for non-customers (i.e., state PDMPs). However, in many cases, the only way to verify the design and content of the integrated report is by visually inspecting it. Any legal agreements, whether for an EHR or integration vendor, must be accounted for in project timelines.	Legal agreements for viewing access of integrated reports. These agreements may be with EHR or integration vendors.

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Batch Query (for applicable integrations)	Set up a batch query for a set of patients at a time prior to the testing session. Check each patient and their PDMP report in the batch.	Ensure batch query procedures are successful and do not compromise functionality or data accuracy.	For every patient included in the batch, there is a successful query and the PDMP report is present. There are no missing patients. Time requests and the requesting clinician are accurate and align with the specifications set when scheduling the batch. No information is missing from each patient's PDMP report and the data are accurate.	This scenario is only applicable to health care systems conducting batch queries. If applicable, ensure that clinicians can conduct ad-hoc queries on patients whose batch query has failed. Additionally, ensure that batch query times are scheduled at a time after pharmacy data uploads. This ensures clinicians receive the most up-to-date data and is particularly applicable for states with query-per-time-period restrictions (e.g., one query per patient per 24 hours).	The batch query should be scheduled prior to the test session so results can be examined during the test session.
Automatic Queries (for applicable integrations)	Set up appointments or admit patients across all possible encounter types for a set of patients at a time prior to the testing session. Check each patient and their PDMP report.	For integrations where a scheduled appointment or patient admit is designed to automatically query the PDMP, ensure automatic query procedures are successful.	Designated encounter or appointment types automatically trigger a query and the PDMP report is present in the user view and accurate. Non-designated encounter types should not trigger a query (e.g., x-rays, labs, etc.).	This scenario is only applicable to health care systems scheduling automatic queries.	

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Dynamic Features (for applicable integrations)	A clinician submits a query on a patient with PDMP data. Interact with or change the various dynamic features (such as sorting or filtering), if available.	Ensure that dynamic features are fully functional and do not compromise data accuracy.	Clinicians can utilize all dynamic features of the report, report reacts without errors, and new information is accurate. For an example, see the look-back period change in *Accurate Look-Back Period*.		Determine if there are any dynamic features (e.g., sorting patient data by categories or filtering certain medications) applicable to the integration.
Default Querying Clinician	Query a patient without an assigned clinician.	In certain contexts, such as the Emergency Department, integrated PDMP queries may be performed prior to a patient receiving an assigned clinician. Such queries should be attributed to a designated default clinician.	Clinician data element is correctly populated by the designated default clinician. Clinician data element is not left blank.	When using a default clinician, the querying physician will not receive "credit" for the query for compliance purposes, since the query is recorded under the default clinician. Therefore, it is best to only use a default clinician in settings where opioid prescribing is low.	Designate a default clinician and assign them in the integration build if applicable. Frequently used default clinicians include department heads or chief medical officers.
PDMP Data Update	An integrated query is conducted. The state PDMP edits information for the test patient. The integrated query is run again (in a timeframe allowed by state regulation).	In the case that the state PDMP updates patient information, ensure the integration can respond to reflect updates and present the most recent, accurate data.	PDMP report information match before and after patient information is updated. The changes are reflected accurately in the integrated report. If applicable, the new report overrides any older stored reports.	If the *Query-Per-Time-Period Restrictions* test applies, it may take the expiration of the time period restriction to see any changes in the integrated report.	

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Moving Between Departments or Care Settings	Check patient into one department and conduct a query from a test clinician in that department. Move patient to a different department and conduct a query from a test clinician in the new department.	Patients often move between different departments within a hospital, such as from the ED to the ICU. Patients may also move between different care settings, such as from the hospital to an outpatient clinic within the same day. The integrated PDMP report displays for all authorized clinicians who see this patient.	The PDMP report displays for all the clinicians assigned to this patient across the different departments.	For integrations with automatic query triggers, ensure that moving the patient across departments or settings does or does not re-trigger a query, depending on the integration specifications.	
Differences in Appointment Types (for applicable integrations)	Query or admit a single patient from/for a variety of encounter or appointment types.	EHR systems may have different access points, functionalities, or reports for different encounters or appointment types. For applicable integrations, certain encounter or appointment types may automatically trigger a query, while other encounter types should not trigger a query (see *Automatic Queries*).	All encounter or appointment types expected to have the integration functionality receive an accurate report without errors. Differences in access, workflow, design, or content of the integrated report are as expected. No PDMP data are expected to be received for any appointment types that should NOT trigger a PDMP query.	Confirm that appointment or encounter types that should not have queries are not firing queries.	

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Differences in Clinician Specialties (for applicable integrations)	Query a single patient from a variety of clinicians in different specialties.	EHR systems may have different functionalities or reports for different specialties	All clinician specialties expected to have the integration functionality receive an accurate report without errors. Other specialties are correctly denied or do not have the option of an integrated query. Differences in access, workflow, design, or content of the integrated report are as expected.		
Query-Per-Time-Period Restrictions (for applicable integrations)	Conduct an integrated query on a patient. Re-query the patient again within the query-per-time-period restricted window.	In certain states, integrated queries may be limited to one per patient per a designated time period (e.g., 24 hours).	The integrated report only refreshes when appropriate. Second queries in the designated time period display the report previously queried in the designated time period; a new report is not pulled from the state PDMP.	PDMP report storage in the EHR is a precondition to this test scenario.	

Test Scenario Short Name	Test Scenario Description	Justification for Test Scenario	Expected Results	Comments	Required Preparation Prior to Testing
Drug uniquely monitored by the state PDMP or newly classified as a controlled substance (for applicable states)	Conduct an integrated query on a patient who has the uniquely monitored or classified drug in their PDMP history.	Test that the uniquely monitored or classified drug can be pulled and incorporated in a PDMP report without errors. When new legislation passes requiring state PDMPs to track a previously unmonitored substance or controlled substance classifications are altered, it is necessary to ensure the integration correctly provides the prescription information for the newly added drug.	Uniquely monitored substance or newly classified controlled substance appears in PDMP report, drug name data element is populated correctly, and no error messages display.	This test scenario should be tested for any changes in state or federal statute and requires ongoing monitoring of changes in statute.	
Performance times and timeouts	Test the performance times/timeouts of report requests and responses at each layer.	A timeout, in this context, is defined as the automatic cancellation of a request or response that occurs when a predefined interval of time has passed without receiving the request/response. For example, if the EHR system has a timeout of 30 seconds, but the integration vendor requires 60 seconds to send a response, this discrepancy may cause errors.	The EHR system and integration vendor should maintain the same timeout parameters.	Should a discrepancy arise, contact the appropriate vendor to remediate.	

Data Elements to Check

This section documents data elements that entities should check during testing sessions to ensure they are present, contain the expected data, match across separate entities (health care system, state PDMP, vendors, etc.), and match across various points within entities (for example, between the visible PDMP report and the audit log). Different data elements may be applicable for the scenarios being tested from the Suggested Test Scenarios table. The health care system and state PDMP should evaluate which scenarios will be tested, and then determine which data elements are applicable and need to be tested. All data elements present in the integrated PDMP report in the EHR should be tested at least once.

The data element tables below contain data elements transmitted for PDMP-EHR integrated query requests and responses. These tables include the data elements minimally required by the public data-sharing hub as well as additional data elements that may or may not be transmitted depending on the state. The data elements listed were relevant to the health care systems testing their integrations as part of the Advancing PDMP-EHR Integration Project and/or outlined in the Standards & Interoperability Framework PDMP Initiative. Integration sites should add any additional data elements that apply to their integration. Depending on the state and integration solution, some data elements in this list may not be visible to testers and may only be visible in the XML messages.

Health care systems should check through the full list of applicable query data elements with the PDMP at least once to ensure all data elements are transmitting and displaying correctly. If the integration uses any additional data elements not listed here, those data elements should be added. After this full test, a condensed list of core data elements can be used to check for each following testing scenario. At a minimum, this list of core query data elements tested for each scenario should contain the patient's first and last name; patient's date of birth; name of the clinician querying the PDMP, and the number of prescription records. In addition to validating the number of records, testers should also periodically spot-check the list of prescriptions to ensure they match across entities and display as expected.

Within the Data Elements tables below, the following conventions are used:

- The minimum data elements transmitted for PDMP-EHR integrated queries through the public data-sharing hub are denoted with an asterisk (*) in the Data Elements column. These minimum data elements were identified based on conversations with and materials provided by the public data-sharing hub and industry experts. State PDMPs may require additional data elements beyond those listed as required here. Data elements without an asterisk may or may not be available for every state or every integration.
- Data elements in **[brackets]** are conditional and should be filled with the applicable option(s) depending on the state. For example, [Requestor Identifier] may be populated by several options, including NPI Number, DEA Number, State License ID, State of License, or a combination of the aforementioned identifiers. The precise data element(s) that populate the conditional data element in brackets is state-dependent.
- Data elements in the **Data Elements in Request Transactions** tables are data elements often sent from the health care system to the state PDMP in a query request. These are data elements that testers from the state PDMP and/or third-party integration vendor often validate (either from audit logs, interface consoles, or XML messages).
- Data elements in the **Data Elements in Response Transactions** tables are data elements often sent from the state PDMP to the health care system in a response to a query. These are data elements that testers from the health care system often validate (either from the integrated report appearing in the EHR display, audit logs, or XML messages).

- Data elements in the **Routing Information** tables are data elements often included in the request or response transaction header. Data elements under the **Message Body** table sub-headers are data elements often included in the transaction message body.[1]
- The design features in the **Generated Report Information** table are not raw data elements displayed as-is from the state PDMP. Rather, these features may be generated using various data elements provided to the third-party integration vendor, EHR vendor, or health care system by the state PDMP. The design features may appear on the integrated report/in the integration interface and should be tested accordingly.

These data elements tables are reproduced in the Testing Templates workbook for convenience, so users may copy and paste a list of data elements into an Excel testing script.

[1] A transaction consists of both a header (requestor and recipient information used to route the transaction to the appropriate routing service clients) and a message body (the payload containing patient information). While both components are encrypted, only the header data elements can be accessed by the data-sharing hub.

Request Transactions

*Data elements in the **Data Elements in Request Transactions** tables are data elements often sent from the health care system to the state PDMP in a query request. These are data elements that testers from the state PDMP and/or third-party integration vendor often validate (either from audit logs, interface consoles, or XML messages).*

Routing Information

*Data elements in the **Routing Information** tables are data elements often included in the request or response transaction header.*

Table 2. Data Elements Contained in the Request Transaction Header Routing Information

Data Elements Contained in the Request Transaction Header Routing Information	Data Element Description	Comments & Troubleshooting Suggestions
* Requestor	The person that requests the PDMP data	Requestor is sometimes referred to as clinician username. This element will include the requestor's given name and surname.
* Requestor Role	Specifies the role of the clinician submitting the request. Digit indicators (codes) are used to tie the requestor to specific roles.	If there are errors associated with the requestor/clinician role, check that the correct PMIX role is assigned. If this is the error source, follow up by checking for system-wide discrepancies in role mapping between the EHR system and PMIX; ensure clinicians are all assigned to an appropriate PMIX role.
[Requestor Identifier]	This varies by state and can include: NPI Number, DEA Number, State License ID, and/or State of License	Confirm that the required externally generated and validated requestor/clinician identifier (such as DEA number, NPI number, etc.) is used in the EHR audit log, rather than a clinician username or other internal identifier. This improves troubleshooting, stabilization, and auditing workflow for the technical team. Additionally, these external identifiers may be standard for reconciliation and prescribing in the state and are potentially more static than usernames.
* Request ID	Identification associated with the specific transaction instance	
Request Timestamp	The date and time of the request	Confirm that the time zone is consistent within a system/audit log or differences in time zones are clearly communicated; this is most applicable when the health care facility is working with EHR or integration vendors headquartered in different time zones.

Data Elements Contained in the Request Transaction Header Routing Information	Data Element Description	Comments & Troubleshooting Suggestions
[Requesting Facility Identifier]	Name of the entity from which the clinician sends the request (e.g., pharmacy name, hospital name, name of group practice, etc.)	
* Requesting State	The state in which the request is initiated from	Requesting State includes the location of the facility where the clinician is located.
* Disclosing State	The state PDMP(s) that should receive the request	Disclosing state includes the state in which the facility is located and may include additional states. A health care system must be integrated with its home state to request from another state.

Message Body

*Data elements under the **Message Body** table sub-headers are data elements often included in the transaction message body.*[2]

Table 3. Data Elements Contained in the Request Transaction Message Body

Data Elements Contained in the Request Transaction Message Body	Data Element Description	Comments & Troubleshooting Suggestions
[Patient Name Prefix]	The identifiers preceding a person's full name, such as Mrs., Ms., Mr., Dr., etc.	
* Patient First Name	The patient's first name	Sometimes alternatively referred to as "patient given name"
Patient Middle Initial/Name	The patient's middle name	
* Patient Last Name	The patient's last name	Sometimes alternatively referred to as "patient surname"

[2] A transaction consists of both a header (requestor and recipient information used to route the transaction to the appropriate routing service clients) and a message body (the payload containing patient information). While both components are encrypted, only the header data elements can be accessed by the data-sharing hub.

Data Elements Contained in the Request Transaction Message Body	Data Element Description	Comments & Troubleshooting Suggestions
[Patient Suffix]	The identifiers following a person's full name, providing additional information about the person to indicate that the individual holds a position, educational degree, accreditation, office, or honor (e.g., Jr., Sr., II, III, etc.)	
* Patient Date of Birth	Date patient was born	
[Patient Sex]	Patient Sex, as recorded in the patient's medical record	The precise data element that populates this field is contingent on the EHR's definition. The element may also be named patient gender or patient gender assigned at birth.
Species Code	A code indicating the species for which the prescription was written. This is relevant for veterinary data.	
Pet/Animal Name	The name of the pet/animal, often entered by a veterinarian or pharmacist.	
[Patient Identifier]	A patient identifier can be a patient's SSN, a patient's driver's license number and state of license, a patient's passport ID number, a patient's military ID number, a patient's tribal identification number, a combination of such identifiers, etc. It may be composed of separate data elements, and often [type of identifier/identification jurisdiction] is coupled with [identifier value].	Often, the patient identifier is used by the state PDMP for auditing purposes. If the Patient Identifier is an internal tracking ID specific and unique to the EHR system, changing the Patient Identifier to an identifier that is easily trackable across all entities' systems is a recommended enhancement. This improves troubleshooting, stabilization, and auditing workflow for the technical team.
Request Prescription Date Range Start Date	Used in a request for prescription data to indicate the beginning of the date range in which the responding PDMP should search for prescriptions matching the search criteria	Entities should ensure their definitions of prescription range dates are consistent to avoid discrepancies or errors. Prescription date ranges may be based on either the dates that prescriptions are issued/written or the dates that prescriptions are filled/dispensed.
Request Prescription Date Range End Date	Used in a request for prescription data to indicate the end of the date range in which the responding PDMP should search for prescriptions matching the search criteria	

Data Elements Contained in the Request Transaction Message Body	Data Element Description	Comments & Troubleshooting Suggestions
Patient Contact Telephone Number	The patient's telephone number	Sometimes the patient telephone number is included in the request message body because it can be used by the state PDMP to enhance patient matching.
Patient Address	Patient's current residence or mailing address. May be composed of separate data elements including the street address, city, state, and zip code.	Sometimes the patient address is included in the request message body because it can be used by the state PDMP to enhance patient matching

Response Transactions

*Data elements in the **Data Elements in Response Transactions** tables are data elements often sent from the state PDMP to the health care system in a response to a query. These are data elements that testers from the health care system often validate (either from the integrated report appearing in the EHR display, audit logs, or XML messages).*

Routing Information

*Data elements in the **Routing Information** tables are data elements often included in the request or response transaction header.*

Table 4. Data Elements Contained in the Response Transaction Routing Information

Data Elements contained in Response Transaction Header Routing Information	Data Element Description	Comments & Troubleshooting Suggestions
Response Timestamp	The date and time of the response	If Response Timestamp is not currently available on one or any of the involved entities' audit logs, adding it is a recommended enhancement. Transaction timestamps can improve troubleshooting, transaction mapping, and performance monitoring. Confirm that the time zone is consistent within a system/audit log or differences in time zones are clearly communicated; this is most applicable when the health care facility is working with EHR or integration vendors headquartered in different time zones.
Response Prescription Data Range Start Date	Indicates the beginning of the date range of the PDMP data patient report	This should match the Request Prescription Date Range Start Date.
Response Prescription Data Range End Date	Indicates the end of the date range of the PDMP data patient report	This should match the Request Prescription Date Range End Date.

Data Elements contained in Response Transaction Header Routing Information	Data Element Description	Comments & Troubleshooting Suggestions
* Requesting State	The state in which the request is initiated from	
* Disclosing State(s)	The state PDMP(s) that should receive the request	
* Request ID	The ID associated with the specific transaction instance	This identifier is assigned in the Request and the Request ID is sent back in the Response.

Message Body

*Data elements under the **Message Body** table sub-headers are data elements often included in the transaction message body.*[3]

Table 5. Data Elements Contained in the Response Transaction Message Body

Data Elements Contained in the Response Transaction Message Body	Data Element Description	Comments & Troubleshooting Suggestions
Patient First Name	The patient's first name	
Patient Middle Initial/Name	The patient's middle name	
Patient Last Name	The patient's last name	
Patient Suffix	Identifiers following a person's full name, providing additional information about the person (e.g., Jr., Sr., II, III, etc.)	
Patient Date of Birth	The patient's date of birth	
[Person Sex]	The patient's sex code, as recorded in the PDMP's data exchange standard.	

[3] A transaction consists of both a header (requestor and recipient information used to route the transaction to the appropriate routing service clients) and a message body (the payload containing patient information). While both components are encrypted, only the header data elements can be accessed by the data-sharing hub.

Data Elements Contained in the Response Transaction Message Body	Data Element Description	Comments & Troubleshooting Suggestions
[Species Code]	A code indicating the species for which the prescription was written. This is relevant for veterinary data.	
[Pet/Animal Name]	The name of the pet/animal, often entered by a veterinarian or pharmacist.	
[Patient Address]	The patient's current or mailing address. It may be composed of separate data elements including the street address, city, state, and zip code.	The patient address associated with the prescription record at the time of dispense.
Prescription Written Date	The date the prescription was written by the prescriber	
Prescription Filled Date	The date the prescription was filled at the pharmacy	
[Prescription Sold Date]	The date the prescription was sold by the pharmacy	Prescription Sold Date is sent when available. Not all prescriptions submitted to PDMPs will contain a date sold because pharmacy management systems may not be tied to point-of-sale systems.
Prescription Number	The serial number assigned to the prescription by the pharmacy	
Drug Name	The product name of the drug prescribed to the patient; reported to the PDMP from the pharmacy	Drug Name is a required response data element provided that the data are available to be sent.
[Dosage Form]	The physical form in which the medication will be delivered to the body (tablet, capsule, extended-release tablet, syrup, injectable, etc.)	Dosage Form data are contained within the drug name.
[Drug Strength]	The strength of the dispensed product, usually derived by the product ID contained in the NDC code	
Drug Quantity	The number of metric units dispensed in the metric decimal format	
Days of Supply	The calculated or estimated number of days the medication will be consumed by the patient based on prescriber orders	

Data Elements Contained in the Response Transaction Message Body	Data Element Description	Comments & Troubleshooting Suggestions
Refill Number	The refill value of the current dispensing event, e.g., the refill is number 3 of 5 authorized refills	
Refills Authorized	The number of refills authorized by the prescriber	
Partial Fill Indicator	An indicator used to signal if a prescription was only partially filled by the pharmacy	
Method of Payment	The method used to purchase the prescription	
Drug Product ID	The drug identification number (e.g., RxNorm ID number, NDC number, etc.), as reported to the PDMP from the pharmacy	Often, this is accompanied by a Drug Product ID Qualifier data element which indicates the coding system used for the product ID (i.e., RxNorm ID, NDC number, etc.), as reported to the PDMP from the pharmacy. The qualifier also indicates if the drug is a compound drug.
Dispenser Organization Name	The name of the pharmacy or dispensing facility	
Dispenser Organization Address	The pharmacy or dispensing facility's address. It may be composed of separate data elements including the street address, city, state, and postal zip code.	Dispenser Organization Address data are required to be provided in the response, on the condition that the data are available to be sent. Note, the address, city, state, and postal zip code are sent as separate data elements.
Dispenser Organization Phone Number	The phone number of pharmacy or dispensing facility	Dispenser Organization Phone Number is required to be provided in the response, on the condition that it is available to be sent.
[Dispenser Organization Identifier]	This varies by state and can include: DEA Number, NCPDP Number, and/or NPI Number	
Prescriber First Name	The prescriber's first name	
Prescriber Last Name	The prescriber's last name	
Prescriber Organization	The organization the prescriber belongs to or the organization the prescriber was working under when they wrote the prescription.	

Data Elements Contained in the Response Transaction Message Body	Data Element Description	Comments & Troubleshooting Suggestions
Prescriber Address	The prescriber's organization or street address. May be composed of separate data elements including the street address, city, state, and zip code.	Prescriber Address is required to be provided in the response provided that it is available to be sent.
[Prescriber Identifier]	This varies by state and can include: DEA Number, NPI Number, State License ID, and/or State of License	PDMPs will use the DEA number, excluding the state of Nebraska as its PDMP contains all medications in addition to controlled substances.
[Patient Identifier]	A patient identifier can be: patient's SSN, patient's driver's license number and state of license, patient's passport ID number, patient's military ID number, or patient's tribal identification number	

Generated Report Information

*The design features in the **Generated Report Information** table are not raw data elements displayed as-is from the state PDMP. Rather, these features may be generated using various data elements provided to the third-party integration vendor, EHR vendor, or health care system by the state PDMP. The design features may appear on the integrated report/in the integration interface and should be tested accordingly.*

Table 6. Design Features Contained in the Response Transaction Generated Report Information

Design Features Contained in the Response Transaction Generated Report Information	Design Feature Description	Comments & Troubleshooting Suggestions
Active MME Amount	The total amount of morphine milligram equivalents (MME) the patient is currently prescribed	Calculations for Active MME may vary. Entities should ideally ensure their method of calculations is consistent. If Active MME calculations differ, and this difference is acceptable to the health care facility and the state PDMP, then check the raw data that these calculations are based on, to ensure they are consistent with PDMP data. Awareness of any differences in Active MME calculations is essential.

Design Features Contained in the Response Transaction Generated Report Information	Design Feature Description	Comments & Troubleshooting Suggestions
Report Look-Back Period	The period of time the PDMP data spans; this period typically represents the past number of months or years up until the time of the query (i.e., the past 1 year, 6 months, etc.)	This look-back period should equal the difference between the Request/Response Prescription Data Range End Date and the Request/Response Prescription Data Range Start Date.
Risk Assessment	Any visualization, qualification, or quantification of a patient's risk level, including but not limited to: a risk score, a risk gauge reading, or a risk color scheme	A risk assessment may be produced by analyzing the patient's PDMP data and/or EHR health history data. If the Risk Assessment indicator, or any other element requiring analysis of PDMP data, is performed outside of the PDMP (e.g., by an integration vendor or in the EHR system), check the raw data these analysis indicators are based on, to ensure they are consistent with PDMP data.
Notes Section	The Notes section of the patient's chart	The Notes section may contain additional information; occasionally, other necessary data elements will populate in the Notes section if they do not have their own designated field.