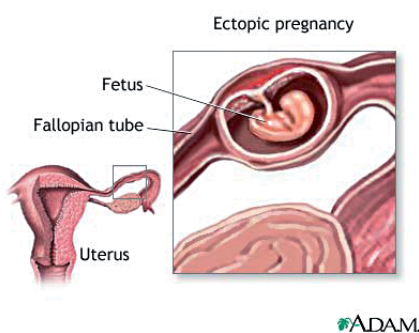


# Medication Safety

## Methotrexate errors when treating ectopic pregnancy

In this issue we present a near miss involving methotrexate, which was prescribed to treat ectopic pregnancy. Methotrexate can be an effective treatment in certain instances of ectopic pregnancy, either by ending an early ectopic pregnancy or by preventing the growth of any embryonic or fetal cells that are left behind after surgery to end an ectopic pregnancy. The drug is typically used during the first six weeks of pregnancy, when human chorionic gonadotropic levels are low and the embryo is 3.5 cm or smaller and without cardiac activity. In this case, the physician prescribed a dose of 50 mg/kg IM, or 4,250 mg. But, for ectopic pregnancy, the drug should have been prescribed at a dose of 50 mg/m<sup>2</sup>, or 150 mg. An evening-shift pharmacist received a call from an emergency department nurse who said she was faxing the order to the pharmacy for the prescribed dose of 4,250 mg. Recognising that the dose was unusually large and potentially harmful, the pharmacist called the prescriber and had the order corrected before the drug was dispensed. The overdose could have resulted in severe methotrexate toxicity or even fatality. Methotrexate may be contraindicated in patients diagnosed with

ectopic pregnancy who have significant renal disease. Two cases have been published involving severe toxicity—including bone marrow suppression, hepatotoxicity, gastrointestinal desquamation, phototoxicity, and even death—when the drug was given to women with end-stage renal disease (ESRD) who were receiving haemodialysis [1, 2]. Excretion of methotrexate is almost entirely renal.



Within 12–24 hours of a dose, 20–50% of the drug is excreted unchanged in the urine of patients with normal renal function. Thus, the amount of circulating drug in patients with compromised renal function may be significantly high. Methotrexate is not effectively removed by dialysis, and when inadvertent administration of

methotrexate occurs in a patient with ESRD, folinate-rescue (Leucovorin) may not be helpful.

The dose variation in methotrexate can be up to a factor of 100, so you need to be aware of the indication and dosing frequency or the treatment course. Therefore, appropriate warnings during order entry offer one of the best safeguards to protect patients in the event this drug is prescribed in an unsafe fashion.

### References

1. Kelly J, Harvey D, Moll S. A cautionary tale: fatal outcome of methotrexate therapy given for management of ectopic pregnancy. *Obstet Gynecol.* 2006;107(2):439–41.
2. McDonnell PJ, Jacobs MR. Hospital admissions resulting from preventable adverse drug reactions. *Ann Pharmacother.* 2003;37:303–4.

Material published with permission from ISMP.

*This column is the result of cooperation between EJHP Practice and the Institute for Safe Medication Practices (ISMP). Email ISMP at [ismpinfo@ismp.org](mailto:ismpinfo@ismp.org). ISMP is located in Horsham, PA, USA and has affiliates in Canada (ISMP Canada) and Spain (ISMP Spain).*