

### Supplementary Material

#### **Supporting healthcare professionals to offer reproductive genetic carrier screening: a behaviour change theory approach**

*Stephanie Best<sup>A,B,C,D,E,\*</sup>, Janet C. Long<sup>A</sup>, Zoe Fehlberg<sup>A,B</sup>, Alison D. Archibald<sup>F,G,H</sup>, and Jeffrey Braithwaite<sup>A</sup>*

<sup>A</sup>Australian Institute of Health Innovation, Macquarie University, Sydney, NSW 2113, Australia.

<sup>B</sup>Australian Genomics, Murdoch Children's Research Institute, Melbourne, Vic. 3052, Australia.

<sup>C</sup>Peter MacCallum Cancer Centre, Melbourne, Vic. 3000, Australia.

<sup>D</sup>Victorian Comprehensive Cancer Centre Alliance, Melbourne, Vic. 3000, Australia.

<sup>E</sup>Sir Peter MacCallum Department of Oncology, University of Melbourne, Melbourne, Vic. 3000, Australia.

<sup>F</sup>Department of Paediatrics, University of Melbourne, Melbourne, Vic. 3000, Australia.

<sup>G</sup>Victorian Clinical Genetics Services, Murdoch Children's Research Institute, Melbourne, Vic. 3052, Australia.

<sup>H</sup>Genomics in Society, Murdoch Children's Research Institute, Melbourne, Vic. 3052, Australia.

\*Correspondence to: Stephanie Best Sir Peter MacCallum Department of Oncology, University of Melbourne, Melbourne, Vic. 3000, Australia Email: [stephanie.best@unimelb.edu.au](mailto:stephanie.best@unimelb.edu.au)

### Supplementary material 1: Intuitive supports identified by health care professionals

Intuitive Supports	Data source	Example
Access to interpreters	Interviews	<i>I think that [language] would be a barrier but I would still tell them to come and see me and sit down at the computer and translate it for them with the translator.</i>
Translated resources for patients	Survey + Interviews	Translated material for non English speaking women/couples
Resources that contain visual explanations of reproductive genetic carrier screening for patients	Survey + Interviews	More visual displays for patients to refer to e.g. infographics
A short video to show patients explaining reproductive genetic carrier screening	Survey + Interviews	A short video etc to email to patient to go over screening so they have seen it in advance of my appointment
Printed information sheet to give to patients	Survey + Interviews	Written fact sheet to provide patients
A comprehensive website to direct patients for information	Survey + Interviews	A national website for patients
Receiving a regular newsletter	Survey	Regular and clear updates
Script to follow when introducing discussion around reproductive genetic carrier screening	Survey	good 'dummies guide' script for offering genetic counselling at level expected of a GP
Picture/story-based waiting room posters	Survey + Interviews	<i>It [the poster] would have been more useful had it told a story</i>
Accessible information on <i>all</i> genetic conditions screened	Survey + Interviews	A good handout on the range of diseases screened for in the extended panel.
Accessible information on <i>common</i> genetic conditions screened	Survey + Interviews	A summary I can refer to of the common genetic disorders in order to explain to patients
Information on clear referral pathways for ongoing care	Survey	I would like to have more clarity around pathways and access should there be a finding in the screening process (particularly around wait times and public options).
Information on other preconception or antenatal genetic tests	Interviews	<i>There are times that we got mixed up with screening. So, this is genetic screening and there is chromosomal screening, which comes on later after the patient falls pregnant, so there was a bit of confusion</i>
Having the contact details of a genetic counsellor	Survey + Interviews	Readily accessible genetics services for referral/ phone advice if required.
Being able to contact a genetic counsellor you know	Interviews	<i>I very much felt I had the support of the Genetic Counsellor here...she just said if you've got any questions just give me a call or email...And I knew she was going to be able to help me out if I knew nothing about it.</i>
Receiving a check-in call from a genetic counsellor	Survey	Easy access to genetic counsellors to discuss the test in further detail
Easy referral pathways to genetic services	Survey	easier access to private geneticist counselling and services
Fast and reliable turnaround times for results	Survey	Faster turn-around-time for results.
Administrative support (e.g., coordination of results, billing patients)	Survey	admin support in my department

Having a genetic counsellor deliver 'increased chance' results	Survey + Interviews	There has to be genetic counselling back up for positive results. I don't have the time or expertise to discuss positive screening results
Reproductive genetic carrier screening integrated into your practice's electronic system (e.g., test request forms and reporting)	Survey + Interviews	referral forms in medical software ( preloaded),
Notification when a couple has provided samples	Interviews	<i>It would be nice to get notified once a couple has signed up</i>
A reproductive genetic carrier screening community awareness campaign	Survey + Interviews	Public awareness campaign
Promotion of reproductive genetic carrier screening within professional health networks	Interviews	<i>You need to get the PHNs involved. That would be the, that is the only way that you'll ever disseminate the information to GPs</i>
Regular CPD activities	Survey	Regular CPD activities to keep my knowledge up to date, revision topics to keep my interest
Being part of a reproductive genetic carrier screening special interest group	Survey	a forum or development of a RACGP Special Interests group may be beneficial for me to speak to others who share the same interest
Wider awareness amongst your peers (within clinic and/or externally)	Survey + Interviews	Education (more for colleagues than myself)
Incorporating offering reproductive genetic carrier screening into routine care for antenatal or pre-pregnancy planning appointments	Survey	It should be in the local healthpathways as part of the antenatal booking in visit/pre conception counselling/assessment
Funding for additional services (e.g., pre-implementation genetics, IVF)	Survey	Access to subsidised preimplantation genetics would make offering screening to all easier
Funding for longer consultations	Survey + Interviews	Medicare funding a longer pregnancy consult item number
Funding screening which includes the cost of genetic counselling for 'increased chance' couples	Survey + Interviews	Separate mbs item number for counseling

**Supplementary material 2: Intuitive supports ranked in importance by tertiary health care professional respondents**

<b>Intuitive Supports, n (%)</b>	<b>Important</b>	<b>Neutral</b>	<b>Not important</b>
Being part of a reproductive genetic carrier screening special interest group	127 (99.22)	1 (0.78)	0
A comprehensive website to direct patients for information	124 (96.88)	3 (2.34)	1 (0.78)
Funding for additional services (e.g., pre-implementation genetics, IVF)	124 (96.88)	4 (3.13)	0
Reproductive genetic carrier screening integrated into your practice's electronic system (e.g., test request forms and reporting)	123 (96.09)	4 (3.13)	1 (0.78)
Funding screening which includes the cost of genetic counselling for 'increased chance' couples	122 (95.31)	5 (3.91)	1 (0.78)

Information on clear referral pathways for ongoing care	122 (95.31)	4 (3.13)	2 (1.56)
Resources that contain visual explanations of reproductive genetic carrier screening for patients	122 (95.31)	3 (2.34)	3 (2.34)
Printed information sheet to give to patients	120 (93.75)	6 (4.69)	2 (1.56)
Accessible information on <i>common</i> genetic conditions screened	119 (92.97)	7 (5.47)	2 (1.56)
Receiving a check-in call from a genetic counsellor	119 (92.27)	7 (5.47)	2 (1.56)
Easy referral pathways to genetic services	119 (92.97)	7 (5.47)	2 (1.56)
Translated resources for patients	117 (91.41)	7 (5.47)	4 (3.13)
Regular CPD activities	116 (90.63)	6 (4.69)	6 (4.69)
Notification when a couple has provided samples	115 (89.84)	7 (5.47)	6 (4.69)
Being able to contact a genetic counsellor you know	108 (84.38)	18 (14.06)	2 (1.56)
Access to interpreters	108 (84.38)	14 (10.94)	6 (4.69)
Funding for longer consultations	105 (82.03)	18 (14.06)	5 (3.91)
Having a genetic counsellor deliver 'increased chance' results	102 (79.69)	19 (14.48)	7 (5.47)
Information on other preconception or antenatal genetic tests	100 (78.13)	20 (15.63)	8 (6.25)
Having the contact details of a genetic counsellor	100 (78.13)	20 (15.63)	8 (6.25)
A reproductive genetic carrier screening community awareness campaign	99 (77.34)	21 (16.41)	8 (6.25)
Wider awareness amongst your peers (within clinic and/or externally)	98 (76.56)	25 (19.53)	5 (3.91)
Incorporating offering reproductive genetic carrier screening into routine care for antenatal or pre-pregnancy planning appointments	96 (75)	24 (18.74)	8 (6.25)
A short video to show patients explaining reproductive genetic carrier screening	94 (73.44)	22 (17.19)	12 (9.38)
Fast and reliable turnaround times for results	89 (69.53)	31 (24.22)	8 (6.25)
Accessible information on <i>all</i> genetic conditions screened	92 (71.88)	24 (18.75)	12 (9.38)
Receiving a regular newsletter	60 (46.88)	45 (35.16)	23 (17.97)
Promotion of reproductive genetic carrier screening within professional health networks	50 (39.06)	58 (45.31)	20 (15.63)
Picture/story-based waiting room posters	58 (45.31)	37 (28.91)	33 (25.78)
Administrative support (e.g., coordination of results, billing patients)	47 (36.72)	59 (46.09)	22 (17.19)
Script to follow when introducing discussion around reproductive genetic carrier screening	45 (35.16)	44 (34.38)	39 (30.47)

**Supplementary material 3: Initiative supports rated in order of their perceived importance by primary health care professionals**

respondents and clinic location

Intuitive Supports, n (%)	Metropolitan primary HCPs (n = 262)			Regional/remote primary HCPs (n = 128)		
	Important	Neutral	Not important	Important	Neutral	Not important
Regular CPD activities	188 (99.47)	1 (0.53)	0	73 (100)	0	0
A comprehensive website to direct patients for information	187 (98.94)	2 (1.06)	0	71 (97.26)	2 (2.74)	0
Funding screening which includes the cost of genetic counselling for 'increased chance' couples	187 (98.94)	2 (1.06)	0	70 (95.89)	3 (4.11)	0
Information on clear referral pathways for ongoing care	186 (98.41)	1 (0.53)	2 (1.06)	70 (95.89)	2 (2.74)	1 (1.37)
Being part of a reproductive genetic carrier screening special interest group	185 (97.88)	4 (2.12)	0	71 (97.26)	2 (2.74)	0
Reproductive genetic carrier screening integrated into your practice's electronic system (e.g., test request forms and reporting)	184 (97.35)	3 (1.59)	2 (1.06)	71 (97.26)	2 (2.74)	0
Accessible information on <i>common</i> genetic conditions screened	183 (96.83)	3 (1.59)	3 (1.59)	70 (95.89)	3 (4.11)	0
Printed information sheet to give to patients	180 (95.24)	5 (2.65)	4 (2.12)	71 (97.26)	2 (2.74)	0
Notification when a couple has provided samples	178 (94.18)	9 (4.76)	2 (1.06)	70 (95.89)	2 (2.74)	1 (1.37)
Funding for longer consultations	176 (93.12)	9 (4.76)	4 (2.12)	71 (97.26)	2 (2.74)	0
Resources that contain visual explanations of reproductive genetic carrier screening for patients	173 (91.53)	15 (7.94)	1 (0.53)	69 (94.52)	4 (5.48)	0
Receiving a check-in call from a genetic counsellor	170 (89.95)	18 (9.52)	1 (0.53)	63 (86.30)	9 (12.33)	1 (1.37)
Having the contact details of a genetic counsellor	169 (89.42)	19 (10.05)	1 (0.53)	65 (89.04)	7 (9.59)	1 (1.37)
Funding for additional services (e.g., pre-implementation genetics, IVF)	173 (91.53)	11 (5.82)	5 (2.65)	62 (84.93)	10 (13.70)	1 (1.37)
Information on other preconception or antenatal genetic tests	166 (87.83)	21 (11.11)	2 (1.06)	64 (87.67)	8 (10.96)	1 (1.37)
Easy referral pathways to genetic services	164 (86.77)	22 (11.64)	3 (1.59)	65 (89.04)	5 (6.85)	3 (4.11)
Having a genetic counsellor deliver 'increased chance' results	159 (84.13)	23 (12.17)	7 (3.70)	67 (91.78)	5 (6.85)	1 (1.37)
Incorporating offering reproductive genetic carrier screening into routine care for antenatal or pre-pregnancy	159 (84.13)	24 (12.70)	6 (3.17)	58 (79.45)	11 (15.07)	4 (5.48)

planning appointments						
Translated resources for patients	155 (82.82)	21 (11.11)	13 (6.88)	59 (80.52)	10 (13.70)	4 (5.48)
Accessible information on <i>all</i> genetic conditions screened	151 (79.89)	29 (15.34)	9 (4.76)	58 (79.45)	13 (17.81)	2 (2.74)
A short video to show patients explaining reproductive genetic carrier screening	145 (76.72)	35 (18.52)	9 (4.76)	56 (76.71)	15 (20.55)	2 (2.74)
Being able to contact a genetic counsellor you know	142 (75.13)	41 (21.69)	6 (3.17)	61 (83.56)	11 (15.07)	1 (1.37)
Fast and reliable turnaround times for results	140 (74.07)	44 (23.28)	5 (2.65)	54 (73.97)	16 (21.92)	3 (4.11)
Wider awareness amongst your peers (within clinic and/or externally)	142 (75.13)	38 (20.11)	9 (4.76)	49 (67.12)	19 (26.03)	5 (6.85)
A reproductive genetic carrier screening community awareness campaign	139 (73.54)	40 (21.16)	10 (5.29)	52 (71.23)	14 (19.18)	7 (9.59)
Access to interpreters	135 (71.43)	34 (17.99)	20 (10.58)	56 (76.71)	10 (13.70)	7 (9.59)
Script to follow when introducing discussion around reproductive genetic carrier screening	97 (51.32)	54 (28.57)	38 (20.11)	48 (65.75)	14 (19.18)	11 (15.07)
Picture/story-based waiting room posters	87 (46.03)	62 (32.80)	40 (21.16)	37 (50.68)	28 (38.36)	8 (10.96)
Promotion of reproductive genetic carrier screening within professional health networks	71 (37.57)	88 (46.56)	30 (15.87)	28 (38.36)	33 (45.21)	12 (16.44)
Receiving a regular newsletter	69 (36.51)	79 (41.80)	41 (21.69)	35 (47.95)	24 (32.88)	14 (19.18)
Administrative support (e.g., coordination of results, billing patients)	64 (33.86)	86 (45.50)	39 (20.63)	30 (41.10)	33 (45.21)	10 (13.70)