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Potential Pitfalls in the Use of an Internet Search to Obtain Information Regarding Oxycodone/Morphine Dose Conversion

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Objective

- Describe potential pitfalls of utilizing the internet to provide medication information to prescribing clinicians regarding the conversion of one opioid ingredient to another.



Problem

- Phone Call
- Patient post-op
- Treatment handed off to PCP
- Currently receiving oxycodone
- MD wants to switch to morphine

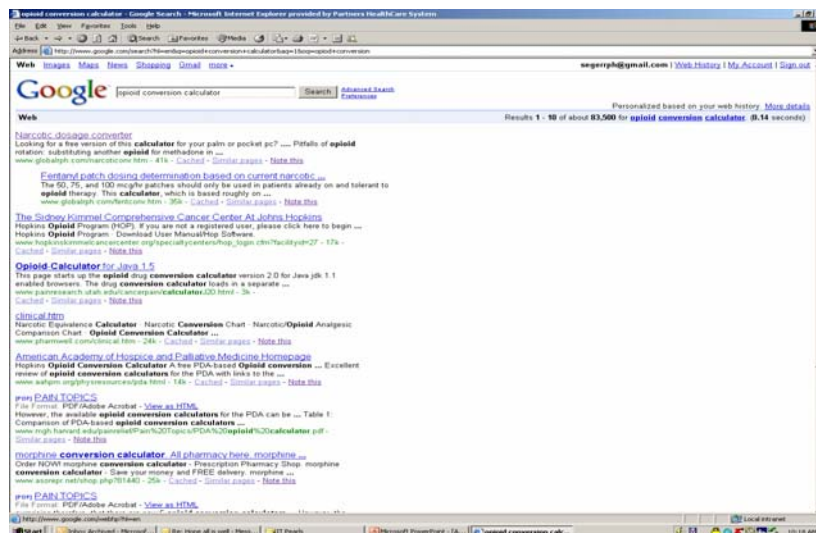


What to do?

- Current drug administration guidelines (DAG)
- Internet search by MD
- Look at results



Internet search



1st Try

Narcotic analgesic converter
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Converting from
Step 1: Oxycodone (Dura)
Step 2: Enter total daily dose: 20 mg
Reduction for incomplete cross tolerance: 0 %
(Usual range: 25 - 75% reduction)

Converting to
Step 3: Morphine (Dura)
Calculate equivalent dose

Based on your selections above, here is the result:
Equivalent dose for opiate selected in Step 3 above: 30.00 mg
Reduction for incomplete cross tolerance: 0 %

(Note: If morphine was chosen, the conversion factor used was for chronic dosing only. Ideally, we recommend our desk-top program for much greater control over these conversions.)

Warning: Beware of the importance of incomplete cross-tolerance of equianalgesic conversions

Please review the importance of correcting for incomplete cross-tolerance. Equianalgesic conversions should not be considered a simple straightforward calculation. Significant 'inter/intra' patient variability exists depending on the selected opiate, dosage level, and expected response.

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2nd Try

Narcotic Equivalence Converter

Narcotic	Route	Dose	Duration
Select a drug: Oxycodone (Oxy-Contin)	PO	20 mg	4-6 hours
Convert to: Morphine	PO	240 mg	4-6 hours

Calculate Reset Form

Adapted from: Tessier, Plouffe Pharmacopoeia

DISCLAIMER: All calculations should be confirmed before use. The authors make no claims of the accuracy of the information contained herein, and these suggested doses are not a substitute for clinical judgement. Neither medlab.com nor any other party involved in the preparation or publication of this site shall be liable for any special, consequential, or exemplary damages resulting in whole or in part from any user's use of or reliance upon this material.

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3rd Try

The screenshot shows a web browser window displaying the 'End of Life Online Curriculum - Modules' page. The main content area is titled 'Opioid Conversion Tutorial' and is at 'STEP 2'. A calculation box asks the user to calculate the conversion of 20 mg of Oral Oxycodone per day to Oral Morphine, given that Oral Oxycodone is 1.5 times as strong as Oral Morphine. The user has entered '1.5' in the answer field, which is marked as 'Incorrect'. A 'Try Again' button is visible below the calculation box. The page includes a sidebar with navigation links and a footer with the Brigham and Women's Hospital logo.

3rd Try Part 2

This screenshot is identical to the one above, but the calculation box now shows the correct answer. The user has entered '13.33' in the answer field, which is marked as 'Correct'. A 'Go to Step 3' button is visible below the calculation box. The rest of the page content, including the sidebar and footer, remains the same.

To be fair

End of Life Online Curriculum - Modules

Pain Control: Opioid Conversion

Opioid Equivalency Table

Drug	Oral/Rectal Route	Parenteral Route	Conversion Ratio to Oral Morphine	Equianalgesic Dose of Oral Morphine
Morphine sulfate	30mg Oral morphine	10mg of parenteral morphine	Parenteral morphine is 3 times as potent as oral morphine	30mg Oral morphine
Oxycodone	20mg of oral oxycodone	n/a	Oral Oxycodone is roughly 1.5 times more potent than oral morphine	30mg Oral morphine
Hydrocodone	20mg of oral hydrocodone	n/a	Oral hydrocodone is roughly 1.5 times more potent than oral morphine	30mg Oral morphine
Hydromorphone	7mg of oral hydromorphone	1.5mg of parenteral hydromorphone	Oral hydromorphone is about 4-7 times as potent as oral morphine	30mg Oral morphine
Fentanyl	n/a	15 micrograms/hr	Parenteral hydromorphone is 20 times as potent as oral morphine Transdermal fentanyl approximately 100 times as potent as morphine	30mg Oral morphine
Meperidine	300mg of oral meperidine	75mg of parenteral meperidine	Oral Morphine is about 10 times more potent than oral meperidine and about one time more potent as parenteral meperidine (mg for mg)	30mg Oral morphine

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Charts

Opioid Equianalgesic Doses

Drug	PO/PR (mg)	SQ/IV (mg)	Conversion from oral transmucosal fentanyl citrate (OTFC) to fentanyl buccal tablet (Fbtab)
Morphine	30	10	Current OTFC (Aging) Dose / Initial Dose of Fenters (in micrograms)
Oxycodone	20	n/a	
Hydrocodone	20	n/a	200
Hydromorphone	7.5	1.5	100
Meperidine	See page 11 for conversion		600
Fentanyl	n/a	0.1 (i.e. 100 mcg)	800
Oxymorphone	10	1	1200
			400

EQUIANALGESIC CONVERSION EXAMPLE

A patient is on sustained release (SR) oxycodone 40 mg po q8h and oxycodone 15 mg three 5 mg tablets po q3-4h prn for breakthrough pain. The patient's pain has been well controlled on this regimen, as only one rescue dose of 15 mg has been required for breakthrough pain. Oral administration has become contraindicated in this patient, and you wish to convert the pain management regimen to a continuous IV infusion of morphine.

STEP I: Calculate the patient's total daily opioid requirement.
 Total daily dose of oxycodone from SR oxycodone = 40 mg x 3 doses = 120 mg
 Total daily dose of oxycodone from three, 5 mg oxycodone tablets = 15 mg
 120 mg oxycodone + 15 mg oxycodone = 135 mg oxycodone/day

STEP II: Convert the daily requirement of the old opioid to that of the new opioid.
 20 mg of oral oxycodone = 10 mg of IV morphine
 $\frac{20 \text{ mg po oxycodone}}{10 \text{ mg IV morphine}} = \frac{135 \text{ mg po oxycodone}}{X \text{ mg IV morphine}}$
 $X = 67.5 \text{ mg IV morphine/day}$
 i.e., 67.5 mg IV morphine/day is equianalgesic to 135 mg po oxycodone/day
 Reduce dose by 25% for incomplete cross tolerance = 50 mg IV morphine/day

STEP III: 50 mg/day = 24 hours/day = 2 mg of morphine/hour

Dose Conversion Table for Selected Opioids

Hydromorphone (mg/day)	Morphine (mg/day)		Fentanyl transdermal patch (mcg/hr)	Oxycodone (mg/day)
	IV/IM	PO		
2.5	12.5	17	25	30
5	25	33	50	60

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Conclusions

- Calculators are convenient to convert morphine/oxycodone
- Available on the internet and possibly locally
- Caution must be exercised, read carefully and as always....

