

Diagnostic Imaging Pathways - Nipple Discharge

Population Covered By The Guidance

This pathway provides guidance on the imaging of adult female patients with new onset of nipple discharge.

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Quick User Guide

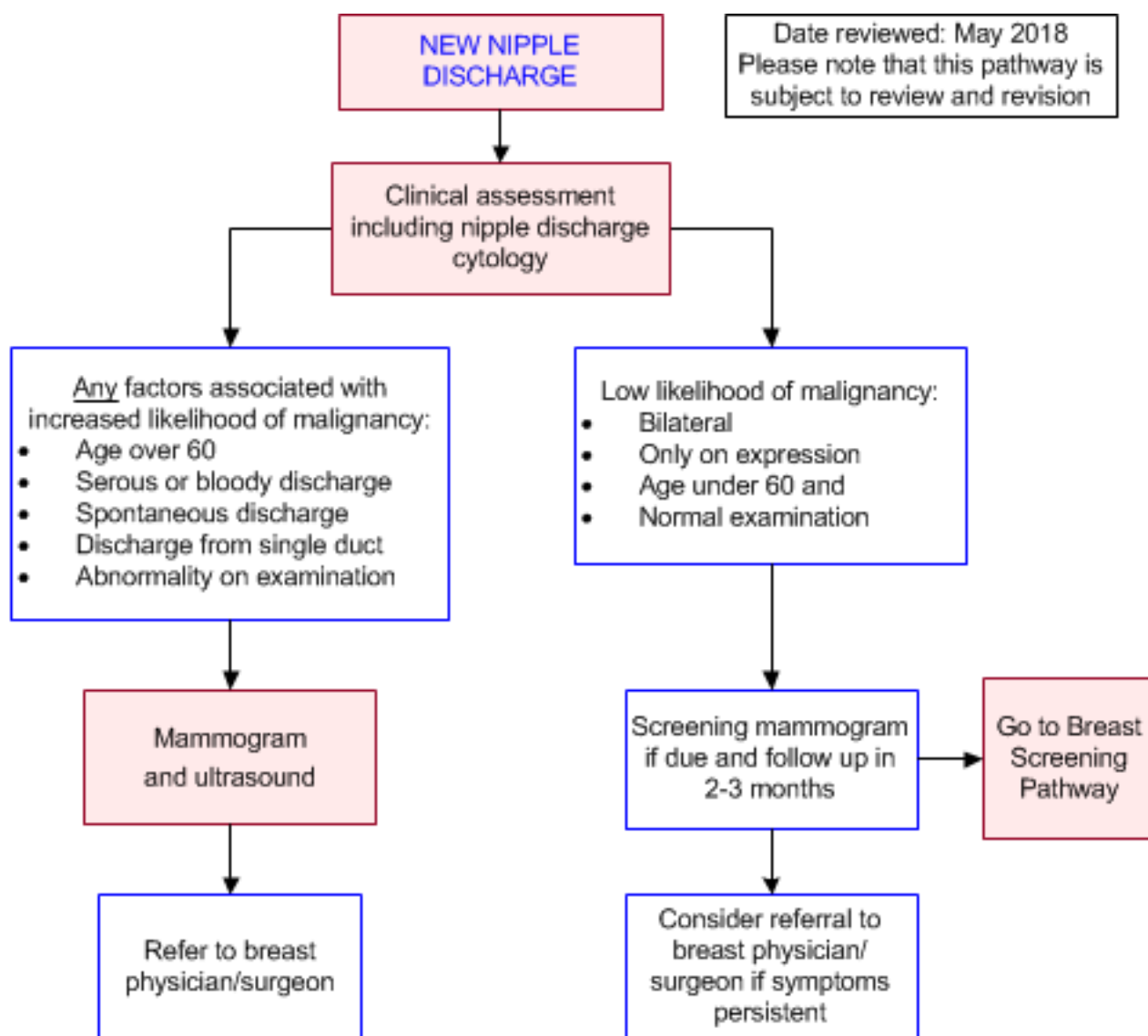
Move the mouse cursor over the **PINK** text boxes inside the flow chart to bring up a pop up box with salient points.

Clicking on the **PINK** text box will bring up the full text.

The relative radiation level (RRL) of each imaging investigation is displayed in the pop up box.

SYMBOL	RRL	EFFECTIVE DOSE RANGE
	None	0
	Minimal	< 1 millisieverts
	Low	1-5 mSv
	Medium	5-10 mSv
	High	>10 mSv

Pathway Diagram

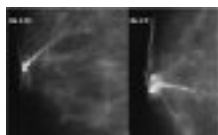


Breast MRI

Image Gallery

Note: These images open in a new page

1



Intraductal Papilloma

Image 1 (Ductography): Lateral-medial and craniocaudad magnified ductogram demonstrating the irregular filling defect (arrow) of intraductal

papilloma.

Teaching Points

- 97% of nipple discharge is caused by benign disease [1](#) but it may be the presenting complaint for malignancy
- Nipple discharge can be classified as physiological or pathological
- Physiological discharge is usually bilateral, from multiple ducts, only on expression and can be milky, green, grey, yellow or black
 - Causes include pregnancy, endocrine disorders and medications [2](#)
 - The risk of cancer is extremely low in the absence of any pathological features [3, 4](#)
 - Imaging is not recommended in this situation [1, 5-7](#) and medical work up should be done including ?-hCG to rule out pregnancy [2](#)
- The features of pathological discharge include the following:
 - Age > 60 [8, 9](#)
 - Serous or bloody discharge [10, 11](#)
 - Spontaneous discharge [1, 11](#)
 - Discharge from single duct
 - Abnormality on examination [1](#)
- These features are associated with an increased risk of malignancy and further imaging is recommended when any of these features are present [6](#)
- Malignancy occurs in 5-25% of women with pathological discharge [10, 12, 13](#)
- The most common malignancy is ductal carcinoma in-situ (DCIS)
- The most common cause of pathological discharge is papilloma. [14, 15](#) Although benign, they may harbour malignancy. [16](#) All women with nipple discharge should be assessed with the Triple Test, including examination, imaging and tissue biopsy. [6](#) The Triple Test is positive when any component is indeterminate, suspicious or malignant
- Mammography and ultrasound do not detect all lesions presenting with nipple discharge [11, 17](#) and do not reliably differentiate between malignant and benign lesions [17, 18](#)
- Discharge cytology has a high false negative rate [19](#) so it is not useful to rule out malignancy
- Surgical referral is recommended if symptoms are persistent, despite normal investigations [6](#)
- MRI may be considered by a breast specialist in limited cases where mammography and ultrasound are negative and there is persisting clinical concern
- Surgical management may be required for a definitive tissue diagnosis or treatment of the underlying pathology

References

Date of literature search: April 2018

References are graded from Level I to V according to the Oxford Centre for Evidence-Based Medicine, Levels of Evidence. [Download the document](#)

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Mammography

- Recommend as the initial investigation of pathological nipple discharge in conjunction with ultrasound [6](#)
- Although mammography is an excellent tool for evaluating breast lesions, the sensitivity is lower for women presenting with nipple discharge (20) as the associated lesions are often small, intraductal, retroareolar and non-calcified [3](#), [21-22](#) and hence, not readily demonstrated on mammography
- Mammography is useful for demonstrating microcalcifications associated with DCIS
- Where a lesion is identified on imaging, the radiologist may proceed to fine needle aspiration (FNA) or core biopsy

Ultrasound

- Recommended as the initial investigation of pathological nipple discharge in conjunction with mammography
- Detects lesions not visible on mammography in 63-69% of pathological discharge [11](#), [23](#)
- Where a lesion is identified on imaging, the radiologist may proceed to fine needle aspiration (FNA) or core biopsy
- The diagnostic accuracy of ultrasound is dependent on the expertise of the sonographer as well as the reporting radiologist

Breast MRI

- Breast MRI may be considered by a breast specialist in limited cases where the mammography and ultrasound are negative and there is persisting clinical concern
- Breast MRI is performed with gadolinium contrast – renal impairment and contrast sensitivity are contraindications
- Lesions appear as mass or non-mass enhancement in ductal or segmental distribution [5](#)
- MRI also identifies index lesions in peripheral ducts, outside the area normally encompassed by ductography or targeted US. (24) Asymptomatic lesions in the contralateral breast may also be identified [25](#)
- MRI-guided biopsy can be performed if a lesion is identified
- Where MRI and mammogram are both negative, the risk of malignancy is low at 4% and surveillance rather than surgical excision may be suitable [26](#)

Discharge Cytology

- Discharge cytology has a high false negative rate [19](#) so it is not useful to rule out malignancy but can provide useful information when cells indicative of malignancy are present

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