MOD® Provides the Pain Data Query System (PDQS) Useful for Joint Commission Pain Standard Compliance Reports

Joint Commission (JC) Pain Standards Since 2018

The Medication on Demand (MOD®) oral patient-controlled analgesia (PCA) device is the ONLY pain medication delivery system for both non-opioid and opioid oral pain medication delivery that both delivers the medication and collects valuable data during the process to determine best approaches for pain management in any healthcare facility.

Standard PI.01.01.01 in the JC standards for pain management in 2018 mandates that a facility "Collects data on pain assessment and pain management including types of interventions and effectiveness."

Standard PI.02.01.01 requires that the hospital also "Analyzes data collected on pain assessment and pain management to identify areas that need change to increase safety and quality for patients."

MOD® Reports addressing JC Pain Standards compliance are noted in boxed areas in this document.

Only the MOD® Provides Data for Immediate Analysis

The MOD® Compared to Other Pain Delivery Systems

All other pain medication delivery devices (e.g., IV PCA, peripheral nerve blocks with PCA, epidural PCA) provide data regarding the amount of pain medication delivered over selected time frames while nursing staff collects the required pain scores from patients related to the time of medication administration and reassessment after a time interval since the last pain medication. Patient pain data is usually entered manually into the electronic health record (EHR).

EHR Pain Data

The electronic health record (EHR) provides the collected patient pain scores and reassessment scores on various electronic display screens for each patient. Pharmacy data regarding the time of medication administration is often displayed on other screens with limited ability to easily aggregate the data for analysis by patient unit, diagnoses, surgical procedures, pain management protocols, or other parameters that would be useful for understanding how to improve pain management in different patient populations. Collecting and analyzing this data could require a large commitment of staff time and expertise.

Pain Satisfaction Data in Retrospect

HCAHPS data on patient pain satisfaction surveys are collected after patient discharge up until six weeks post-discharge. Patients are not required to return surveys or patients may be contacted by phone from a contracted agency to collect data. The pain question on HCAHPS has been modified by CMS providing less information regarding patient satisfaction with pain management.

Data From Commercial Entities
These organizations may collect patient databases that focus more on patient experiences to improve patient care and assist staff in better behavioral approaches for patient management. Other commercial entities contract with hospitals to assist in tracking quality indicators as part of AHRQ metrics or CMS core measures. None of these groups provide databases for pain management data during the hospital stay.

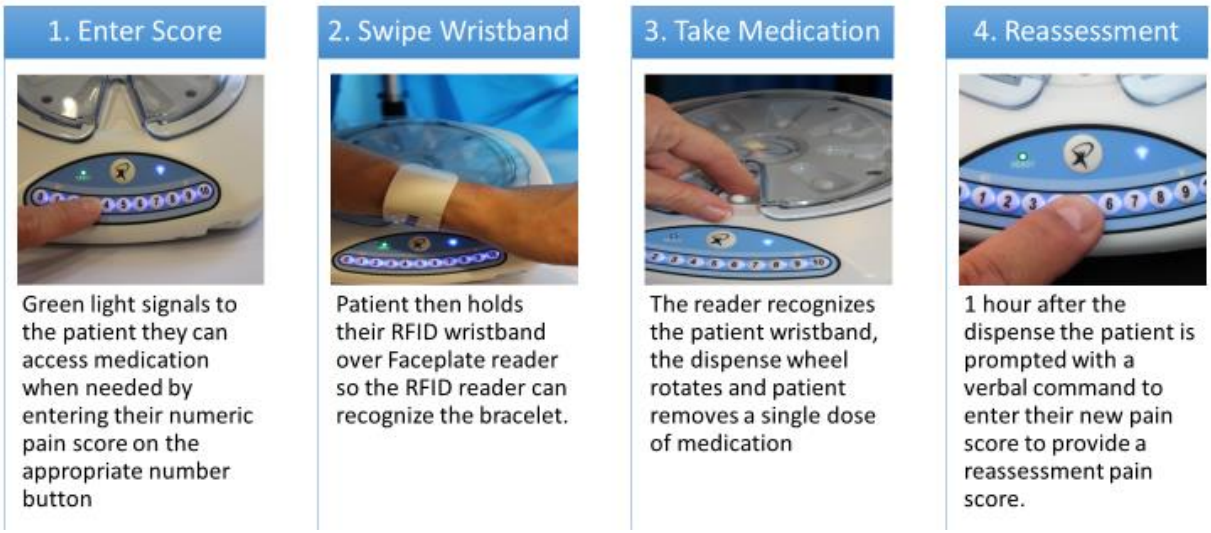
Opioid Safety Gap Analysis
An opioid safety gap analysis exercise is a useful tool to answer and analyze questions regarding safety measures to protect against future opioid adverse events with pain management. This data exercise however does not provide the tools necessary to gauge the effectiveness of pain management in different patient groups or circumstances.

Description of MOD® Use and Data Capture

Following the MOD® policy and procedure for patient selection and the nurse patient pain education activity, a MOD® is provided at the patient bedside within reach of the patient wearing a radiofrequency Identification (RFID) bracelet registered to the patient's device.

The patient is easily taught how to obtain a dose of medication and respond to the pain reassessment audible feature which prompts the patient to enter their reassessment pain score. The numeric pain score entered as part of the medication request and reassessment score is for data capture only and does not change the dose of the provided oral pain medication as is the approach with all PCA devices.

How the Patient Uses the MOD®



At each medication dispense, data capture includes the patient identification, the medication and its dose, the date and time of self-administration of the medication, the patient-entered pain score, and the reassessment pain score.

Other captured data include the staff member programming the device, including adding a patient, loading a new medication tray, changing any pain order, providing a dispense now bolus dose for the patient, or removing the patient from the device use.

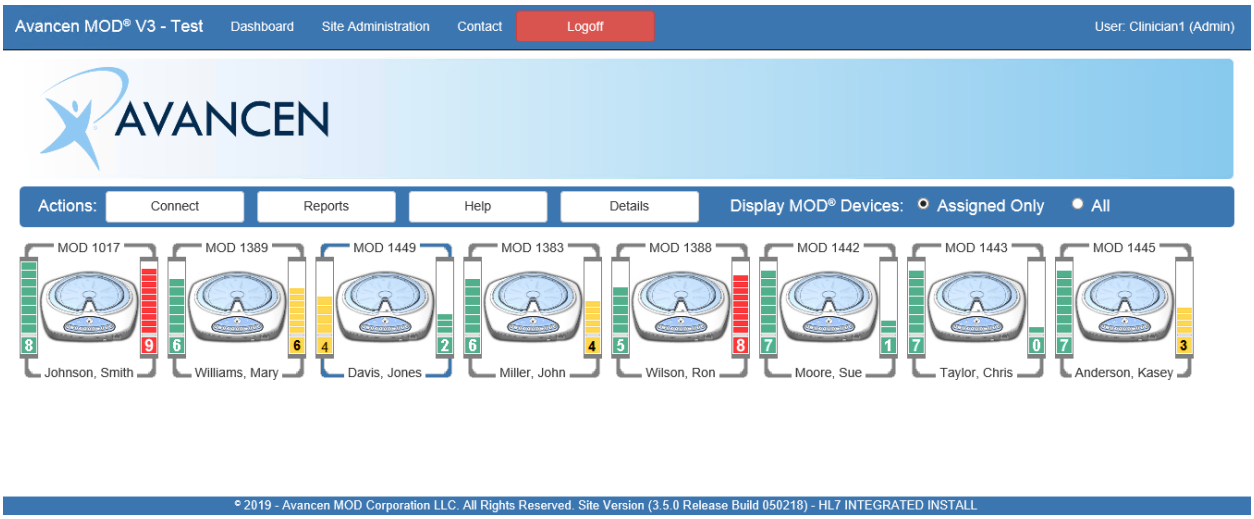
Any time medications in the MOD® tray are exposed during the loading or discharge process, a secondary nurse verifier is identified in the database as responsible, along with the programming nurse for the safe dispensing, handling, or disposal of the medications.

Real Time MOD® Data During Patient Use

The MOD® Dashboard on the device computer application screen shows all the patients using devices in a particular unit. Each device has a specific serial number that is seen above the device picture; the patient name or ID number is below the picture. The column of numbers to the left of the device from zero to 8 indicates the number of medication tabs in the device at that point in time; numbers to the right of the device indicate the last pain score entered by the patient color coded from low to high numbers

During the patient MOD® use, accumulated data is obtained by placing the mouse cursor over the appropriate device on the Dashboard screen and selecting the information to be viewed on that patient's MOD® use displayed in a tabular and graphic format called the **Shift Change Report** shown below providing all the data acquired during the device use up to that point in time. To see only the graphic display, the **Pain Scale Report** is selected.

Dashboard



Collection of real time pain data and the reassessment data can serve to meet JC standards PC.01.02.07.

Joint Commission Standard Compliance – PC.01.02.07

The MOD® protocol specifies patient selection criteria and patient education as part of MOD®` use. The availability of real time pain data in a single table and graphic display from the MOD® is in compliance with:

Provision of Care, Treatment, and Services (PC) – Standard PC.01.02.07 –

The hospital assesses and manages the patient's pain and minimizes the risks associated with treatment.

The hospital has defined criteria to screen, assess, and reassess pain that are consistent with the patient's age, condition, and ability to understand.

The hospital involves patients in the pain management treatment planning process through the following:

- *Providing education on pain management, treatment options, and safe use of opioid and non-opioid medications when prescribed.*

The hospital reassesses and responds to the patient's pain through the following:

- *Evaluation and documentation of response(s) to pain interventions(s)*
- *Progress towards pain management goals including functional ability*
- *Side effects of treatment*
- *Risk factors for adverse events caused by the treatment*

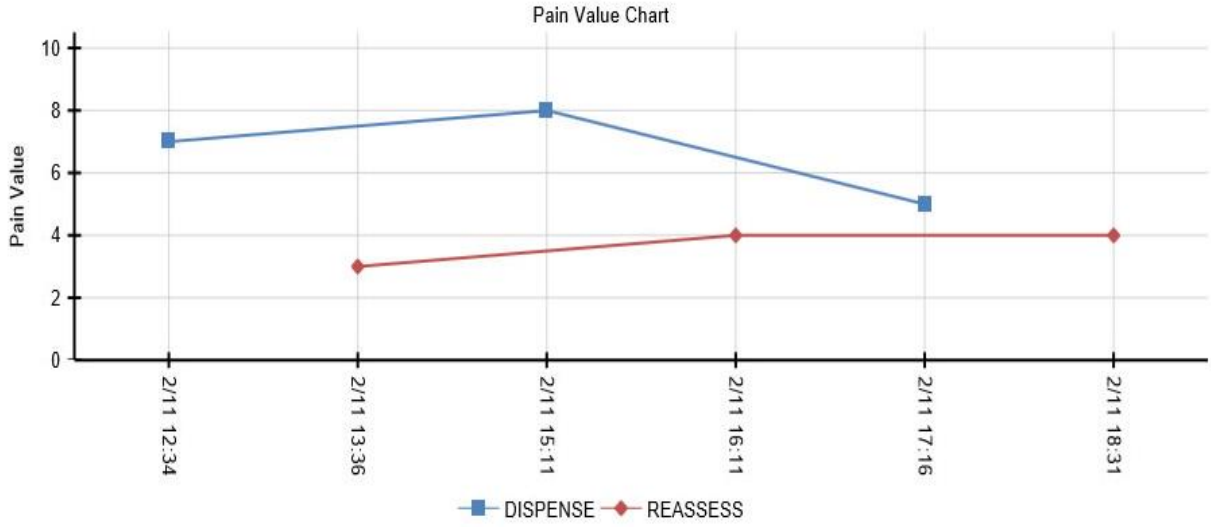
Strict patient selection and education in accordance with the MOD® protocol as part of MOD® use provides patient pain education, medication information, goals of treatment, pain scores, and reassessment data during the device use.

Shift Change Report (MOD: MOD 1017)

Patient ID: Sample,Patient

Report Run Date: 2/11/2015 6:55:28 PM

Date/Time	Event	Order ID	Drug (Dose)	Dose Start Delay	Dose Interval	Pain Value	Verifier	User Name
2/11/2015 18:31	RE	546890000	Oxycodone (5mg)			4		Sample,Patient
2/11/2015 17:16	DS	546890000	Oxycodone (5mg)			5		Sample,Patient
2/11/2015 16:11	RE	546890000	Oxycodone (5mg)			4		Sample,Patient
2/11/2015 15:11	DS	546890000	Oxycodone (5mg)			8		Sample,Patient
2/11/2015 13:36	RE	546890000	Oxycodone (5mg)			3		Sample,Patient
2/11/2015 12:34	DS	546890000	Oxycodone (5mg)			7		Sample,Patient
2/11/2015 12:32	PR	546890000	Oxycodone (5mg)	2:00	0:00		sc	avancen



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Once a patient is discharged from the device use, a **Patient Summary Report** is created with all the data accumulated during the MOD® use. This data can be viewed or printed directly from the device and it is automatically filed in the MOD® device database for all devices for later query and analysis. The patient summary report can be seen again showing the tabular and graphic display by selecting it from among the MOD® Pain Data Query System (PDQS) reports under Patient Details.

MOD® Pain Data Query System (PDQS) Reports and Applications

These reports are available for selection by clicking on the Report tab at the top of the MOD® display Dashboard. This selection will display the MOD® PDQS reports to view and use for study and data analysis. Select Run Report to view the reports available.

PDQS Reports Details and Examples

Patient Details – Access to a specific patient's data is obtained by either selecting a patient name or picking a time frame to search for the desired patient information found in the sidebar to the right of the report page.

Seen below is a sample Patient Detail Report. This report is similar to the Patient Summary Report available at the time the patient is removed from the device. The report details the entire use of the device, including pain scores recorded each time a patient removed a medication from the device, the reassessment pain scores, the number of pills remaining at the time of removal of the patient from the device, and the summary graphic display of all the pain and reassessment scores during the device use.

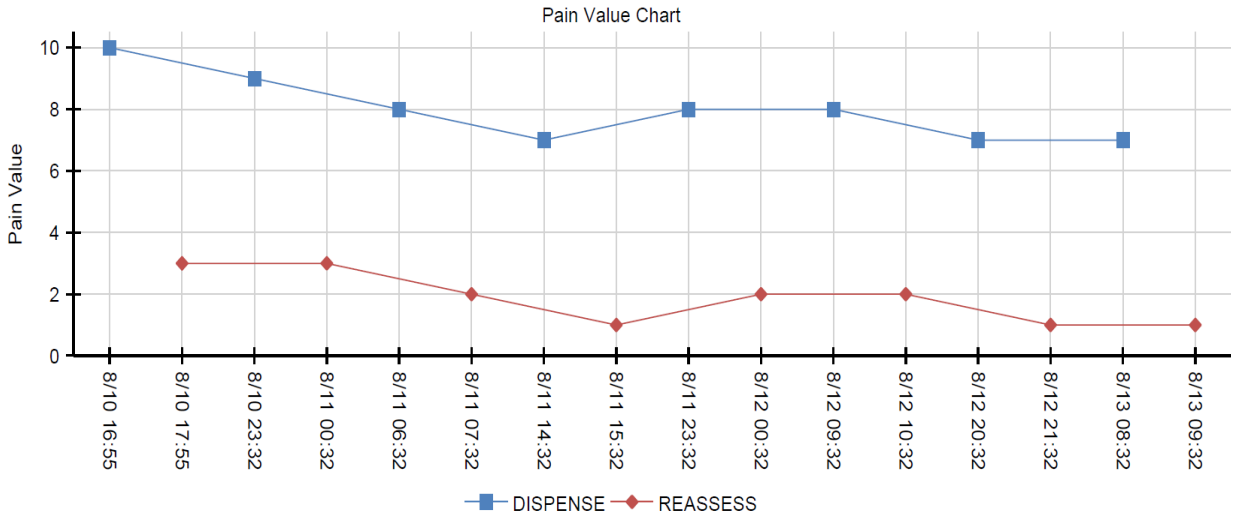
These reports provide detailed information regarding pain control throughout the patient use of the MOD® – a reflection not only of the medication provided by the device but also the effectiveness of any multimodal pain management protocol provided to this patient during the patient's device use.

Patient Detail Report (All MOD® Devices)

Patient Info: Patient, Test3 (F), DOB:2010/08/11, BED:FA049:F016:01

Report Run Date: 10/9/2017 4:11:34 PM

Date/Time	Event	Order ID	Medication	Dose Start Delay	Dose Interval	Pain Value	Verifier	User Name
8/13/2017 10:39	RP	117726	*Wasted 0 Pills*				Nurse3	Nurse1
8/13/2017 09:32	RE	117726	Reassessment			1		Nurse1
8/13/2017 08:32	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			7		Nurse1
8/12/2017 21:32	RE	117726	Reassessment			1		Nurse1
8/12/2017 20:32	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			7		Nurse1
8/12/2017 10:32	RE	117726	Reassessment			2		Nurse1
8/12/2017 09:32	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			8		Nurse1
8/12/2017 00:32	RE	117726	Reassessment			2		Nurse1
8/11/2017 23:32	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			8		Nurse1
8/11/2017 15:32	RE	117726	Reassessment			1		Nurse1
8/11/2017 14:32	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			7		Nurse1
8/11/2017 07:32	RE	117726	Reassessment			2		Nurse1
8/11/2017 06:32	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			8		Nurse1
8/11/2017 00:32	RE	117726	Reassessment			3		Nurse1
8/10/2017 23:32	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			9		Nurse1
8/10/2017 18:32	***DN***	***117726***	***OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T***					***Nurse1***
8/10/2017 17:55	RE	117726	Reassessment			3		Nurse1
8/10/2017 16:55	DS	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T			10		Nurse1
8/10/2017 12:55	AP	117726	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T	0:00	4:00		Nurse3	Nurse1



Report Summary / Event Key					
Dispenses (DS):	8	Reassess (RE):	8	Add Patient (AP):	1
Dispense Now (DN):	1	Modify/Reloads (MR):	0	Remove Patient (RP):	1

Utilization – This section has two areas for viewing:

Utilization by Nurse: This data lists the nurse identifiers and the number of patients these nurses have programmed as new patients. The Utilization by Nurse is a useful tool to discover which nurses are primarily programming patients for MOD® use as new patients to the device during a selected time period. It can be useful, in particular, when a device is being adopted into a unit to monitor nurse utilization of the device.

Patient Pain Info: The Patient Pain Info section identifies all patients who have used MOD® devices over a selected period of time. The time interval of interest can be selected in the area found to the right of the report screen. The data summary for each patient listed includes the drug used, total number of pills dispensed, and the overall average pain scores during the device use. At the bottom of the chart is a summary of the total pills dispensed over that time frame and global averages.

Above the Patient Pain Info chart is a series of icons that enables either printing the data or exporting the Patient Detail data to an Excel file for sorting and analysis for a variety of parameters.

This valuable data can be sorted and studied to answer many potential questions that may be posed regarding pain management in a facility's unit with patient's using MOD® devices. Examples of this application could be:

- Comparison of selected patients undergoing the same surgical procedure in one unit deploying different combinations of pain medications in the multimodality pain regimen with the same medication used in the MOD®. The question to answer here would be which overall pain regimen provides the best pain control from patient pain score data.

- Comparison between two different geographical surgical units or the same unit in which two different surgical approaches are deployed to achieve the same outcome, e.g., total hip arthroplasty using using different surgical methods. The question here would be which surgical approach results in better post-operative pain management or whether the two are equivalent regarding patient pain reports.
- Comparison between patients following the same surgical procedure but different MOD® medications for pain management, e.g., one group receiving oxycodone and another group receiving oral tramadol delivered from their MOD® devices with otherwise the same multimodal pain medications. The question here would be whether one group is reporting better or equivalent pain control.
- Additional bolus doses may be given from the MOD® device shown as Dispense Now (DN) or rescue doses for pain needing further medication. This data would also be useful comparing different medications in use in devices to discover which patient group requires more bolus doses of medication for pain management.
- Other important questions regarding pain management using MOD® accumulated data can be addressed. The ability to easily explore valuable collected pain data in one location from different patient groups provides many options to select and sort data as required in the JC Standard Compliance Performance Improvement.

Joint Commission Standard Compliance – PI.01.01.01 and PI.02.01.01

The ability to select and sort data from multiple patients will enable a pain team or patient unit to meet the following Joint Commission Standards

Performance Improvement (PI)

PI.01.01.01 The hospital collects data on pain assessment and pain management including types of interventions and effectiveness.

PI.02.01.01 The hospital compiles and analyzes data.

The hospital analyzes data collected on pain assessment and pain management to identify areas that need change to increase safety and quality for patients.

The hospital monitors the use of opioids to determine if they are being used safely (for example, the tracking of adverse events, such as such as respiratory depression, naloxone use, and the duration and dose of opioid prescriptions).

The mention of adverse events such as respiratory depression and naloxone use are key safety features to track with any patients receiving opioids either parenteral or oral. Of note is the Avancen white paper entitled, “The MOD® Experience after 4,000 Patients,” which reports NO naloxone use or respiratory depression reported in the first 4,000 patients to use MOD® devices. This patient number is now approaching 5,000 with still no respiratory depression or naloxone use in MOD® patients using oral opioids. See www.avancen.com for all MOD® white papers.

View the Utilization and Patient Pain Info sample reports below.

MOD® Utilization Report

Period: 1/1/2017 to 10/20/2017

Report Run Date: 10/20/2017 11:36:29 AM

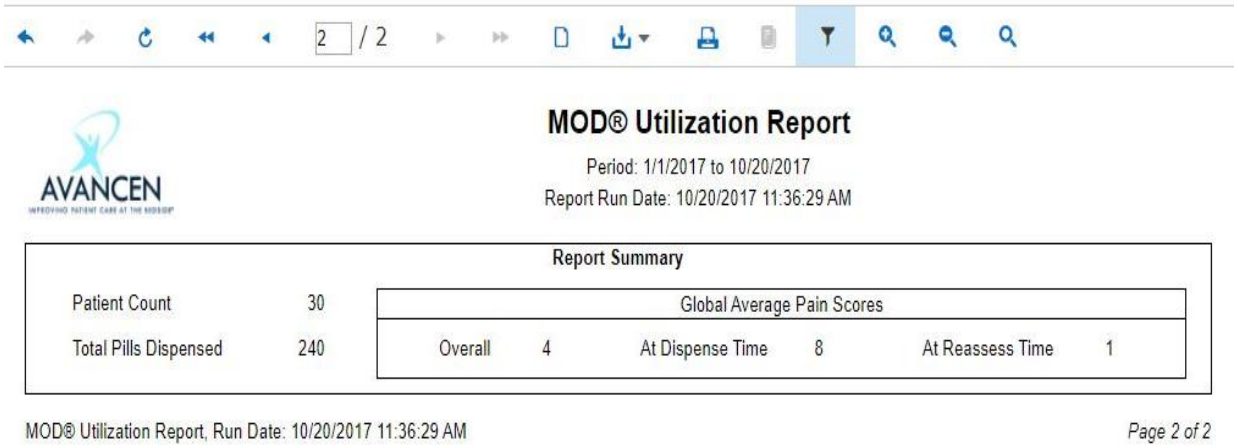
Utilization by Nurse

Name	Total Patients Programmed By Nurse
Nurse1	8
Nurse4	4
Nurse5	3
Nurse6	3
Nurse7	3
Nurse2	3
Nurse0	3
Nurse3	2
Nurse8	2
CMillsap	1

Patient Pain Info

--- NOTE: Active patients excluded --- Avg Pain Values: (Visit) : (At Dispense) : (At Reasess)

Patient	MRN	DOB	Room/Bed	Drug	Pills	Avg Pain	Period	Nurse
Patient, Test12 (F)	458264	1948/12/05	FA089:F016:01	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T	8	4 : 8 : 1	8/8/2017 : 8/12/2017	Nurse7
Patient, Test15 (M)	945695	1961/12/24	FA066:F056:01	ACETAMINOPHEN-OXYCODONE 325 MG-5 MG TABLET	8	4 : 8 : 1	8/8/2017 : 8/13/2017	Nurse0
Patient, Test20 (F)	251751	2000/07/21	FA093:F053:01	oxycodone-acetaminophen (PERCOCET) tab 5-325 mg	8	4 : 8 : 1	8/8/2017 : 8/10/2017	Nurse1
Patient, Test23 (M)	332970	2002/06/22	FA099:F029:01	OxyCODONE--Acetaminophen (5mg-325mg) 5mg/325mg T	8	4 : 8 : 1	8/8/2017 : 8/12/2017	Nurse0
Patient, Test25 (F)	705470	2013/09/27	FA030:F074:01	oxycodone-acetaminophen (PERCOCET) tab 5-325 mg	8	4 : 8 : 1	8/8/2017 : 8/12/2017	Nurse2
Patient, Test27 (F)	248716	1974/04/28	FA00:F057:01	oxycodone-acetaminophen (PERCOCET) tab 5-325 mg	8	4 : 8 : 1	8/9/2017 : 8/11/2017	Nurse1
Patient, Test29 (F)	206931	1998/01/18	FA086:F055:01	ACETAMINOPHEN-OXYCODONE 325 MG-5 MG TABLET	8	4 : 8 : 1	8/9/2017 : 8/11/2017	Nurse5
Patient, Test13 (M)	497316	2013/09/01	FA071:F090:01	ibuprofen (MOTRIN) 800 mg	8	4 : 8 : 1	8/9/2017 : 8/13/2017	Nurse5



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MOD® Utilization Report

Period: 1/1/2017 to 10/20/2017

Report Run Date: 10/20/2017 11:36:29 AM

Report Summary

		Global Average Pain Scores					
Patient Count	30	Overall	4	At Dispense Time	8	At Reassess Time	1
Total Pills Dispensed	240						

MOD® Utilization Report, Run Date: 10/20/2017 11:36:29 AM

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Clinician Details Report – This data shows in two bar graph images and a table summary format the first and last 24 hours of patient pain medication information for any patient selected in the list to the right of the chart. The upper bar graph image shows the average dose interval (ADI) in hours during the first 24 hours of MOD® use and the last 24 hours of use. The last 24 hours of use is determined by counting back over the last 24 hours from the time of the data request.

In short-stay patients, for example those using devices only up to 48 hours, the request for data the last 24 hours may overlap with the first 24 hours depending upon the request time for information. However, the intent is still to reflect how the patient may be weaning off the MOD® pain medication as pain improves. This is frequently done without the patient realizing the process themselves since the green ready light comes on after each medication administration lockout interval in hours has passed.

For example, after a two-hour lockout interval, the green ready light will come on and remain on as long as necessary until the next dose is requested and taken. In the example shown below the average dispense interval in hours, the first 24 hours is 5 hours and the last dispense time average is 9 hours during the last 24 hours of use. This indicates that the patient took medication more frequently in the first 24 hours than in the last 24 hours.

The lower bar graph shows the number of dispenses (i.e., tabs used) in the first 24 hours and the number used in the last 24 hours. In this case, five tabs of pain medication were taken in the first 24 hours and three tabs in the last 24 hours.

Correct Prescription Data for Discharge – This data can be used to determine the best prescription for the patient at the time of discharge without overprescribing opioid medication. In this example, if the patient was taking 5 mg oxycodone tabs from the MOD® the last 24 hours prior to discharge only every nine hours, a prescription could be written for oxycodone 5 mg every eight hours as needed for five days only, i.e., 15 tabs only would likely be entirely sufficient for the patient discharge prescription with further instructions to wean off to either acetaminophen or a nonsteroidal medication over-the-

counter medication during that time to continue on a nonopioid after completing the oxycodone medication.

The lower graphic chart is a summary of the patient pain data during the entire MOD® use for a rapid snapshot for the clinician to gauge how the patient's pain should be improving during the hospital stay.

Joint Commission Standard Compliance – PI.02.01.01

Performance Improvement

Standard PI.02.01.01 Elements of Performance – The hospital monitors the use of opioids to determine if they are being used safely (for example, the tracking of adverse events such as respiratory depression, naloxone adverse events, such as respiratory depression, naloxone use, ***and the duration and dose of opioid prescriptions****.* The clinician report provides data to inform the discharging medical team regarding the most appropriate discharge prescription for minimal but adequate pain medication that will diminish the risk of addiction induction from discharge medication.

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IMPROVING PATIENT CARE AT THE BEDSIDE®

MOD® Clinician Report

Report Run Date: 10/18/2017 1:49:24 PM

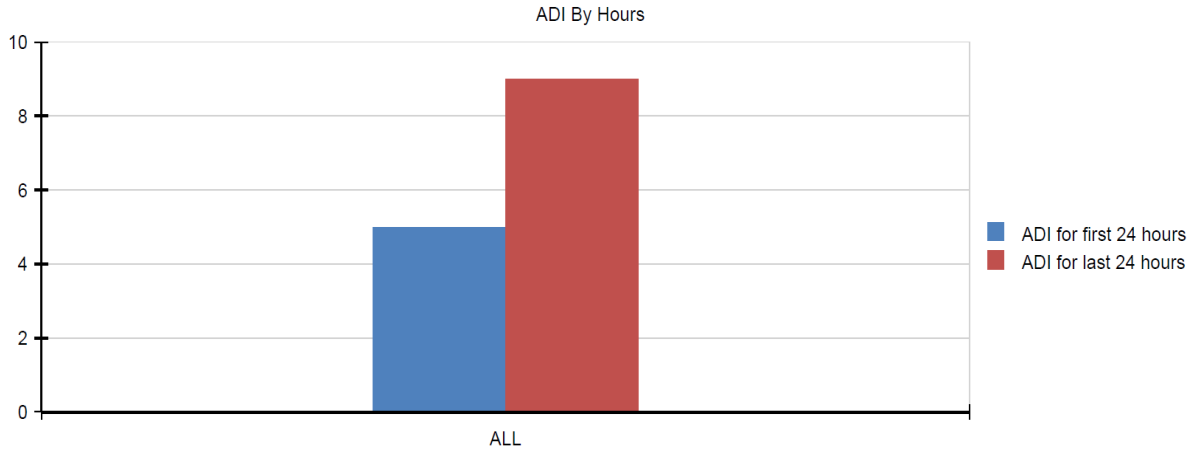
Patient, Test16 (F), DOB:1948/05/16, BED:FA04:F030:01

Report Definitions

ADI First: Average dispense interval in hours for medication taken by patient in the first 24 hours.

ADI Last: Average dispense interval in hours for medication taken by patient in the last 24 hours.

Dispenses In First 24 Hours	Dispenses In Last 24 Hours	ADI First	ADI Last	Period Of Use
5	3	5	9	8/14/2017 : 8/16/2017

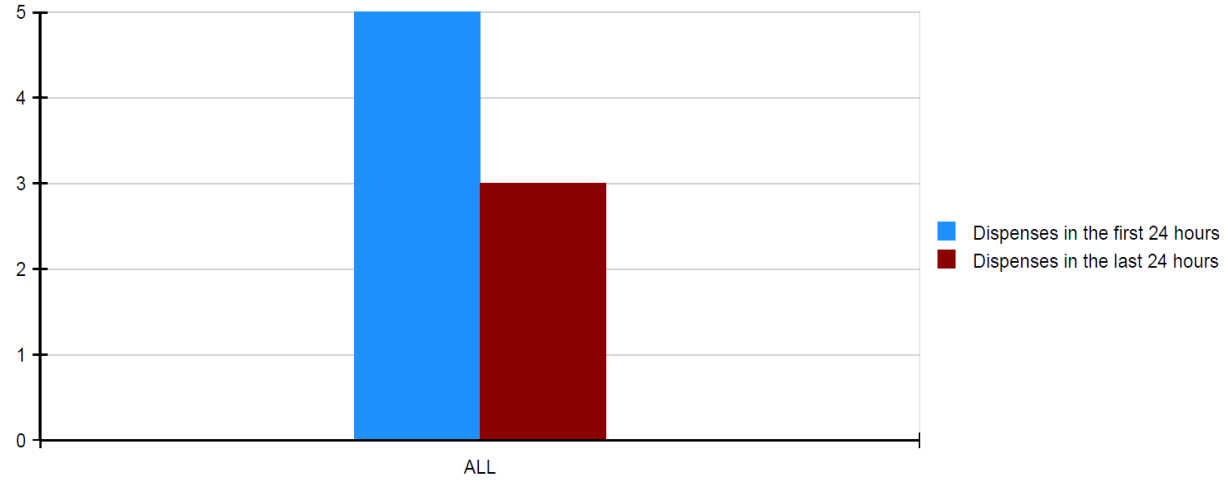


MOD® Clinician Report

Report Run Date: 10/18/2017 1:49:24 PM

Patient, Test16 (F), DOB:1948/05/16, BED:FA04:F030:01

Dispenses By Patient For First and Last 24 Hours

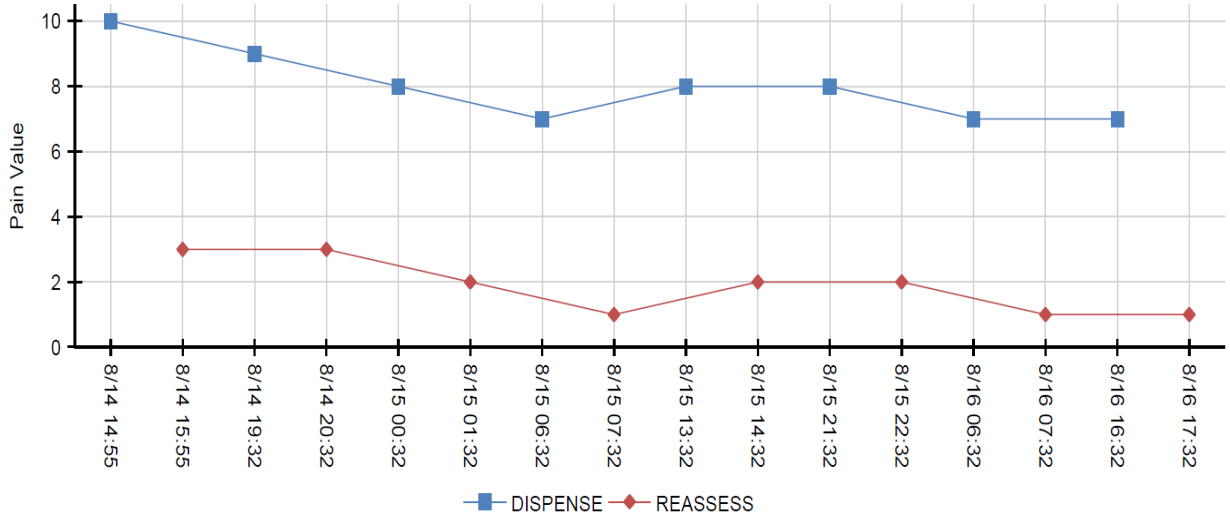


MOD® Clinician Report

Report Run Date: 10/18/2017 1:49:24 PM

Patient, Test16 (F), DOB:1948/05/16, BED:FA04:F030:01

Pain Value Chart



Pharmacy Reports – Pharmacy is tasked with tracking the inventory of medication use and disposal from devices of both controlled and non-controlled substances. They also follow staff utilization of devices for any suggestions of medication diversion.

Shown below is a snapshot of a pharmacy report sample. The pharmacy can source this data from specific time points to update the inventory databases. The nursing data is useful to track the most frequent nursing staff involved in medication disposal. This report is similar to other commercial pharmacy reports reporting staff frequency of opioid dispensing.

Three nursing charts may be viewed,

- The primary nurse responsible for programming the patient removal from the device or a tray reload, in which case some pills may need to be wasted and recorded. This is noted by the chart Wasted Medications by Nurse.
- Nurse-Verifier frequency is shown as events in which the same nurse and nurse verifier are noted when handling any medication exposed in the medication tray. Very high frequency of the same nurse and verifier may require a notification to the nurse manager of the unit regarding any possible concern for diversion.
- Verifier frequency notes those staff more consistently used to verify medication handling. A very high frequency may require a notification to the nurse manager of the unit regarding any concern for diversion.

Wasted Medications

- This data can be requested for all medications used in MOD® devices. With a formulary limited to only one medication, this data is all that is necessary to track medication use and disposal data.
- Data can also be requested by the medication itself – for example, in a unit using MOD® devices containing either ibuprofen or oxycodone, the pharmacist would want to see the inventory of these two drugs separately, in which case this can be requested from the database to the right of the chart display.

AVANCEN
IMPROVING PATIENT CARE AT THE BEDSIDE®

MOD® Pharmacy Report

Period: 8/8/2017 to 9/7/2017
Report Run Date: 9/7/2017 8:09:50 AM

Wasted Medications by Nurse (-- All --)			
Nurse	Pills Wasted at Discharge	Pills Wasted at Reload	Total Pills Wasted
Nurse4	26	0	26
Nurse1	26	0	26
Nurse7	14	0	14
Nurse6	12	0	12
Nurse5	9	0	9
Nurse8	7	0	7
Nurse0	6	0	6
Nurse3	4	0	4
Nurse2	4	0	4
Totals	**108**	**0**	**108**

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IMPROVING PATIENT CARE AT THE BEDSIDE

MOD® Pharmacy Report

Period: 8/8/2017 to 9/7/2017
Report Run Date: 9/7/2017 8:09:50 AM

Nurse - Verifier Frequency		
Nurse	Verifier	Frequency
Nurse1	Nurse2	6
Nurse0	Nurse0	4
Nurse4	Nurse4	4
Nurse4	Nurse1	4
Nurse8	Nurse5	4
Nurse7	Nurse6	4
Nurse1	Nurse6	2
Nurse5	Nurse6	2
Nurse5	Nurse1	2
Nurse7	Nurse4	2
Nurse1	Nurse5	2
Nurse2	Nurse5	2
Nurse3	Nurse5	2
Nurse1	Nurse0	2
Nurse2	Nurse0	2
Nurse3	Nurse0	2
Nurse6	Nurse0	2
Nurse5	Nurse2	2
Nurse1	Nurse3	2
Nurse6	Nurse3	2
Nurse0	Nurse4	2
Nurse1	Nurse4	2
Nurse2	Nurse4	2
CMillsap	Jackie Chile	1

The PDQS reports are in addition to the real time reports available during each patient's MOD® use.

Any facility that adopts devices with data integrated into the EHR can request some customization of the PDQS reports for that particular facility or patient groups. The unique aspect of these reports is the ability to view comprehensive pain data on one screen for each patient during the inpatient stay and after discharge to be reviewed in comparison with other patient databases. It is important to remember that for those patients using MOD® devices the collected pain data reflects the entire pain regimen in use for that patient. This realization further amplifies the value of this data for better pain management in today's acute care facilities.