**FH Mutations**

**What you should know about FH mutations**

Individuals with an FH mutation have Hereditary Leiomyomatosis Renal Cell Cancer syndrome (HLRCC). The fumarate hydratase (FH) gene works to suppress tumors throughout the body. Changes in the gene, or mutations, can increase tumor/cancer risk. HLRCC confers an increased risk for renal (kidney) tumors, skin leiomyomata, and uterine fibroids.

**The risk for cancer associated with FH mutations**

- Approximately 76% of men and women with HLRCC have one or more specific skin findings called **cutaneous leiomyoma**. Cutaneous leiomyomas appear as skin-colored to light brown papules or nodules distributed over the trunk and extremities, and occasionally on the face. The skin lesions are sensitive to light and temperature and can be painful.
- Almost all women with HLRCC have uterine leiomyoma, also known as **uterine fibroids**. Typically these fibroids are larger, more numerous, and occur at a younger age than in the general population.
- Approximately 10-16% of men and women with HLRCC develop renal tumors. Most of these tumors are classified as **type II papillary renal cancer**. Renal tumors associated with HLRCC tend to have a high grade of malignancy (cancerous) and tend to be more aggressive.

**The risks to family members**

Mutations in the FH gene are inherited in an autosomal dominant fashion. This means that children, brothers, sisters, and parents of individuals with a FH mutation have a 50% chance of having the mutation. Individuals with a FH mutation may develop one cancer, more than one cancer, or none at all.

**Managing the cancer risks**

There are currently no formal management guidelines for individuals with FH mutations. However, the following surveillance has been suggested based on expert opinion.

**Cutaneous Leiomyomata:**
- Skin exams by a dermatologist every 1-2 years to monitor leiomyomas and evaluate for cancerous changes
- Leiomyomas may be removed surgically or with cryoablation/lasers
- Medications have been reported to reduce pain

**Uterine Fibroids:**
- Annual pelvic exam, pelvic MRI, and/or pelvic ultrasound are recommended to assess the severity of uterine fibroids and to evaluate for cancerous changes
- May be treated with gonadotropin-releasing hormone agonists, antihormonal medications, and pain relievers
- Myomectomy (remove fibroid and reconstruct uterus) is preferred surgery with hysterectomy when necessary

**Renal Tumors:**
- Baseline CT scan with contrast – questionable lesions should be followed with CT scans, PET-CT, and/or ultrasound
- If initial and first annual CT scan are normal, CT scan with contrast is recommended every two years
- Be aware of symptoms of renal cancer and report to your physician – blood in the urine, lower back pain, mass in kidney that can be felt