PTEN HAMARTOMA TUMOUR SYNDROME CLINICAL PATHWAY

*The **Patient Clinical Pathway** is "the whole care pathway from identification, diagnostics, and multidisciplinary case discussions to surveillance and preventive surgery", so indeed a pathway in time, focusing on **HOW***

Annual Review Recommended

The syndrome is characterized by hamartomatous lesions that affect multiple organs: skin, mucous membranes, thyroid, breast, gastrointestinal tract, endometrium and brain. It is also associated with an increased risk of developing malignancy in many tissues but especially breast, thyroid and endometrium.

At time of diagnosis, or possible diagnosis, ALL patients should be seen in a genetics department. Those with significant complications will be followed up as appropriate through the nationally recognized reference PHTS centre if available.
Annual review should be undertaken by a Community/District Paediatrician and GP throughout childhood, and by a GP in adulthood.
Patients, paediatricians, GPs and specialists should have telephone access to the PHTS Reference Centre for PHTS-related concerns.

PTEN hamartoma tumour syndrome Review Checklist

	WHAT TO LOOK FOR	WHEN TO REFER
SKIN	Check for symptomatic lesions, trichilemmomas, lipomas, facial acral keratosis, papillomatous papules, Mucosal lesions, penile freckling, vascular anomalies: arteriovenous malformation, venous malformation, superficial cutaneous haemangioma and melanoma.	Rapidly growing, painful or changing lesions: **REFER** to National PHTS Reference Centre or specialist sarcoma team. Lesions being removed for other reasons need referral to plastic surgeon or dermatologist
NEUROLOGICAL	Adult Lhermitte-Duclos disease (LDD) (cerebellar tumours), Autism spectrum disorders (ASD), developmental delay, Intellectual disability.	**REFER** to National PHTS Reference Centre or neurologist if increase in frequency and/or severity of headaches or onset of other symptoms.
ENDOCRINE	Multinodular Struma, hypothyroidism, hyperthyroidism, Increased insulin sensitivity and obesity.	**REFER** to endocrinologist if symptoms of glycaemic or thyroid function exist.
PREGNANCY	Pre-natal and pre-implantation testing is available but relies on pre-pregnancy genetic work up.	Women who are planning pregnancy should be **REFERRED** to clinical genetics services
ANY OTHER NEW SYMPTOMS	Consider other possible complications.	**REFER** to appropriate specialist

UNSURE? Do not hesitate to contact the PHTS team if you have any queries

The most serious consequences of PHTS in adulthood relate to the increased risk of cancers including those of the breast, thyroid, endometrium, and to a lesser extent, kidney and colon.
The most important aspect of management of any individual with a germline *PTEN* mutation is increased cancer surveillance to detect any tumours at the earliest, most treatable stages.

Cancer Surveillance for individuals with *PTEN* Hamartoma tumour syndrome (PHTS)

According to Cancer surveillance guideline for individuals with PTEN Hamartoma Tumour Syndrome (PHTS) *Authors: Prof Marc Tischkowitz, U.K., Dr. Chrystelle Colas, France, Dr Sjaak Pouwels, The Netherlands, Prof Nicoline Hoogerbrugge, The Netherlands.*

- Published online on 12 June 2020 in the European Journal for Human Genetics: https://doi.org/10.1038/s41431-020-0651-7
- complete guidelines on genturis.eu

CANCER	SURVEILLANCE METHOD	INTERVAL	FROM AGE
BREAST	MRI	Annually	30 years
	Mammography	Every 2 years	40 years
	Risk reducing surgery offered	-	-
THYROID	Ultrasound	Annually	18 years*
RENAL	Ultrasound	Every 2 years	40 years
COLORECTAL	Baseline colonoscopy	-	35-40 years
MELANOMA	Baseline skin examination**	-	30 years
ENDOMETRIAL* **	Not recommended		

It is important to have a high level of clinical suspicion due the concerning a-priori cancer risk that these patients have.
* moderate evidence for age of commencement of surveillance
** consider further surveillance as required
*** consider surveillance as part of clinical trial

PTEN hamartoma tumour syndrome Clinical Pathway

Faculty: .....

Family name:

Given name(s)

Address:

Date of Birth: Sex: ☐ M ☐ F ☐ I

Annual Review Recommended

The syndrome is characterized by hamartomatous lesions that affect multiple organs: skin, mucous membranes, thyroid, breast, gastrointestinal tract, endometrium and brain. It is also associated with an increased risk of developing malignancy in many tissues but especially breast, thyroid and endometrium.

WHEN	WHOM	REVIEWS CARRIED OUT BY
At time of (possible) diagnosis	All patients	Genetics department.
	Those with significant complications	the nationally recognized reference PHTS centre. Annual review should be undertaken by a Community/District Paediatrician and GP throughout childhood, and by a GP in adulthood.

Review Checklist

Clinical Presentation:

..... ☐

..... ☐

Other symptoms:

.....

.....

Genetic counselling completed ☐

Date Completed:

.....

Clinical diagnosis

.....

Genetic Test '+'ve ☐

Diagnosis Date:

.....

General Health Check:

Please record the follow as soon as possible and then annually:

Height

.....

Weight

.....

Blood Pressure

.....

WHAT TO LOOK FOR	WHEN TO REFER
SKIN: Check for symptomatic lesions, trichilemmomas, lipomas, facial acral keratosis, papillomatous papules, Mucosal lesions, penile freckling, vascular anomalies: arteriovenous malformation, venous malformation, superficial cutaneous haemangioma and melanoma.	Rapidly growing, painful or changing lesions: REFERRAL to National PHTS Reference Centre or specialist sarcoma team. Lesions being removed for other reasons need referral to plastic surgeon or dermatologist ☐ **Date Referred**: .....
NEUROLOGICAL: Adult Lhermitte-Duclos disease (LDD) (cerebellar tumours), Autism spectrum disorders (ASD), developmental delay; Intellectual disability.	REFER to National PHTS Reference Centre or neurologist if increase in frequency and/or severity of headaches or onset of other symptoms. ☐ **Date Referred**: .....
ENDOCRINE: Multinodular Struma, hypothyroidism, hyperthyroidism, Increased insulin sensitivity and obesity.	REFER to endocrinologist if symptoms of glycaemic or thyroid function exist. ☐ **Date Referred**: .....
PREGNANCY: Pre-natal and pre-implantation testing is available but relies on pre-pregnancy genetic work up.	Women who are planning pregnancy should be REFERRED to clinical genetics ☐ **Date Referred**: .....
ANY OTHER NEW SYMPTOMS: Consider other possible complications.	Refer to appropriate specialist ☐ **Date Referred**: .....
UNSURE? Do not hesitate to contact the PHTS team if you have any queries	

CANCER	SURVEILLANCE METHOD	INTERVAL	FROM AGE
BREAST	MRI	Annually	30 years
	Mammography	Every 2 years	40 years
	Risk reducing surgery offered	-	-
THYROID	Ultrasound	Annually	18 years*
RENAL	Ultrasound	Every 2 years	40 years
COLORECTAL	Baseline colonoscopy	-	35-40 years
MELANOMA	Baseline skin examination**	-	30 years
ENDOMETRIAL* **	Not recommended		

It is important to have a high level of clinical suspicion due the concerning a-priori cancer risk that these patients have.
* moderate evidence for age of commencement of surveillance
** consider further surveillance as required
*** consider surveillance as part of clinical trial

Notes:

.....

.....

.....

Doctor: .....

Review date: .....

Faculty: .....

www.genturis.eu