

# Computed Tomography (CT) Scans

The information provided is taken from various reference sources. It is provided as a guideline. No responsibility can be taken by the author or the Breastfeeding Network for the way in which the information is used. Clinical decisions remain the responsibility of medical and breastfeeding practitioners. The data presented here is intended to provide some immediate information but cannot replace input from professionals.

**Multiple national recommendations state that it is not necessary to interrupt breastfeeding following the use of after iodinated contrast media during a CT scan because of the low bio availability of the injected medium Breastfeeding can continue as normal.**

Computed tomography (CT) scanning is used commonly for diagnosis of a variety of conditions. It uses X-rays to provide cross sectional images (slices) of organs and vessels in the body. In order to obtain a CT scan patients lie in a scanner – similar to a bed inside a circular mint. The X-ray tube and the detectors are opposite to each other. Both of these rotate around the patient. ([patient.co.uk](http://patient.co.uk)).

CT scanning provides images in shades of grey - occasionally the shades are similar, making it difficult to discern between two areas. Injection of contrast medium is used to enhance the images to overcome this problem. Barium is commonly used to outline the gastrointestinal tract, and intravenous contrast containing an iodine based substance is used to outline arterial blood vessels.

## Breastfeeding after injection of contrast medium

The Royal College of Radiologists (RCR), the American College of Radiology (ACR), the European Society of Urogenital Radiology (ESUR), and The Royal Australian and New Zealand College of Radiologists (RANZR) note that the available data suggest that it is safe to continue breast-feeding after receiving intravenous contrast.

- **The Royal College of Radiologists.** Standards for intravascular contrast administration to adult patients (3<sup>rd</sup> Ed) 2015  
([https://www.rcr.ac.uk/sites/default/files/Intravasc\\_contrast\\_web.pdf?fbclid=IwAR0ffFLHcZxi209F8\\_RgGyrbRITuPOtESi4y1fYa\\_f2DU0MsPOeHSBgcaQQ](https://www.rcr.ac.uk/sites/default/files/Intravasc_contrast_web.pdf?fbclid=IwAR0ffFLHcZxi209F8_RgGyrbRITuPOtESi4y1fYa_f2DU0MsPOeHSBgcaQQ)) . Page 9

*“Lactation: a very small percentage of the injected dose enters the breastmilk and virtually none is absorbed across the normal gut, hence no special precautions or cessation of breastfeeding is required. (Laskey) ”*

- **The Royal Australian and New Zealand College of Radiologists (RANZR) 2018 (page 24)**

*“2.10 Breast Feeding Recommendations R29. Cessation of breast feeding or expression and discarding of breast milk after iodinated contrast media administration are not required. [References cited Bettman, Tremblay, Wang, Kubik-Huch]”*

- **The American College of Radiology (ACR) [www.acr.org/Quality-Safety/Resources/Contrast-Manual](http://www.acr.org/Quality-Safety/Resources/Contrast-Manual)** (Breastfeeding and iodinated contrast page 101) states that Iodinated X-ray Contrast Media (Ionic and Nonionic):

To talk to a mum who knows about breastfeeding call the National Breastfeeding Helpline 0300 100 0212

Calls to 0300 numbers cost no more than calls to UK numbers starting 01 and 02 and will be part of any inclusive minutes that apply to your provider and call package.

*“The plasma half-life of intravenously administered iodinated contrast medium is approximately 2 hours, with nearly 100% of the media cleared from the bloodstream in patients with normal renal function within 24 hours. Because of its low lipid solubility, less than 1% of the administered maternal dose of iodinated contrast medium is excreted into the breast milk in the first 24 hours [Bettman, Webb]. In addition, less than 1% of the contrast medium ingested by the infant is absorbed from its gastrointestinal tract [Trembley]. Therefore, the expected systemic dose absorbed by the infant from the breast milk is less than 0.01% of the intravascular dose given to the mother. This amount represents less than 1% of the recommended dose for an infant being prescribed iodinated contrast material related to an imaging study (usually 1.5 to 2 mL/kg). The potential risks to the infant include direct toxicity and allergic sensitization or reaction, which are theoretical concerns but have not been reported.*

### **Recommendation**

*Because of the very small percentage of iodinated contrast medium that is excreted into the breast milk and absorbed by the infant’s gut, we believe that the available data suggest that it is safe for the mother and infant to continue breast-feeding after receiving such an agent.*

*Ultimately, an informed decision to temporarily stop breast-feeding should be left up to the mother after these facts are communicated. If the mother remains concerned about any potential ill effects to the infant, she may abstain from breast-feeding from the time of contrast administration for a period of 12 to 24 hours. There is no value to stop breast-feeding beyond 24 hours. The mother should be told to express and discard breast milk from both breasts during that period. In anticipation of this, she may wish to use a breast pump to obtain milk before the contrast-enhanced study to feed the infant during the 24-hour period following the examination.”*

**The European Society of Urogenital Radiology (ESUR) 2018.**

[http://www.esur.org/fileadmin/content/2019/ESUR\\_Guidelines\\_10.0\\_Final\\_Version.pdf](http://www.esur.org/fileadmin/content/2019/ESUR_Guidelines_10.0_Final_Version.pdf)

*“Lactation: Breast feeding may be continued normally when iodine-based contrast media is given to the mother”*

### **Other research**

Newman (1987) comments that contrast media used for both magnetic resonance imaging and computed tomography scans are excreted into breast milk in such small quantities that there is no concern at all for nursing babies. Further that the iodine of contrast material is bonded to a carrier molecule, and the compound does not enter the milk in any noticeable amount [Nielsen 1987, Illett 1981].

The concerns of radiologists to avoid exposing any baby to any product is understandable but dismisses the needs of the mother and baby to continue breastfeeding. Expressing for 24 hours after the procedure is not without difficulty and may introduce a risk of mastitis in the mother. The use of artificial formula is not without risks and some babies refuse to feed from a bottle whether given expressed breastmilk or formula.

In trying to do no harm we may inadvertently cause harm to the breastfeeding relationship.

### **Diatrizoate**

Hale reports a study of a single patient who received 18.5 grams of iodine, diatrizoate levels were undetectable [Fitz 1982] In another woman who received 93 grams of iodine, total iodine transferred into breastmilk in the first 24 hours was 0.03% [Texier 1983]

Lactmed states that “Limited information indicates that maternal doses of diatrizoate up to 38 g (containing 18.5 grams of iodine) produce low levels in milk. In addition, because diatrizoate is poorly absorbed orally, it is not likely to reach the bloodstream of the infant or cause any adverse effects in

breastfed infants. Guidelines developed by several professional organizations state that breastfeeding need not be disrupted after a nursing mother receives a iodine-containing contrast medium. [ACR, Webb 2005, Chan 2008]

## **Iohexol**

Lactmed states that "Limited information indicates that maternal doses of iohexol up to 45.3 grams (containing 21 grams of iodine) produce low levels in milk. In addition, because iohexol is poorly absorbed orally, it is not likely to reach the bloodstream of the infant or cause any adverse effects in breastfed infants. Guidelines developed by several professional organizations state that breastfeeding need not be disrupted after a nursing mother receives an iodine-containing contrast medium. [ACR, Webb 2005, Chan 2008]

Hale states that as a group, radiocontrast agents are virtually unabsorbed after oral administration (<0.1%). Iohexol has a brief half-life of just two hours, and the estimated dose ingested by the infant is only 0.5% of the radiocontrast dose used clinically for various scanning procedures in infants. Although most company package inserts suggest that an infant be removed from the breast for 24 hours, no untoward effects have been reported with these products in breastfed infants. Because the amount of iohexol transferred into milk is so small, breastfeeding is acceptable after intravenously administered iohexol.

## **Conclusion by ACR**

"Review of the literature shows no evidence to suggest that oral ingestion by an infant of the tiny amount of contrast medium excreted into breast milk would cause toxic effects.... it is safe for the mother and infant to continue breast-feeding after receiving such an agent"

## **Contrast medium names**

Diatrizoate; Trade Names: Angiovist®, Cardiografin®, Cystografin®, Gastrografin®, Hypaque®, Reno-M®, Renografin®, Renografin-30®, Renografin-60®, Renografin-Dip®, Retrografin®, Sinografin®, Urovist®

Iohexol: Accupaque®, Myelo-Kit®, Omnigraf®, Omnipaque®, Omnitrast®

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- The Royal Australian and New Zealand College of Radiologists (RANZR) Iodinated Contrast Media Guideline, 2018 <https://www.ranzcr.com/college/document-library/ranzcr-iodinated-contrast-guidelines>
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