Impact and sustainability of extended genetic testing panels in a high-risk breast and ovarian cancer clinic

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Parkville Familial Cancer Clinic

Merger of the Royal Melbourne FCC and the Peter Mac FCC in 2019

The Familial Cancer Centre (FCC) is a service for people that have questions and concerns about their personal and/or family history of cancer.

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Background of BOCRMC

- Since Feb 2009 breast MRI has been subsidized by Medicare for annual surveillance in women < 50 yrs who are at high risk (changed to <60 now)
- BOCRMC established August 2010 to centralise the assessment and management
- Conducted in conjunction with Gynaecological Oncology Services at the RWH
- PMCC had centralised MDM for high-risk women from 2001
- From late 2015, referral criteria were defined as a LTR of developing BC of at least 25% on BOADICEA and/or MRI eligibility as per Cancer Australia
- Provides screening CBE and discusses Risk Reducing strategies – onward referrals

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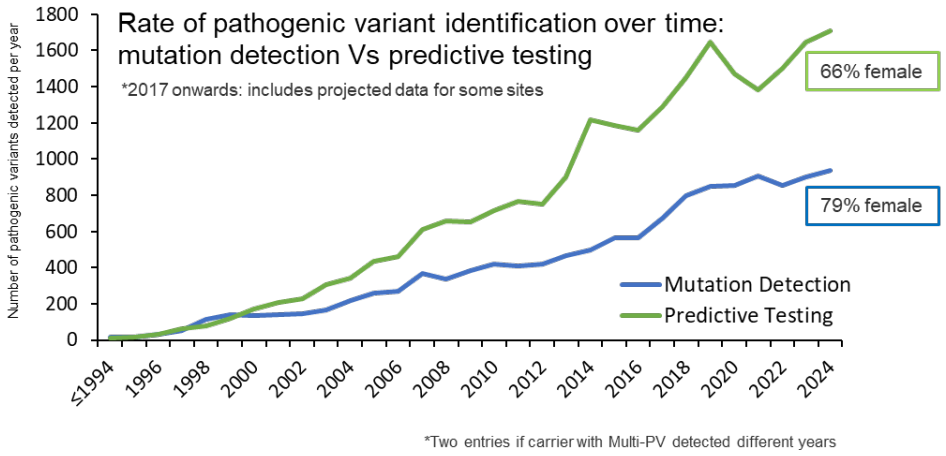
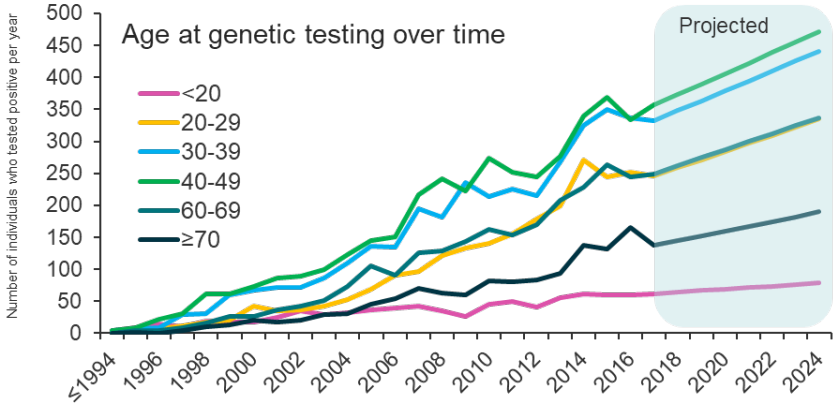
Detection of cancer predisposition in the Australian population over the past 30 years



*Two entries if carrier with Multi-PV detected different years



*Age of individual at the detection of first variant if >1 variants

FCC gene panels

PMS2 gene are tested by NGS and if a variant is detected, it is confirmed by long-range PCR and Sanger sequencing prior to reporting.

GENE PANELS	
SPECTRUM ONE (28 genes): APC, ATM, BAP1, BARD1, BMPR1A, BRCA1, BRCA2, BRIP1, CDH1, CDK4, CDKN2A, CHEK2, EPCAM, GREM1 (SCG5), MLH1, MSH2, MSH6, MUTYH, PALB2, PMS2, POLD1, POLE, PTEN, RAD51C, RAD51D, SMAD4, STK11, TP53	**RENAL** (15 genes): BAP1, FH, FLCN, MET, MLH1, MSH2, MSH6, PTEN, SDHA, SDHB, SDHC, SDHD, TSC1, TSC2, VHL
BRCA ONLY (2 genes): BRCA1, BRCA2	**PARA, PHEO & GIST** (paraganglioma, pheochromocytoma & GIST) (18 genes): EPAS1, FH, IDH1, KIF1B, KIT, MAX, MDH2, NF1, NF2, PDGFRA, RET, SDHA, SDHAF2, SDHB, SDHC, SDHD, TMEM127, VHL
BRCA PLUS (10 genes): ATM, BARD1, BRCA1, BRCA2, BRIP1, CHEK2, PALB2, RAD51C, RAD51D, TP53	**PITUITARY** (8 genes): AIP, CDKN1B, MEN1, PRKAR1A, SDHA, SDHB, SDHC, SDHD
BOPP (Breast, Ovarian, Prostate & Pancreas) (20 genes): ATM, BARD1, BRCA1, BRCA2, BRIP1, CDH1, CDKN2A, CHEK2, EPCAM, HOXB13, MLH1, MSH2, MSH6, PALB2, PMS2, PTEN, RAD51C, RAD51D, STK11, TP53	**MELANOMA** (8 genes): BAP1, BRCA2, CDK4, CDKN2A, POT1, PTEN, RB1, TP53
OVARIAN (12 genes): BRCA1, BRCA2, BRIP1, EPCAM, MLH1, MSH2, MSH6, PALB2, PMS2, RAD51C, RAD51D, TP53	**GORLIN SYNDROME** (2 genes): PTCH1, SUFU
PROSTATE (11 genes): ATM, BRCA1, BRCA2, CHEK2, HOXB13, EPCAM, MLH1, MSH2, MSH6, PMS2, TP53	**FACIAL PAPULE SYNDROME** (5 genes): FH, FLCN, PTEN, TSC1, TSC2
PANCREAS (12 genes): ATM, BRCA1, BRCA2, CDKN2A, EPCAM, MLH1, MSH2, MSH6, PALB2, PMS2, STK11, TP53	**SCHWANNOMATOSIS** (3 genes): LZTR1, NF2, SMARCB1
COLORECTAL & ENDOMETRIAL (20 genes): APC, AXIN2, BMPR1A, BUB1B, CDH1, EPCAM, GREM1 (SCG5), MLH1, MSH2, MSH6, MUTYH, NTHL1, PMS2, POLD1, POLE, PTEN, SMAD4, STK11, TP53	**SARCOMA** (5 genes): APC, EXT1, EXT2, RB1, TP53
MMR (Mismatch Repair) (7 genes): EPCAM, MLH1, MSH2, MSH6, PMS2, POLD1, POLE	**HAEM MALIGNANCY PREDISPOSITION** (10 genes): ANKRD26, CEBPA, DDX41, ETV6, GATA2, MBD4, RUNX1, SAMD9, SAMD9L, TP53
POLYPS (13 genes): APC, AXIN2, BMPR1A, BUB1B, GREM1 (SCG5), MUTYH, NTHL1, POLD1, POLE, PTEN, SMAD4, STK11, TP53	**ENDOCRINE** (8 genes): AIP, CDC73, CDKN1B, MEN1, PRKAR1A, PTEN, RET, VHL

Spectrum One = $550 **All other Cancer Predisposition panels = $450** **Add on genes = $50 per gene** (up to 5 additional genes may be added to a panel)

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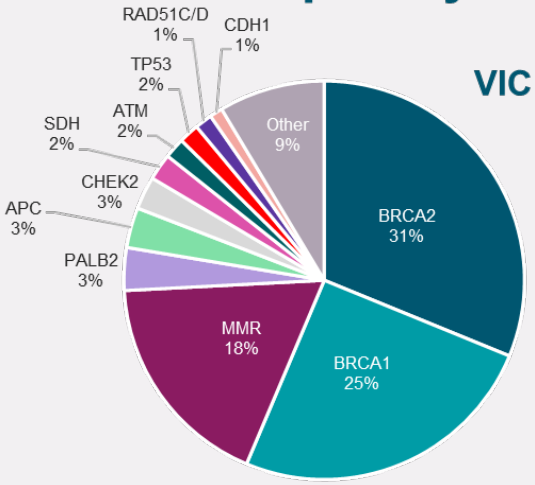
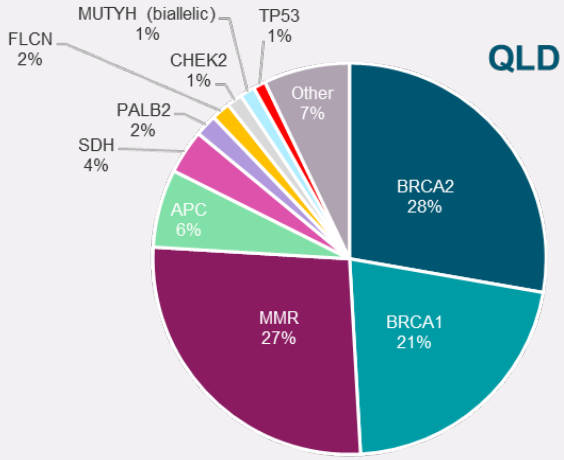
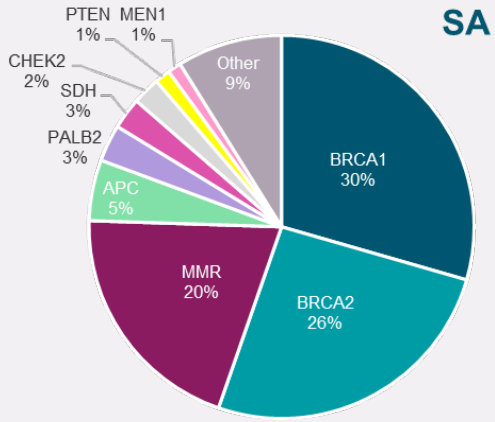
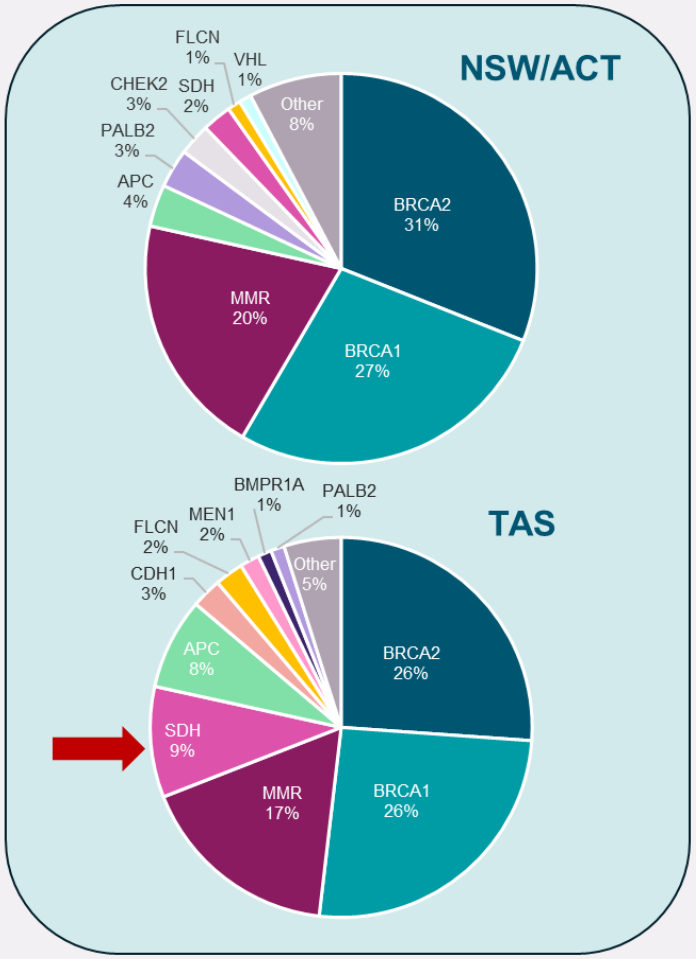
Most frequently observed genes with clinically relevant variants in each state









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Make-up of the Clinic – extra GT (mainstreaming; DNA screening; cost factor)

Gene carriers

Initial consult

Tailored advice

Referral pathways

Planning/Discussion

Support/Contact details

Rapid Access

In Person

Strong Family history – MRI eligible

- Initial Consult
- Screening
- Support/Contact details
- TH and calls
- Welcome to CanRisk
- Eugene | At-Home Genetic Tests for Pregnancy & Preventive Health – Eugene Labs

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Ethical principles

Autonomy

- Respect for the individual, their right to make informed choices, privacy, confidentiality

Beneficence

- To do good, in the best interests of the patient

Non-maleficence

- To do no harm (not to leave the patient in a worse situation than before)

Justice

- Fairness in terms of resources, equity of access

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Sustainability

Resources

Person Dependent – trying to make processes into the future

Collegial Discussion

MDM for case reviews

Creative ways of accessing Professional input

Weight of returns

EviQ updates

AI possibilities

PFCC

Referrals Parkville Familial Cancer Centre

- **Address referrals** to Dr Paul James, Parkville Familial Cancer Centre, Peter Mac/RMH
- **Send referrals to** referrals@petermac.org or RMH FCC
- **Include**
  - Name, address, date of birth, phone number and if possible, email address
  - **Family history –**
    - **age of onset,**
    - **sites of cancer**
    - **Close relatives on both sides of the family – *first and second degree***
  - If anyone in the family has seen our service previously, please provide their details

- **We will assess levels of risk and whether a genetic consultation may be useful depending on the level of information in the referral.**
- **PFCC Contact details**
  - **Ph 85595322/93427151**

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Thank you

Any questions?

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