

Pain Test

Specimen No: SAMPLE000.0-A09
Physician: Ima Test

DOB: 01/01/2000
Sex: FEMALE

Sample Collection: Dec. 16, 2021 20:00 EST
Sample Analysis: Dec. 18, 2021 11:49 EST

MEDICATION	DOSAGE FREQUENCY	RESULT	DDI*	INDICATION
IN THE MEDICAL RECORD:				
BUPRENORPHINE Subutex	8 mg			Central nervous system agents / Analgesics
NALOXONE Narcan	40 mg/ml			Central nervous system agents / Other CNS drugs
NOT IN THE MEDICAL RECORD:				
ARIPIPIRAZOLE Abilify	Not in medical record			Psychotherapeutic agents / Antipsychotics
ATOMOXETINE Strattera	Not in medical record			Central nervous system agents / CNS stimulants
FLUOXETINE Prozac	Not in medical record			Psychotherapeutic agents / Antidepressants
OXYMORPHONE Opana	Not in medical record			Central nervous system agents / Analgesics

Result:

-  Above minimum reference value
-  Below minimum reference value*

*Drug-Drug Interaction (DDI): See details on the following pages.

-  Major - The use of these medications together is contraindicated. Rare exceptions may exist.
-  Moderate - The use of these medications together may be contraindicated in a select group of patients. The patient should be monitored for possible manifestations of the interaction.

A medication may be below our reference value in the sample due to various reasons including time between last dose and sample collection, non-adherence, taking only as needed, and/or rapid metabolism.

MEDICATIONS NOT IN ASSAY:

LITHIUM (300 MG)

Medical record transcription accuracy is the responsibility of the ordering physician

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Interaction Details

NALOXONE / ARIPIPRAZOLE: **MAJOR**

Evidence Level Established

Description

The metabolism of Aripiprazole can be decreased when combined with Naloxone. The subject drug is a strong CYP3A4 inhibitor and the affected drug is metabolized by CYP3A4. Concomitant administration will decrease the metabolism of the affected drug, increasing serum concentrations, as well as the risk and severity of adverse effects.

Management

The combination is contraindicated. If no alternatives can be found, adjust doses according to instructions on the label and monitor the patient carefully.

References

Zhou SF: Drugs behave as substrates, inhibitors and inducers of human cytochrome P450 3A4. *Curr Drug Metab.* 2008 May;9(4):310-22. :: Lynch T, Price A: The effect of cytochrome P450 metabolism on drug response, interactions, and adverse effects. *Am Fam Physician.* 2007 Aug 1;76(3):391-6. :: Klein K, Zanger UM: Pharmacogenomics of Cytochrome P450 3A4: Recent Progress Toward the "Missing Heritability" Problem. *Front Genet.* 2013 Feb 25;4:12. doi: 10.3389/fgene.2013.00012. eCollection 2013.

NALOXONE / OXYMORPHONE: **MAJOR**

Evidence Level Established

Description

The metabolism of Oxymorphone can be decreased when combined with Naloxone. The subject drug is a strong CYP3A4 inhibitor and the affected drug is metabolized by CYP3A4. Concomitant administration will decrease the metabolism of the affected drug, increasing serum concentrations, as well as the risk and severity of adverse effects.

Management

The combination is contraindicated. If no alternatives can be found, adjust doses according to instructions on the label and monitor the patient carefully.

References

Zhou SF: Drugs behave as substrates, inhibitors and inducers of human cytochrome P450 3A4. *Curr Drug Metab.* 2008 May;9(4):310-22. :: Lynch T, Price A: The effect of cytochrome P450 metabolism on drug response, interactions, and adverse effects. *Am Fam Physician.* 2007 Aug 1;76(3):391-6. :: Klein K, Zanger UM: Pharmacogenomics of Cytochrome P450 3A4: Recent Progress Toward the "Missing Heritability" Problem. *Front Genet.* 2013 Feb 25;4:12. doi: 10.3389/fgene.2013.00012. eCollection 2013.

FLUOXETINE / BUPRENORPHINE: **MODERATE**

Evidence Level Established

Description

Fluoxetine may increase the central nervous system depressant (CNS depressant) activities of Buprenorphine. Buprenorphine is a central nervous system depressant. Administering other drugs within the central nervous system (CNS) depressant class of drugs may potentiate these effects. Significant respiratory depression and death have been reported in association with buprenorphine, especially when taken by the intravenous (IV) route in combination with other CNS depressants.

Management

According to the FDA label, consider reduced doses of other CNS depressants, and avoid such drugs in patients at high risk of buprenorphine overuse/self-injection. Initiate buprenorphine patches (Butrans brand) at 5 mcg/hr when used with other CNS depressants. Monitor closely for signs of CNS depression.

References

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FLUOXETINE / ARIPIPRAZOLE: **MODERATE**

Evidence Level Established

Description

The serum concentration of Aripiprazole can be increased when it is combined with Fluoxetine. Co-administration of fluoxetine with a CYP2D6 substrate may lead to increased serum concentrations of the CYP2D6 substrate since fluoxetine is a known CYP2D6 enzyme inhibitor.[A203270,L7664]

Management

References

Sager JE, Lutz JD, Foti RS, Davis C, Kunze KL, Isoherranen N: Fluoxetine- and norfluoxetine-mediated complex drug-drug interactions: in vitro to in vivo correlation of effects on CYP2D6, CYP2C19, and CYP3A4. Clin Pharmacol Ther. 2014 Jun;95(6):653-62. doi: 10.1038/clpt.2014.50. Epub 2014 Feb 25.

FLUOXETINE / ATOMOXETINE: **MODERATE**

Evidence Level Established

Description

The metabolism of Atomoxetine can be decreased when combined with Fluoxetine. The subject drug is a CYP2D6 inhibitor and atomoxetine is metabolized by CYP2D6. Concomitant administration will reduce the metabolism of atomoxetine, increasing serum concentrations, as well as the risk and severity of adverse effects.

Management

Initiate atomoxetine at a reduced dose of 0.5mg/kg/day in adults <70kg or 40mg/day in adults ≥70kg.

References

Michelson D, Read HA, Ruff DD, Witcher J, Zhang S, McCracken J: CYP2D6 and clinical response to atomoxetine in children and adolescents with ADHD. J Am Acad Child Adolesc Psychiatry. 2007 Feb;46(2):242-51. doi: 10.1097/01.chi.0000246056.83791.b6. :: Sauer JM, Ring BJ, Witcher JW: Clinical pharmacokinetics of atomoxetine. Clin Pharmacokinet. 2005;44(6):571-90. doi: 10.2165/00003088-200544060-00002.

FLUOXETINE / OXYMORPHONE: **MODERATE**

Evidence Level Established

Description

The serum concentration of Oxymorphone can be increased when it is combined with Fluoxetine. Co-administration of fluoxetine with a CYP2D6 substrate may lead to increased serum concentrations of the CYP2D6 substrate since fluoxetine is a known CYP2D6 enzyme inhibitor.[A203270,L7664]

Management

References

Sager JE, Lutz JD, Foti RS, Davis C, Kunze KL, Isoherranen N: Fluoxetine- and norfluoxetine-mediated complex drug-drug interactions: in vitro to in vivo correlation of effects on CYP2D6, CYP2C19, and CYP3A4. Clin Pharmacol Ther. 2014 Jun;95(6):653-62. doi: 10.1038/clpt.2014.50. Epub 2014 Feb 25.

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ATOMOXETINE / BUPRENORPHINE: MODERATE

Evidence Level Established

Description

The metabolism of Atomoxetine can be decreased when combined with Buprenorphine. The subject drug is a CYP2D6 inhibitor and atomoxetine is metabolized by CYP2D6. Concomitant administration will reduce the metabolism of atomoxetine, increasing serum concentrations, as well as the risk and severity of adverse effects.

Management

Initiate atomoxetine at a reduced dose of 0.5mg/kg/day in adults <70kg or 40mg/day in adults ≥70kg.

References

Michelson D, Read HA, Ruff DD, Witcher J, Zhang S, McCracken J: CYP2D6 and clinical response to atomoxetine in children and adolescents with ADHD. J Am Acad Child Adolesc Psychiatry. 2007 Feb;46(2):242-51. doi: 10.1097/01.chi.0000246056.83791.b6. :: Sauer JM, Ring BJ, Witcher JW: Clinical pharmacokinetics of atomoxetine. Clin Pharmacokinet. 2005;44(6):571-90. doi: 10.2165/00003088-200544060-00002.



OXYMORPHONE / BUPRENORPHINE: MODERATE

Evidence Level Established

Description

Oxymorphone may increase the central nervous system depressant (CNS depressant) activities of Buprenorphine. Buprenorphine is a central nervous system depressant. Administering other drugs within the central nervous system (CNS) depressant class of drugs may potentiate these effects. Significant respiratory depression and death have been reported in association with buprenorphine, especially when taken by the intravenous (IV) route in combination with other CNS depressants.

Management

According to the FDA label, consider reduced doses of other CNS depressants, and avoid such drugs in patients at high risk of buprenorphine overuse/self-injection. Initiate buprenorphine patches (Butrans brand) at 5 mcg/hr when used with other CNS depressants. Monitor closely for signs of CNS depression.

References



OXYMORPHONE / ARIPIPRAZOLE: MODERATE

Evidence Level Established

Description

The risk or severity of adverse effects can be increased when Aripiprazole is combined with Oxymorphone. Concurrent administration of these agents can lead to various adverse events, including constipation, urinary retention, paralytic ileus, and sedation.[L10343] These symptoms result from the combined, additive adverse effects of both drugs.[A34378,A31486,A34380]

Management

Consider reducing the number/dose of anticholinergic agents and opioids used concomitantly to prevent additive effects. Closely monitor the patient and suspend the concomitant treatment if it is clinically warranted. Some combinations may be contraindicated. Consult individual product monographs for detailed dosing guidance/management.

References

Bell JS, Mezzani C, Blacker N, LeBlanc T, Frank O, Alderman CP, Rossi S, Rowett D, Shute R: Anticholinergic and sedative medicines - prescribing considerations for people with dementia. Aust Fam Physician. 2012 Jan-Feb;41(1-2):45-9. :: Lieberman JA 3rd: Managing anticholinergic side effects. Prim Care Companion J Clin Psychiatry. 2004;6(Suppl 2):20-3. :: Benyamin R, Trescot AM, Datta S, Buenaventura R, Adlaka R, Sehgal N, Glaser SE, Vallejo R: Opioid complications and side effects. Pain Physician. 2008 Mar;11(2 Suppl):S105-20.

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ARIPIPRAZOLE / BUPRENORPHINE: **MODERATE**

Evidence Level Established

Description

Aripiprazole may increase the central nervous system depressant (CNS depressant) activities of Buprenorphine. Buprenorphine is a central nervous system depressant. Administering other drugs within the central nervous system (CNS) depressant class of drugs may potentiate these effects. Significant respiratory depression and death have been reported in association with buprenorphine, especially when taken by the intravenous (IV) route in combination with other CNS depressants.

Management

According to the FDA label, consider reduced doses of other CNS depressants, and avoid such drugs in patients at high risk of buprenorphine overuse/self-injection. Initiate buprenorphine patches (Butrans brand) at 5 mcg/hr when used with other CNS depressants. Monitor closely for signs of CNS depression.

References

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