ASSOCIATION OF
BREAST SURGERY

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GUIDANCE AND PATHWAYS FOR THE ASSESSMENT OF CHILDREN WITH BREAST SYMPTOMS

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INTRODUCTION

The overwhelming majority of breast symptoms in children and adolescents are benign and self-limited.[1,2] Breast symptoms in children often cause anxiety and significant family distress. Around 10% of symptomatic referrals to the breast clinic are adolescents under the age of 18, of which less than 1% are under the age of 10.

Breast lumps in children present in both males and females and are most commonly changes associated with normal development and puberty. The prevalence of breast lumps in teenage girls is 3.2%.[3] In the UK no cases of breast malignancy have been reported in children under the age of 15 years.[4,5]

There are varying referral pathways in place to diagnose and treat children with breast symptoms across the UK. Children may be referred with breast symptoms to breast units that treat adults or to paediatric outpatient clinics.

The aim of this guidance is to outline the best practice for assessment of children with breast symptoms. A key component would be to provide education and advice on pathways for General Practitioners to follow for patients under the age of 18 with breast symptoms.

QUALITY CARE PATHWAY FOR CHILDREN PRESENTING WITH BREAST SYMPTOMS

Pubertal breast development is classified into five stages by Tanner:[6]

I. Preadolescent – no breast tissue
II. Breast Buds – areolar enlargement with palpable retroareolar bud development
III. Enlargement and elevation of entire breast
IV. Projection of the nipple and areola above the breast tissue
V. Mature female breasts have developed. Recession of the areola to form a smooth contour with the rest of the breast.

PRIMARY CARE

Children who present with breast symptoms will need a clinical examination to exclude other pathology e.g. Klinefelter (XXY) syndrome, precocious puberty or drug-induced breast enlargement.[1,2] (Appendix 1)

If there is suspicion of such a condition, referral should follow local recommendations to secondary care (e.g. a general paediatric clinic). If there is no evidence of other pathology, the child and the family will need re-assurance and advice on developmental physiology of the breast.

The lesions that are part of a spectrum of normal or aberrant development of the breast can be grouped in the following table [1,2,7,8]

CONDITION	DESCRIPTION	MANAGEMENT
Abnormalities of Embryogenesis	Accessory nipples (Polythelia) or supernumerary breast (Polymastia) which can occur in 1-6% of the population.	Reassurance and no referral is needed.
Premature Thelarche	Breast development in a child under the age of 7 would be considered premature thelarche.	Precocious puberty should be excluded in these children. Most cases can be managed conservatively. Referral should follow local recommendations to secondary care (e.g. a general paediatric clinic)
Asymmetrical Breast Development	Most mature women have some degree of breast asymmetry. Asymmetry may be more pronounced between Tanner stage 2 and 4, when the breast is developing, but often improves by Tanner stage 5.	Evaluate for a history of injury of the prepubertal breast (e.g., trauma, infection, surgery) and for rib cage or spinal asymmetry. Reassurance and no referral is required.
Gynaecomastia	This affects approximately 60% of adolescent males, with a mean onset between 12 and 14 years and typically lasting 6-12 months, with spontaneous regression in 90% of cases.	We advise delaying treatment in adolescents until symptoms have persisted for more than two years and providing reassurance that symptoms persist in only 10%. If pathological or drug-induced causes (Appendix 1) are considered, referral following local recommendations to secondary care (e.g. a general paediatric clinic) is advised. ***For further information in adults, please refer to ABS Gynaecomastia guidelines in the breast surgery section of the Guidance Platform.***
Mastitis and Abscess Formation	Mastitis can occur during the neonatal period or between the ages of 8-17 years old. Most adolescent mastitis is associated with skin infections, piercings or lactation.	For adolescent mastitis or abscess a course of antibiotics and referral to the breast unit would be appropriate for ultrasound.
Nipple Discharge	Nipple discharge in the absence of a palpable breast mass may be single or multiple ducts and unilateral or bilateral.	Single ductal discharge or bloody discharge warrants further investigation and referral to a breast unit would be appropriate. Milky discharge (galactorrhoea) should be referred to secondary care (e.g. a general paediatric clinic) as per local pathways. ***Please refer to ABS guidelines for nipple discharge guidelines in the breast surgery section of the Guidance Platform.***
Breast Masses	Breast masses are rare and are usually a cyst or a benign condition.	If symptoms persist or are causing distress, consideration of referral to breast clinic. See Figure 1 for management plan.

SECONDARY CARE

Children referred to the symptomatic breast clinics should undergo a thorough history and clinical examination (including pubertal status) with details to exclude developmental causes and secondary causes for breast symptoms.

Ultrasound scan is considered to be the most appropriate and most reliable diagnostic tool in the paediatric age group.[8] A core biopsy may be considered to obtain a pathological diagnosis. MRI scan is a useful modality of imaging; however its validity of use in children is not adequately proven and would need an MDT discussion on an individual basis.

Very few children will need surgery for breast lumps. Most surgical principles and treatment are extrapolated from treatment of adult patients. It is recommended in such instances the Royal College of Anaesthetists guidelines for the provision of Paediatric Anaesthesia Services 2019 are followed.[9] It is also recommended that a local policy for Paediatric Pre-operative assessment and post-operative care is developed taking care to include staff training on child protection training and education.

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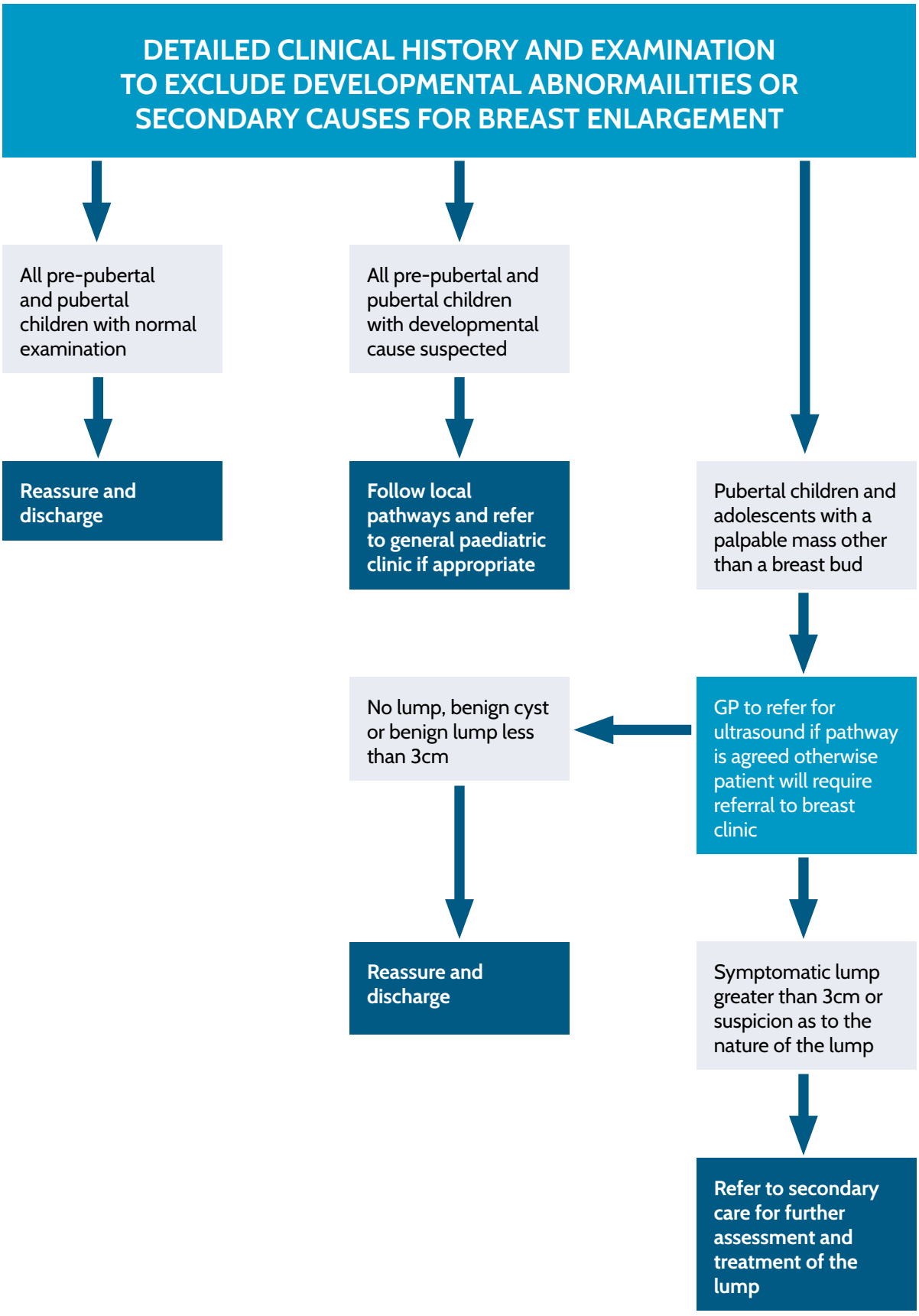
Figure 1: Pathway for Managing Children Who Present with Breast Masses in Primary Care



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APPENDIX 1: DRUG-INDUCED GYNAECOMASTIA

Adapted from Thiruchelvam P, Walker JN, Rose K, Lewis J, Al-Mufti R. Gynaecomastia. BMJ. 2016;354:i4833.

Drugs known to cause gynaecomastia

- **Antiandrogens** — bicalutamide, flutamide, finasteride, dutasteride (AA) Antihypertensive — spironolactone (AA)
- **Antiretrovirals** — protease inhibitors (saquinavir, indinavir, nelfinavir, ritonavir, lopinavir), reverse transcriptase inhibitors (stavudine, zidovudine, lamivudine) (UM)
- **Environmental exposures** — phenothrin (antiparasitical)
- **Exogenous hormones** — oestrogens (EP), prednisone (male teenagers), human chorionic gonadotrophin (E)
- **Gastrointestinal drugs** — H2 histamine receptor blockers (cimetidine) (AA), proton pump inhibitors (eg, omeprazole) (AA)
- **Analgesics** — opioid drugs (RA)
- **Antifungals** — ketoconazole (prolonged oral use) (AA)
- **Antihypertensives** — calcium channel blockers (amlodipine, diltiazem, felodipine, nifedipine, verapamil) (UM)
- **Antipsychotics (first generation)** — haloperidol (IP), olanzapine, paliperidone (high doses), risperidone (high doses), ziprasidone
- **Antiretrovirals** — efavirenz (UM)
- **Chemotherapy drugs** — methotrexate, alkylating agents — eg, cyclophosphamide, melphalan (AA); carmustine, etoposide, cytarabine, bleomycin, cisplatin (AA), vincristine (AA), procarbazine
- **Exogenous hormones** — androgens (misuse by athletes) (EP)
- **Cardiovascular drugs** — phytoestrogens (soya based products, high quantity) (EP)
- **Recreational/illicit substances** — marijuana, amphetamines (UM), heroin (UM), methadone (UM), alcohol
- **Herbals** — lavender, tea tree oil, dong quai (female ginseng), Tribulus terrestris, soy protein (300 mg/day), Urtica dioica (common nettle)

Drugs rarely causing gynaecomastia

Amiodarone (UM), aripiprazole, atorvastatin (UM), captopril (UM), cetirizine, clonidine, cyproterone acetate, dasatinib, diazepam (ISHBG), digoxin (EP), domperidone, entecavir, fenofibrate (UM), fluoxetine (UM), gabapentin, imatinib, lisinopril, loratadine, metronidazole (AA), misoprostol, paroxetine (UM), penicillamine (AA), phthalates (UM),37 pravastatin (UM), pregabalin, ranitidine (AA), rosuvastatin (UM), sulindac, sulpiride, sunitinib, theophylline (UM), venlafaxine (UM)

AA=antiandrogenic; RA=reduced androgens; E=oestrogenic; IAM=increased androgen metabolism; ISHBG=increased concentration of sex hormone binding globulin; IP=increased prolactin; UM=unknown mechanism