



## PICK UP QUICK TIPS ON...using Morphine Milligram Equivalents (MME) to signal opioid risk

Calculate **MORPHINE MILLIGRAM EQUIVALENTS (MME)** before prescribing; the risk of respiratory depression and overdose increases as the MME per day (MME/D) increases. (MME is a mathematical conversion that standardizes risk evaluation of the different opioids.)

QUICK **tip**  
SC

SCRIPTS calculates  
MME for you

## QUICK FACTS TO CONSIDER

- Overdose is the **#1 cause of accidental death** in the US.
- In SC, **more overdose deaths come from prescribed opioids** than from the street drugs heroin, cocaine, and methamphetamine combined!
- As many as **1 in 4 people may struggle with addiction when receiving prescription opioids long term** for non-cancer pain in primary care settings.
- **Risk of long-term opioid use can start within days**, even as early as 5 days.

## GUIDELINES AND CLINICAL VALIDATION

50  
MME/D

More recent guidelines have lowered the cautionary opioid dose threshold and suggest levels ranging from 50 – 120 MME/day. Opioid overdose risk increases in a dose response manner. Doses **≥ 50 total MME/day** increase overdose risk by at least two times the risk of doses **< 20 total MME/day**, and the risk continues to grow with increasing total MME/day values.

90  
MME/D

When the total MME/day **reaches 50**, the CDC recommends careful reassessment of benefits and risks, and caution at **90 or above** without “careful justification”.

### Guideline recommendations to address opioid doses ≥ 50 MME/day include considerations such as:

Increasing the frequency of follow-up visits to more closely monitor and assess the benefits and risks of taking opioids

Discussing dose reduction or tapering and discontinuing opioids if benefits do not outweigh harms

Considering consultation with a pain specialist

Considering co-prescribing naloxone (overdose reversal agent)

## SELECTED GUIDELINES AT A GLANCE

GUIDELINE	MME/D	RECOMMENDATION
<a href="#">VA/DoD Clinical Practice Guideline for Opioid Therapy for Chronic Pain - 2017</a>	> 90 MME/day	Evaluate for tapering to reduced dose or to discontinuation
<a href="#">CDC Guidelines For Prescribing Opioids In Chronic Pain - 2016</a>	≥ 50 MME/day	Carefully reassess evidence of individual benefits and risks and whether opioid treatment is meeting the patient’s treatment goals Implement additional precautions (e.g., increased frequency of follow-up)
	≥ 90 MME/day	Avoid doses ≥ 90 MME/day Carefully justify on individualized assessment of benefits and risks and weighing factors Consider consulting with pain specialist
<a href="#">Washington State Opioid Guidelines - 2015</a>	≥ 120 MME/day	Consult a trained pain specialist; recognize there is no completely safe opioid dose
<a href="#">South Carolina Board of Medical Examiners, Board of Dentistry, and Board of Nursing - 2014</a>	≥ 80 MME/day for more than 3 continuous months	Reestablish informed consent Review the patient’s functional status, including daily activities, analgesia, aberrant behaviors, and adverse effects Consult SCRIPTS to verify compliance; re-establish office visit intervals Review frequency of drug screens; review and execute a new treatment agreement

# MME (MORPHINE MILLIGRAM EQUIVALENTS) CAUTIONS

**Terminology can be confusing** because MME is expressed in different ways in major guidelines and common resources. Some terms are per dose and some are per day. Examples include: morphine equivalent dose (MED), morphine equivalent daily dose (MEDD), morphine equivalent per day, morphine daily equivalents, and morphine milligram equivalents per day (MME/D).

**DO NOT USE the calculated MME dose to convert from one opioid to another.**

To convert from one opioid to another, the website <http://www.globalrph.com/narcoticonv.htm> can be helpful because it accounts for cross-tolerance. The newly prescribed opioid should be started at a lower dose to minimize unintentional overdose caused by incomplete cross-tolerance and accommodate for individual differences in the absorption, distribution, metabolism, and excretion of opioids. Consult medication labels if conversion is a consideration.

## INTERPRETING MME IN SCRIPTS TO HELP ASSESS OPIOID RISK

A SCRIPTS report will now display:

- **Active Daily MME** – MME per day of ALL current opioid prescriptions added together
- **MME/D** – MME per day for EACH individual opioid prescription filled (current and past)

A SCRIPTS report calculates MME per day for each patient prescription (Rx) using a common denominator, MME (Morphine Milligram Equivalents), so that the different Rxs can be added together (Active Daily MME) to help assess cumulative risk in addition to assessing the risk associated with a single opioid Rx.

*Important disclaimer: All SCRIPTS patient records included in the report requests need to be reviewed by the prescriber before assessing prescription data. Reports are based on the search criteria entered and data submissions from the dispenser. DHEC does not warrant any report to be accurate or complete. MME values calculated for buprenorphine Rxs to treat addiction typically calculate very high and are not useful to help evaluate opioid risk thresholds for pain.*

**Patient Report** [Refine Search](#)

Report Prepared: 02/02/2017 Date Range: 02/02/2016–02/02/2017

▼ **Test Patient**

**Linked Records**

Name	DOB	ID	Gender	Address
TEST PATIENT	01/01/1900	1	unknown	555 FAKE DR COLUMBIA SC 29230

**Report Criteria**

First Name	Last Name	DOB
Test	Patient	01/01/1900

**Summary**    Prescriptions:6    Prescribers:3    Pharmacies:3    Private Pay:0    **Active Daily MME: 75**

▼ **Prescriptions**

Per CDC guidance, the conversion factors and associated daily morphine milligram equivalents for drugs prescribed as part of medication-assisted treatment for opioid use disorder should not be used to benchmark against dosage thresholds meant for opioids prescribed for pain.

Filled	ID	Written	Drug	QTY	Days	Prescriber	Rx #	Pharmacy *	Refills	MME/D	Pymt Type	PMP
02/02/2017	1	02/01/2017	OXYCODONE-ACETAMINOPHEN 5-325	60.0	30	DA TES	4455	Dave' (0000)	0	15.0	Comm Ins	SC
01/26/2017	1	01/26/2017	OXYCODONE HCL 20 MG TABLET	60.0	30	AL TES	3344	Carol (8506)	0	60.0	Comm Ins	SC
12/26/2016	1	12/26/2016	OXYCODONE HCL 20 MG TABLET	60.0	30	AL TES	2233	Carol (8506)	0	60.0	Comm Ins	SC
11/26/2016	1	11/26/2016	OXYCONTIN 80 MG TABLET	60.0	30	CA TES	1122	Carol (5555)	0	240.0	Comm Ins	SC

The **Active Daily MME** in the Summary is the cumulative sum total of ALL current/active opioid prescriptions – it is the medication theoretically on hand for a virtual pill count the date the report was prepared (e.g., Active Daily MME in this report is **75**)

**MME/D** is the MME per day for each individual prescription (e.g., MME/D for active prescriptions on the first two rows are **15** for OXYCODONE-ACETAMINOPHEN 5-325 plus **60** for OXYCODONE HCL 20 mg. Add these two numbers together to equal **75** Active Daily MME which is reported in the SUMMARY row at the top of the report.)

# CALCULATING MME...

## ...BY HAND

Opioid	Conversion Factor
Codeine	0.15
Hydrocodone	1
Hydromorphone	4
Morphine	1
Oxycodone	1.5
Oxymorphone	3

- 1] Multiply the dose by how many times per day the patient takes it to get the Total Daily Dose.
- 2] Multiply the Total Daily Dose by the appropriate conversion factor (listed in table at left) to get the MME/day.
- 3] If patient has multiple opioid prescriptions, complete Steps 1 and 2 for each prescription then add the numbers together to get the total cumulative MME/day.

## ...WITH ONLINE CALCULATOR OR APP

Bookmark on your computer or mobile device for quick access



[www.agencymeddirectors.wa.gov/Calculator/DoseCalculator.htm](http://www.agencymeddirectors.wa.gov/Calculator/DoseCalculator.htm)



[www.cdc.gov/drugoverdose/prescribing/app.html](http://www.cdc.gov/drugoverdose/prescribing/app.html)

## ...WITH OPIOID PRODUCTS: CHARACTERISTICS AND CONVERSION FACTORS CHART

Brand/Generic Name	Strengths	Morphine Milligram Equivalent Conversion Factor <sup>1</sup>	Dosage Form <sup>2</sup>	Dose Interval	Alcohol Dose Dumping Effect <sup>3</sup>	Abuse-Deterrent Formulation <sup>4</sup>	Scored	Amount of Medication Equal to 50 Morphine Milligram Equivalents (MME) <sup>5</sup>
<b>Oxycodone Hydrochloride/Acetaminophen (APAP) Products</b>								
Oxycodone/APAP	2.5/325 mg, 5/325 mg, 7.5/325 mg, 10/325 mg	1.5	IR tablet	4-6 hours	-	-	5/325 mg	33 mg PO oxycodone = 50 MME
Endocet®, Percocet®	2.5/325 mg, 5/325 mg, 7.5/325 mg, 10/325 mg				-	-	5/325 mg	
Primlev™	5/300 mg, 7.5/300 mg, 10/300 mg				-	-	5/300 mg	
Xartemis™ XR	7.5/325 mg		ER tablet	8-12 hours	-	-	-	
Oxycodone/APAP	5/325 mg per 5 mL		solution	4-6 hours	-	-	-	

To calculate MME/day for an individual Rx, **multiply** opioid dosage unit strength **times** the total number of dosage units per day **times** the appropriate MME Conversion Factor.

Example:

Rx: Oxycodone-APAP 5-325 TID

5 **times** 3 (doses/day) **times** 1.5 = 22.5 MME/day

These values help to quickly eyeball commonly known risk threshold levels.

Example: 33 mg PO oxycodone = 50 MME

Multiply each value **times 2** to get dosage equal to 100 MME.

Example:

66 mg PO oxycodone (33 mg x 2) = 100 MME (50 MME x 2)

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*This information is intended to assist primary care providers in the management of chronic non-cancer pain in adults in a primary care setting. This information is advisory only and is not intended to replace sound clinical judgment nor should it be regarded as a substitute for individualized diagnosis and treatment. Special considerations are needed when treating some populations with certain conditions (such as respiratory/sleep disorders; cardiac; liver and renal impairment; addiction; and pregnancy/breast-feeding).*