ALBERTA PRECISION LABORATORIES
Leaders in Laboratory Medicine

Endocrine Neoplasia Panel: Information for Ordering Providers

The endocrine disorders represented on this panel are characterized by dysfunction or tumours of one or more endocrine glands. The genes analyzed on this panel encompass several different endocrine syndromes. These syndromes are inherited in an autosomal dominant manner. The actual risk to develop gland dysfunction or an endocrine tumour is dependent upon the gene involved and the penetrance.

Individuals who carry a pathogenic variant in a tumour predisposition gene have an increased risk of developing certain endocrine tumours compared to the general population. Tumour risks depend on the gene(s) in which the variant(s) is identified. These individuals are eligible for increased screening and/or risk reducing surgeries and therapeutic interventions. In addition, results may influence treatment plans for individuals.

If a pathogenic variant is identified in one of these genes, the patient and / or their family members may be at increased risk to have a child with one of these disorders. Genetic counselling is recommended for these families.

Indications for testing

Patients presenting with familial hyperparathyroidism or features consistent with multiple endocrine neoplasia are eligible for testing.

Ordering privileges

Please refer to the APL Test Directory (http://ahsweb.ca/lab/apl-td-lab-test-directory) for specific ordering restrictions.

Endocrine Disorders NGS panel

Gene(s)	Associated cancers and/or clinical features[1,2]	Associated Hereditary Syndrome[1]
MEN1	Parathyroid tumors, pituitary tumours, gastro-entero-pancreatic (GEP) tract tumors, carcinoid tumours, adrenocortical tumours, non-endocrine tumours (i.e. facial angiofibromas, lipomas)	Multiple endocrine neoplasia, type 1
RET	Medullary thyroid carcinoma, pheochromocytoma, parathyroid adenoma or hyperplasia, mucosal neuromas of the lips and tongue, ganglioneuromatosis of the gastrointestinal tract	Multiple endocrine neoplasia, type 2 (includes MEN2A and MEN2B)
	Medullary thyroid carcinoma	Familial medullary thyroid cancer
CDKN1B	Primary hyperparathyroidism, pituitary tumours	Multiple endocrine neoplasia, type 4
PRKAR1A	Primary pigmented nodular adrenocortical disease, growth hormone-producing adenoma, testicular tumours, thyroid adenoma or carcinoma, skin pigment abnormalities, myxomas, schwannomas, gastrointestinal stromal tumors (GISTs)	Carney complex
AIP	Pituitary adenomas, including somatotropinomas, somatomammotropinomas and prolactinomas	AIP-related familial isolated pituitary adenoma
CDC73	Primary hyperparathyroidism, parathyroid carcinoma, jaw fibroma	Hyperparathyroidism-jaw-tumor syndrome
CASR	Primary hyperparathyroidism, hypocalciuric hypercalcemia, hypocalcemia	Familial hypocalciuric hypercalcemia

Associated Disorders[1,2]

Some of the genes on this panel are associated with other rare disorders including:

Hirschsprung disease is an autosomal dominant condition characterized by the complete absence of neuronal ganglion cells from a portion of the intestinal tract. Affected individuals are often diagnosed in infancy, however, some are not diagnosed until childhood or adulthood. Hirschsprung disease can occur as part of a syndrome or as an isolated condition. Pathogenic variants in *RET* are associated with both syndromic and non-syndromic presentations.

Congenital central hypoventilation syndrome (CCHS) is an autosomal dominant disorder of respiratory and autonomic regulation. The classic presentation (apparent hypoventilation, autonomic nervous system dysregulation and variable anomalies / tumors of neural crest-derived structures) is seen in newborns, but a milder later onset can present later in life. Most affected individuals have a pathogenic variant in PHOX2B, however, variants have also been reported in RET.

When can I expect results?

Results may take up to 4 months.

How are results reported?

Results are sent to the ordering provider and available in Netcare and Connect Care.

Contact Information

Genetic Counsellors, Genetics & Genomics
Calgary: 403-955-3097

Requisition forms, contact information and other resources can be found at:
http://ahsweb.ca/lab/if-lab-genetics-and-genomics

References

1. Adam MP, Ardinger HH, Pagon RA, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2018 [cited 2017 Dec]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK1116/
2. National Library of Medicine (US). Genetics Home Reference [Internet]. Bethesda (MD): The Library; 1993-2018 [cited 2017 Dec]. Available from: https://ghr.nlm.nih.gov/