

NATIONAL ACTION PLAN FOR OVARIAN CANCER RESEARCH

Working together to change
the ovarian cancer story



What women want

A cure.

To us, it's that simple.

We know it's very hard and complex but nonetheless that's what we want. And what, in the depths of our hearts, we dream of.

We'd also like a future where no women develop ovarian cancer. We'd like it to stop with us, if it has to affect us at all. It's awful knowing other women will follow us on this path.

And in the meantime we'd like a test so, in the future, women can pick it up early and not have to face what we're facing.

And until you've solved all of that we'd like to take better care of those of us diagnosed with and living with ovarian cancer. So we'd like more trials available here. We see lots going on overseas and to us it seems those opportunities aren't here for us.

We want something better than one size fits all. Because as you know, perhaps even better than we do, it doesn't.

We want our doctors to tell us about what is available, even if it's only available at another hospital down the road or interstate or overseas. We want to consider it all and then choose the best course for us with you.



Bridget Whelan, consumer

Of course some of us just want to hide under the covers and never come out. But those women too need your help. Just more quietly.

And some of us also want to help you do all of this. Just ask.

So – really, what do we want right now?

We want your help. To live as long as we can, as well as we can.

Best of luck.

This report was developed and funded by Ovarian Cancer Australia. Ovarian Cancer Australia acknowledges the input from participants in stakeholder consultations, workshops, the members of the working group, and key opinion leaders who made this report possible.

ZEST Health Strategies conducted and reported on the stakeholder consultations and workshops to inform this Plan and designed and produced the report.



Ovarian Cancer Australia



A CALL TO ACTION

This *National Action Plan for Ovarian Cancer Research* (the Plan) marks a significant milestone for the ovarian cancer community in Australia. The Plan provides a strategic blueprint for how Australia can best contribute to the global ovarian cancer research effort. This is an ambitious and future-facing plan that takes account of progress to date and opportunities ahead, and builds on the expertise and skills available to us in Australia.

The Plan discusses the scientific, clinical and patient care issues relating to ovarian cancer; it then identifies the research priorities and actions that address these issues and highlights the enablers that will facilitate their implementation. At the heart of the Plan are the women living with ovarian cancer today, those who will be diagnosed tomorrow, and all those who have been and will be touched by the disease. These women, and their partners and families, demand and deserve the best: the best ways to find and treat the disease, the best approaches to providing care and support, and the best ways to use available resources to work towards a world in which outcomes from ovarian cancer are better than they are today.

“

My goal is to be the little fish that swims through the net.”
– Jan Antony, consumer

We have come a long way in our understanding of ovarian cancer. Progress in genomics and proteomics has radically changed our understanding of the behaviour of cancer cells. We now know that ovarian cancer is not just one disease but a range of diseases with different cellular appearances, different molecular characteristics, and different trajectories. However, this new knowledge has not yet translated into new treatments or improved outcomes. In 2014, ovarian cancer remains a poor prognosis cancer with limited treatment options available.

Our challenge is not unique. However, it could be said that the tools we have available to address the challenge are. We have the benefit of a highly

engaged clinical and scientific research community, internationally recognised leaders in key areas of research, and a platform for consumer engagement that allows women’s voices to be heard.

We acknowledge that the research environment is highly competitive and resources are finite. This highlights the need for a strategic approach that makes the best use of available human and fiscal resources. Our intent in developing the Plan is to set an agreed direction and approach that will maximise our chances of success.

Setting a new strategic direction refers not only to the identification of research priorities, but it also involves changing the way we plan, fund and report our research. Through this Plan we aim to highlight the importance of transparency, accountability and collaboration, as well as the need to communicate progress in a way that is meaningful to clinicians, researchers, the public and to women with ovarian cancer and their families.

I am proud to present this *National Action Plan for Ovarian Cancer Research*. I believe that progress is infinitely achievable through collaborative, strategic efforts, and I ask all organisations and individuals involved in and with an interest in ovarian cancer research to commit to taking the Plan forward.



Paula Benson,

Chair,
Ovarian Cancer Australia



DEVELOPMENT OF THE NATIONAL ACTION PLAN FOR OVARIAN CANCER RESEARCH

This Plan has been developed through a rigorous approach that has included contributions from key opinion leaders (researchers, clinicians, consumers, government and industry representatives) through individual consultations, workshops and a multidisciplinary working group. Scientific, clinical, quality of life and survivorship issues for women were explored and barriers to and enablers of research progress were identified. The current landscape of ovarian cancer research in Australia over the period 2008-2013 was assessed through a comprehensive audit measuring funding inputs and research outputs. The research in Australia was reviewed with regard to progress that had been made internationally over the same period. From these inputs, we have identified a series of research priorities and strategic activities that will support the national research effort and build on Australia's many strengths.

Addressing these priorities will facilitate the delivery of outcomes articulated in our vision for the future. Meeting the challenges will require a collaborative effort amongst the diverse members of the ovarian cancer community – guided by those personally affected. The effort required is encapsulated in the *Australian Charter for Ovarian Cancer Research Excellence*.

An online report entitled *National Action Plan for Ovarian Cancer Research: The Comprehensive Report* presents the detailed methods and findings from the consultation and audit processes and a discussion of each research domain including key opinion leader commentaries. The *Comprehensive Report* can be downloaded at www.ovariancancer.net.au.

THE CASE FOR ACTION

Ovarian cancer is the leading cause of burden of disease from gynaecological cancers, and accounts for 5% of all the burden of disease due to cancer in Australian women. Almost 1500 women in Australia and over 250,000 women worldwide are newly diagnosed each year. Mortality is high. Around 1000 women die from the disease each year in Australia. Only 43 out of every 100 women diagnosed are still alive five years after diagnosis.

Figure 1 depicts how ovarian cancer compares with other cancers in women in terms of five-year survival. Although there has been some improvement since 1982, survival is low, remaining well below the average for all cancers in the 1980s; an indication of the high degree of unmet need.

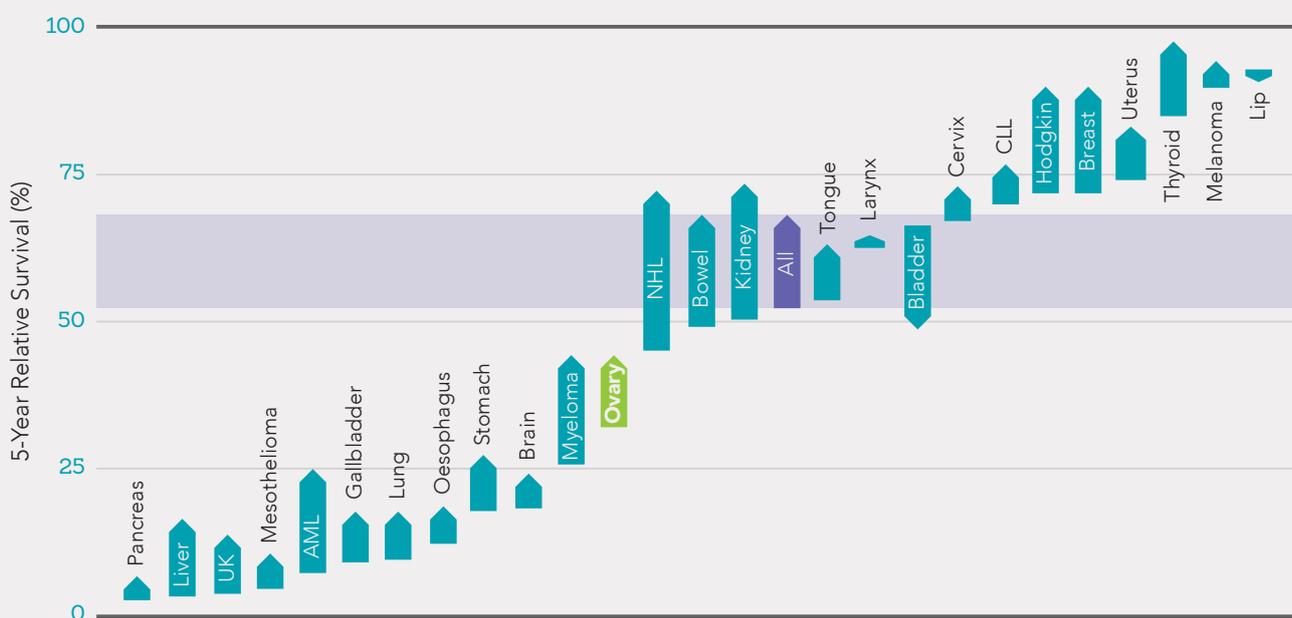


Figure 1: Change in 5-year survival from ovarian cancer over the period 1982-87 to 2006-2010: comparison with other cancers in women.¹

Abbreviations: AML = Acute myeloid leukaemia, NHL = Non-Hodgkin lymphoma,
 CLL = Chronic lymphocytic leukaemia, Melanoma = melanoma of the skin,
 UK = cancer of unknown primary site

¹ Australian Institute of Health and Welfare & Australasian Association of Cancer Registries 2012. Cancer in Australia: an overview, 2012. Cancer series no. 74. Cat no CAN 70. Canberra: AIHW

The treatment regimen for ovarian cancer has changed little in decades. It involves tumour debulking surgery followed by the administration of platinum and taxane-based chemotherapy. Although the recently approved monoclonal antibody, bevacizumab, has demonstrated improvements in progression-free survival, there is an urgent need for more effective therapies for ovarian cancer, for first-line treatment, maintenance therapy and for treating women with platinum-resistant and refractory ovarian cancers.

The high burden of disease and poor prognosis, the complex nature of ovarian cancer and the lack of targeted treatments pose a significant challenge to the Australian and international research communities.

Yet there is cause for hope. The new insights into the pathogenesis and heterogeneity of ovarian cancers together with significant advances in technology set the stage for a concerted international effort to develop better, targeted treatment options and diagnostic tools which will improve outcomes for women living with, or at risk of developing, ovarian cancer.

The intent of this Plan is to provide a strategic framework for transparent and accountable investment in ovarian cancer research to ensure available funds are used to optimal effect and acts as a catalyst to drive further, much needed investment. This is a field poised for change, but achieving that change will require a concerted effort, an alignment of strategies, and a focus of resources to ensure the greatest advantage for women.

This is a Plan developed for all the people who are involved in efforts to overcome this disease, and the people who are personally affected by ovarian cancer – this is our Plan

KEY FINDINGS

FUNDING INPUT

- There are numerous sources of funding for ovarian cancer research in Australia, including funding schemes from:
 - international sources
 - national and state government research councils and organisations
 - not-for-profit organisations (including cancer councils, charities, foundations associated with research institutions)
 - public and private investment.
- Differences in reporting content across not-for-profit organisations highlight the need to adopt a higher standard of reporting to include the amount and purpose of research funding allocated by funders. *It would be desirable for donors to obtain information on the inputs into the research they are supporting.*
- Based on available data, a total of \$54.8m was invested in ovarian cancer research over the period 2008–2013, increasing from \$6.5m in 2008 to \$10.2m in 2013 (approximately a 1.6-fold increase).
- Across the funding period, Australian government agencies funded approximately 69% of research, not-for-profit organisations funded 25%, and international sources funded 6%. Of these, the single greatest contributor to funding was the National Health and Medical Research Council (NHMRC), with its \$26m investment accounting for approximately 48% of total funding. NHMRC funded areas of basic science, clinical research and public health. All other organisations combined contributed \$28.8m (52% of total funding).
- Examination of the pattern of expenditure across research domains according to Common Scientific Outline (CSO) categories² (Figure 2a) reveals that 86% of funding for ovarian cancer research has focused on four areas, in the following order: *Biology, Detection, Treatment, and Aetiology*. There was little expenditure in the categories of Models, Control and Prevention.
- Comparison with international expenditure patterns (Figure 2b) reveals that Australia has allocated far greater funds proportionally to Detection compared to other areas, but the categories of Treatment and Prevention are comparatively under-funded. A similar trend was identified in a recent audit of cancer funding by Cancer Australia, where ovarian cancer funding for Detection was found to be 43% of total funding over 2009-2011.³
- This analysis raises the question as to whether future funding in Australia should be re-allocated to better align with international expenditure patterns, for example by redirecting funding from Detection to Treatment; and by increasing funding to Prevention research (which may be specific to ovarian cancer or relevant across cancer types).
- This analysis also highlights the need to identify funding priorities and reveals a clear opportunity for Government and other organisations to increase funding to these underfunded areas.
- Current funding opportunities are inadequate and greater investment is needed to address research priorities across the research and development continuum. Further, new funding streams will be needed to facilitate collaboration, provide infrastructure to support research, conduct early stage clinical trials and for development activities. Innovative investment models and improved collaboration amongst funders will be required to address these gaps.

² CSO is an international system for cancer research with the following categories: (1) Biology – how cancer starts and progresses; (2) Aetiology – causes and origin of cancer; (3) Prevention – interventions which reduce cancer risk; (4) Detection – Early Detection, Diagnosis, and Prognosis; (5) Treatment; (6) Control – Cancer Control, Survivorship, and Outcomes Research; and (7) Model – Scientific Model Systems.

³ Cancer Australia 2014. *Cancer Research in Australia: an overview of funding to cancer research projects and research programs in Australia 2006 to 2011*, Cancer Australia, Surry Hills, NSW

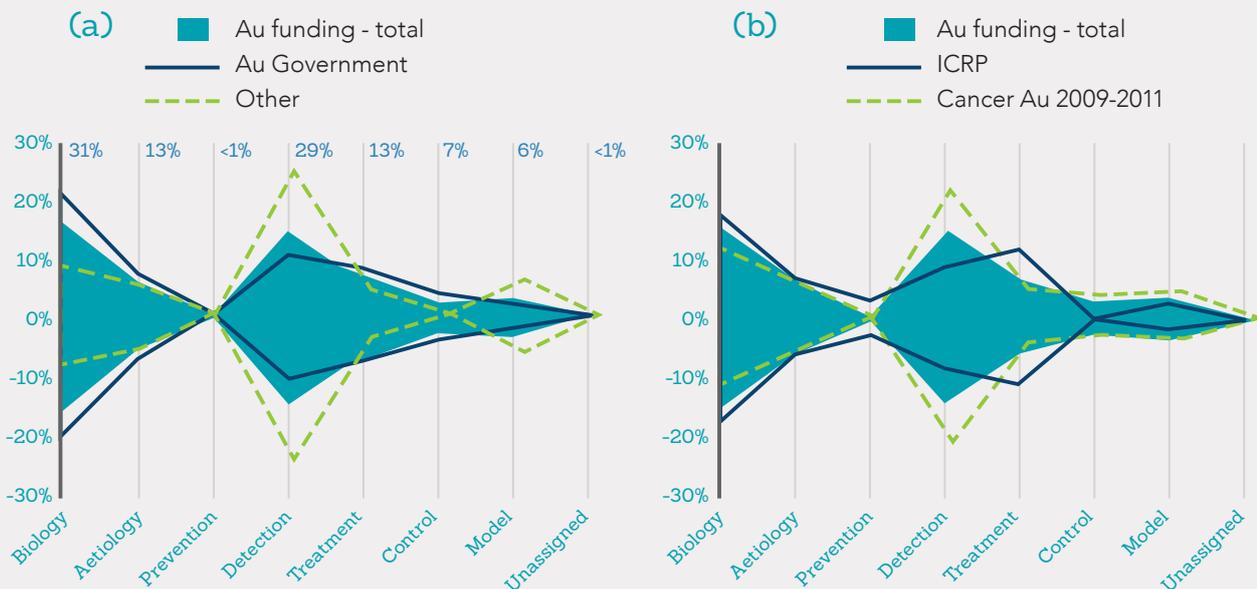


Figure 2: Kite diagrams of funding for ovarian cancer research across CSO categories showing funding patterns in Australia (2008-2013) identified in the desktop audit (blue shade), compared to (a) patterns of government (dark blue line) and other funding (green dotted line); and (b) patterns of funding reported by Cancer Australia (2009-2011) (green dotted line), and internationally (2008-2013) (dark blue line) according to the International Cancer Research Partnership (ICRP).

OUR STRENGTHS

Australia has a wealth of ovarian cancer expertise available to drive high-quality research with relevance at a global level. A cohesive national strategy reduces research overlap, enables the development of programs that complement one another, and helps identify and address critical knowledge gaps. Key opinion leaders and people who are personally affected by ovarian cancer agree that the best way to move forward is via a priority-driven research plan that leverages Australia's strengths through collaboration. It is crucial that ongoing research efforts align with international research strategies and that current and future resources are focused on areas that will generate the greatest benefit for women.

“

As the complexity of ovarian cancer becomes more apparent through genomics, molecular profiling, investigation of biomarkers and sub-classification, collaboration between clinicians, scientists, geneticists, pathologists and the pharmaceutical/diagnostics industry (among many others) has become critical.

”

– clinician researcher

Australia currently has several key areas of strength in ovarian cancer research:

- Biology and genomics research: the main contributor to this is the Australian Ovarian Cancer Study (AOCS), a collaborative research cohort of international significance that has been instrumental in the stratification and classification of ovarian cancer subtypes.
- Genetic counseling and the analysis of inherited risks of ovarian cancer.
- Translational research.
- Clinical trials infrastructure: Australia has strong clinical trials networks and relationships with industry which have facilitated our participation in multiple trials of novel, targeted therapies. The Australia New Zealand Gynaecological Oncology Group (ANZGOG) is the lead group for gynaecological cancer clinical trials in Australia and New Zealand having participated in 18 trials across more than 51 hospitals since 2000.
- Quality of life research (including development and validation of measurement tools) as well as broader supportive care and psychooncology research in cancer.

RESEARCH OUTPUT

Australia has a small research community in the field of ovarian cancer, nevertheless we have a high research output when adjusted for the incidence of ovarian cancer as demonstrated by a comparison across several countries (USA, UK, Canada, Japan and New Zealand). Our audit reviewed 466 publications over the period 2008-2013 that had a significant focus on ovarian cancer and included at least one Australian author.

Comparison of the number of publications across CSO categories shows the highest order of rank as follows: *Control > Biology > Treatment > Detection*.

When we looked at whether the pattern of knowledge production (as measured by number of publications) aligned with the pattern of funding in Australia, we found that the high output in Biology and low output in Models and Prevention are consistent with the level of funding input for these research domains. However, for other areas, knowledge production does not align well with funding:

- Despite low funding, the areas of Control and Treatment are productive in research output.

- The modest research output in Detection is inconsistent with the comparatively high level of funding – an observation which may reflect high challenges in this field.

A commonly used measurement of research impact is the journal Impact Factor (IF), which ranks scientific and medical journals according to the average number of citations received per paper published in that journal. Research impact was measured using a composite score taking into account the quantity of publications and IF measurements. The outcome: the areas of *Biology, Treatment, Aetiology and Control* represent the highest ranking categories. These domains correlate with the areas of Australian expertise identified through the consultation process.

By reviewing the publications with the highest IF ratings and citation index values we found that the participation in medium-to-large collaborations and the accessibility of biobank resources were consistent factors driving high impact research. To explore the value of collaborative networks, we calculated the average IF for publications in ovarian cancer research reported by two highly collaborative groups, AOCS and ANZGOG. These were 62% and 59% above the national average IF, respectively, for ovarian cancer research over the same period.

RESEARCH HIGHLIGHTS AND CHALLENGES

Biology: Our understanding of the biology and aetiology of ovarian cancer has undergone a transformational change. The most important advancement in recent years is the improved understanding of the heterogeneity of ovarian cancer; there are significant differences not only in the cellular appearance of the cancer subtypes but also in the way they behave at the molecular and genetic levels. This is seen to be the foundation for future research questions around risk reduction, detection and treatment of ovarian cancer. It also widens the opportunity to investigate mechanisms of cancer recurrence and treatment resistance. Australia has played a leading role in this area of research.

Epidemiology: This is identified as an area of expertise in the Australian research community, particularly with regard to the role environmental risk factors play in the causation and prognosis of ovarian cancer.

Experimental models: Recent research indicates that the experimental models often used in ovarian cancer research are actually poorly predictive of the most aggressive and common forms of ovarian cancer. This may have hindered the progression of Australian preclinical research into ovarian cancer thus far and highlights the importance of (1) enabling access to the most current and predictive experimental models and (2) developing new predictive models appropriate to the range of ovarian cancer subtypes.

Detection: The field is controversial. In theory, a population-based screening test would have the potential for great impact in the field of ovarian cancer, but many experts believe this is the least realistic target given the heterogeneity of the disease, the current uncertainty regarding the natural history of the disease, the difficulties in achieving technical requirements and the high regulatory challenges to market approval. Instead, developing diagnostic biomarkers for high risk women is viewed as a near term focus, in addition to developing companion diagnostics and biomarkers for prognosis and monitoring recurrence.

Treatment: A number of issues impact on the preclinical and clinical development of improved treatments.

Preclinical:

- Australian drug discovery research in ovarian cancer focuses heavily on cytotoxic therapies, which is not in keeping with international clinical research strategies.
- Australian preclinical research is early stage and relies heavily on the use of ovarian cancer cell lines that are no longer considered good models for high grade serous ovarian cancer.
- Detection and Treatment encompass translational research areas – in both these domains, the stage of research was predominantly early stage. Few projects had progressed to proof-of-concept or into development phases due, in part, to the lack

of relevant experimental models, challenging clinical pathways and the lack of funding for early stage clinical research and product development.

Clinical:

- A review of clinical trials shows that Australia ranks highly in clinical trial participation based on incidence of ovarian cancer. However, the majority of trial involvement is via participation in international initiatives, rather than through Australian-directed programs.
- The clinical trial paradigm for testing new cancer therapeutics is undergoing change, with a move towards trials designed to demonstrate larger therapeutic gains in smaller trial populations, for example, testing targeted treatments on potential responders identified through analysis of the molecular characteristics of their tumour.
- Research investigating how molecular profiling techniques can guide clinical decisions is developing.
- Current funding schemes for clinical research are inadequate and researchers face difficulties in obtaining sufficient funding for early stage clinical research – there is a need for innovative and flexible funding programs to support early-stage clinical research, particularly Australian-led initiatives.

Control: While this encompasses a great breadth of topics, specific expertise areas were identified: health care delivery, behaviour (psychosocial including psychosexual), patient care (quality of life, survivorship) and epidemiology.

THE CONSUMER PERSPECTIVE

Meaningful and active involvement of people affected by ovarian cancer is crucial to the successful implementation of the Plan. At each step we must ask 'what would this mean for women?' To answer that question we must incorporate consumer voices in early research planning conversations, and seek their input when we consider how research outcomes should be reported and translated into treatments.

A PLAN FOR ACTION: RESEARCH PRIORITIES, STRATEGIC ACTIVITIES AND A ROADMAP FOR RESEARCH AND FUNDING

We are at a remarkable time in cancer research and management. Advancements in our understanding of the biology of ovarian cancer have afforded researchers new insight into the significant differences between the distinct cancer subtypes. The importance of this reclassification cannot be understated: not only is it changing the way we might treat the disease with existing therapies, but it is also enabling the development of new, targeted treatments. Australian research has played an important role in advancing this new understanding of the biological basis of ovarian cancer, and due to the high level of expertise, access to collaborative resources such as AOCS and ANZGOG, and the close networks of researchers, the Australian research community is well positioned to build on this progress. Nevertheless, a great deal of work remains to be done to improve outcomes for women. To this end, more research is needed to understand how ovarian cancer initiates, why it develops rapidly in some and not others, and how we can circumvent resistance to treatment. We need better therapies, better models of care, and better quality of life for women with ovarian cancer.

Australian ovarian cancer research has the potential to generate further significant advances in the field, but a more coordinated approach is needed. For example, it has been observed that philanthropic

funding is currently diluted across multiple groups who don't necessarily work together: there needs to be increased collaboration amongst funders and research organisations as well as amongst researchers and clinicians. This Plan identifies areas of research strength and expertise. It also identifies barriers and under-resourced areas that must be addressed as soon as possible, and highlights opportunities for improvement, for example, by increasing collaboration and improving alignment with international research trends. This Plan provides an ambitious, but achievable, framework comprising recommended research priorities, strategic activities and the critical pathways needed to meet these goals.

The research priorities are outlined in Figure 3. It is important to note that these are not to be viewed in isolation – many of these are part of a broad continuum from basic biology (understanding the disease) to translational research (developing new therapies and diagnostics), and beyond (patient care). The Strategic Activities considered essential to support the implementation of the Plan are described in Table 1.

Figure 3: Research priorities for ovarian cancer. (Core research priorities are listed)

BIOLOGY/AETIOLOGY/ MODELS	RISK FACTORS/ EPIDEMIOLOGY	PREVENTION/ DETECTION
<p>Basic</p> <ul style="list-style-type: none"> • Continue research on the biology of ovarian cancer to inform diagnosis, early detection, treatment pathways and research translation • Continue the classification of disease subtypes both in terms of their molecular profiles and their histology, with the aim of identifying and validating new therapeutic targets • Explore the tumour immune microenvironment to identify potential targets for therapy <p>Resistance and recurrence</p> <ul style="list-style-type: none"> • Explore the ways in which tumours respond to their environment and to treatment, focusing on the mechanisms tumours employ in treatment response and resistance • Compare recurrent disease with initial disease, with a view to understanding factors influencing resistance to treatment <p>Aetiology</p> <ul style="list-style-type: none"> • Understand the natural history and latency of disease subtypes, particularly HGSC subtypes, to identify precursors for earlier detection and treatment <p>Models</p> <ul style="list-style-type: none"> • Further develop, assess and enable access to, clinically relevant preclinical models (such as PDX models and cell lines) that are consistent with the various ovarian cancer subtypes to facilitate research into targeted treatments 	<p>Risk factors</p> <ul style="list-style-type: none"> • Continue to explore genetic risk factors for ovarian cancer subtypes (histological and molecular) <ul style="list-style-type: none"> - Identify high risk subgroups for developing new genetic or other biomarker tests <p>Epidemiology</p> <ul style="list-style-type: none"> • Conduct population studies to further explore the relationship between non-genetic risk factors and ovarian cancer aetiology and survival <ul style="list-style-type: none"> - Explore the potential to reduce risk of ovarian cancer by modification of lifestyle factors - Understand how modifiable aspects of lifestyle influence chemotherapy completion and response, QOL, recurrence and survival • Conduct studies to investigate the patterns and experience of disease in population subgroups (the elderly, women in rural and remote areas, Aboriginal and Torres Strait Islanders and those from culturally and linguistically diverse backgrounds) • Research relating to preventive measures that extend from knowledge of the biology of the disease. It is crucial to explore preventative measures that do not reduce women's QOL (including sexual and reproductive lives) 	<p>Prevention - Surgical Methods</p> <ul style="list-style-type: none"> • The adoption of risk reducing surgical methods to reduce mortality in high risk women <ul style="list-style-type: none"> - Surgical methods for BRCA1/2 carriers and post-menopausal women – patterns of care, linking to survival, ensuring adoption of best practice methods - Developing the evidence-base for supporting, or otherwise, the adoption of salpingectomy alone versus BSO <p>Pathways to earlier diagnosis</p> <ul style="list-style-type: none"> • Develop better biomarker-based diagnostic tools <ul style="list-style-type: none"> - To identify high risk women based on genetic or other molecular risk factors - As an aid in the diagnosis of symptomatic women - As an aid to differentiate benign or LMP from malignant tumours - For screening – this will depend on outcomes of UKCTOCS study and will require prospective study design <p>Diagnosis of disease subtypes</p> <ul style="list-style-type: none"> • Develop biomarkers (i) for identifying disease subtypes (ii) as prognostic indicators, (iii) for guiding treatment (companion diagnostics), and (iv) for monitoring disease recurrence <ul style="list-style-type: none"> - Identifying and validating biomarkers relating to more aggressive subtypes, particularly low volume HGSC • Continue and expand research into the molecular profiling of tumours to guide treatment choices

Abbreviations and acronyms: BSO = bilateral salpingo-oophorectomy; HGSC = high grade serous cancer; LMP = low malignant potential; PDX = of screening in 202,000 women (<http://www.controlled-trials.com/ISRCTN22488978>)

in normal, black text with specific, non-limiting examples denoted in italics.)

TREATMENT

Preclinical studies

- Identify and validate new subtype-specific therapeutic targets
- Identify and develop to proof-of-concept new or re-purposed drugs using clinically relevant experimental models of disease

- Focus on the early stage development of novel, immune-modulatory agents and molecular targeted therapies

Clinical studies

- Explore novel and efficient clinical trial designs that provide quicker answers with fewer patients. This will likely require adopting a 'precision medicine' approach, where biomarker based diagnostics, including molecular profiling, are used to guide the testing of new or re-purposed targeted treatments

- Conduct early stage clinical research adopting small, SMART trial approach for targeted therapies in patients selected on the basis of the molecular characteristics of disease

- Initiate or participate in (i) umbrella trials (where different treatments are used based on ovarian cancer subtype) or (ii) basket trials (where the same treatment is used against the same target across different cancers) with patient selection determined by molecular subtype

- Improve the incorporation of patient reported outcomes and QOL measures into clinical trial endpoints

TREATMENT/CONTROL

Translational research

- Find ways to ensure novel and existing molecular and tumour-specific targeted therapies are progressed as rapidly as possible through clinical development and made available to patients as soon as possible

Improve response to existing treatments

- Explore what subgroups of patients respond to treatments, why some patients do not respond, and what factors are associated with recurrence

Managing side effects

- Undertake research that focuses not only on new treatments but also on finding ways to help women get through treatment by reducing and/or managing side effects

Radiotherapy

- Identify the subgroups of women who may benefit from radiation therapy

Health services models/Patterns of care

- Understand why differences in clinical outcomes and mortality exist between facilities and geographic regions and how this relates to patterns of care, service delivery models, and adherence to best practice guidelines (where relevant)

CONTROL

- Describe the extent of access to and use of specialist cancer treatment and services (genetic testing, multidisciplinary care) as a way of highlighting service/treatment gaps
- Explore ways to pro-actively support women and their families during and post-treatment such as routine screening for psychological distress, and by focusing on wellness and survivorship

Quality of life

- Identify ways to improve outcomes for women living with ovarian cancer

- How to optimise functioning and QOL when the burden of disease is significant

- How to best support women experiencing psychosocial (including psychosexual) concerns as a result of their treatment

- How to ensure women have the support they need from diagnosis

- How to help women get through treatment by reducing and/or managing side effects

- Explore links between QOL and time to recurrence and survival outcomes

- Explore the experience of survivorship of women with ovarian cancer and identify areas for focus and unmet needs

Palliative care

- Identify how best to meet the specific palliative care needs in a way that moves beyond curative and end-of-life paradigms
- Identify ways to improve the process of informed decision making by women and their carers about ovarian cancer treatment, particularly when the intent of treatment is not curative

Table 1: Recommendations for strategic activities to

Theme	Goals
Funding the research	
Consolidate	<p>Develop collaborative or consolidated approaches to fundraising for ovarian cancer research to reduce duplication of effort and cost, focus investment on priorities and amplify capacity for impact.</p> <p>Facilitate discussion by not-for-profit organisations about coordinated approaches for funding ovarian cancer research in Australia and internationally.</p>
Communicate	<p>Develop a transparent, accountable approach to funding for ovarian cancer research that includes knowledge of what funding is available, how decisions are made, what funding has been allocated and the outcomes and impact of the research resulting from such funding.</p>
	<p>Manage the expectations of the community to effectively broker funding opportunities and provide a better understanding of research outcomes, development pathways and timelines.</p>
Innovate	<p>Find and test different models of funding and investment.</p>
Raise the bar	<p>Increase the success rate of ovarian cancer research funding applications through a better understanding of the requirements for research funding and aligning applications with the most appropriate funding streams.</p>
Capacity build	<p>Strengthen the track records of early and mid-career researchers in ovarian cancer.</p>
Invest in collaboration and bridge current gaps	<p>Develop funding models to facilitate collaborations (national and international) and build investment streams to fund infrastructure and priority-driven research across the research and development continuum including dedicated funding for early stage clinical trials. Provisions should also be made for investigator-led research opportunities and for scholarships and fellowships.</p>
Seed/Development funding	<p>Adopt project-focused, milestone-based industry models for progressing relevant research outcomes to proof-of-concept, including appropriate resourcing for development activities.</p>
Conducting the research	
Prioritise	<p>Continually review and prioritise research activities based on the potential for greatest impact on women's QOL and survival.</p> <p>Make decisions on low-risk, safe and steady returns by investing in research strengths, while setting funding aside to divert towards more innovative projects of higher risk but potentially transformational returns.</p>
Leverage	<p>Build on existing expertise in stratification, biomarker and target identification and existing infrastructure and associated networks (AOCS, ANZGOG) to facilitate the transition from early stage research to human proof-of-concept.</p>
Innovate	<p>Use innovative clinical trial designs such as SMART or umbrella trial designs to achieve rapid proof-of-concept in humans.</p>
Collaborate internationally	<p>Continue to participate in high-profile international research and clinical activity, including Phase III trials, and expand international collaborations (including Asia).</p>
Translate	<p>Ensure that research is practice and policy ready to facilitate rapid translation to the bedside and dissemination across the field.</p>

support the successful implementation of the Plan

Theme	Goals
Supporting the research	
Collaborate nationally and invest in our strengths	Facilitate a cultural change and establish national standardised resources to drive collaboration and demonstrate its benefits across the clinical, research and consumer spectrum.
	Grow and sustain the existing collaborative infrastructure and networks (AOCS, ANZGOG and the Australian Society of Gynaecologic Oncologists Inc.).
	Foster big picture and innovative thinking through ideas exchange; provide networking and professional development opportunities within the broader frame of innovation, collaboration, leadership and commercialisation.
Establish a consistent approach to managing data, biospecimens and clinical registries	Establish a national standardised system with competent and efficient mechanisms for sample and data collection, annotation, storage and access to tissue and other samples; and enable access to multiple researchers.
	Establish a national ovarian database – this would enable investigations into the deficiencies in current management so that these can be a priority for research
	Create linkages between biobanks and clinical registries and overcome governance issues around data custodianship and privacy.
Communicating the research and priorities	
Share	Foster regular sharing of information through established and well-supported forums and communication mechanisms.
Educate	Educate health professionals and women about symptoms of ovarian cancer.
Clarify	Clearly communicate the complexities of early detection and screening to women and the community.
	Communicate the value of investing in research that can make a difference to the quality of life and survival for women, including more realistic communication of research ‘breakthroughs’.
Inform	Communicate research priorities to other funders (government, not-for profit and industry organisations) to inform on key issues relating to ovarian cancer research.
Evaluating the research	
Measure	Adopt a core suite of evaluation measures by all funders to raise the bar on transparency and accountability to support investment decisions and public reporting.
	Routinely review and monitor progress of investments – establish improved and additional mechanisms to measure performance and impact (e.g. social return on investment methodology).
Review and update	Regularly revisit the Plan to ensure relevance, and reprioritise as required.

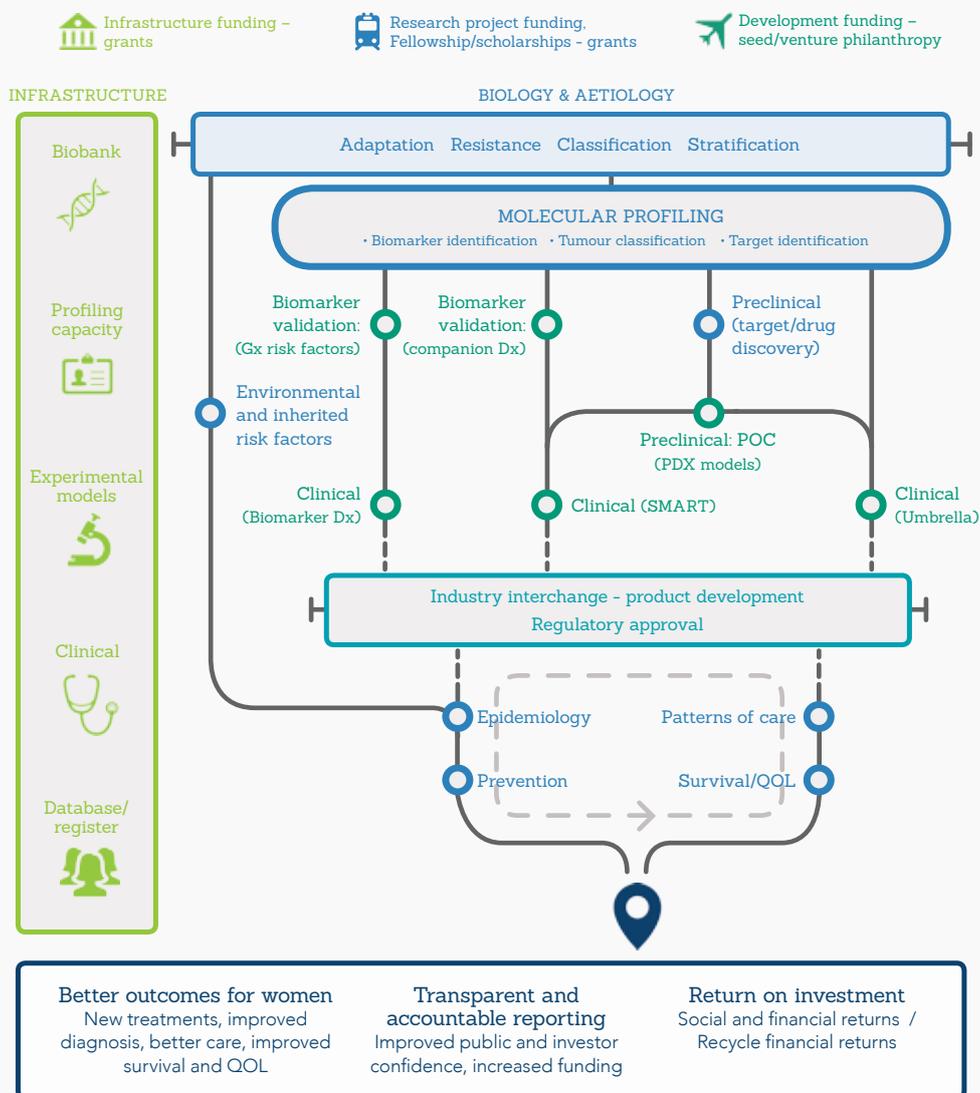
For a more visual overview of the Plan, we provide Figure 4: a concept roadmap representing the core elements of an effective, focused funding strategy for ovarian cancer research. This roadmap:

- is underpinned by collaboration and meaningful, active consumer involvement
- identifies three critical streams of funding: (i) infrastructure funding to support and enable

research effort and impact, (ii) funding for priority-driven research and researcher support, and (iii) development funding to drive the translational effort through to proof-of-concept

- depicts the research priorities along the critical pathways to achieving better outcomes for women.

Collaboration network



Consumer involvement

Figure 4: A concept roadmap to strengthen, focus and fund future ovarian cancer research in Australia.

Abbreviations: Dx = diagnostic; Gx risk factors = genetic risk factors; POC = proof-of-concept

Our short to longer term vision for the future is encapsulated by the goals articulated in Figure 5. Implementation of the research priorities identified in this Plan will help achieve this vision. Regular

review, evaluation and adaptation of the Plan will be required to face down the current and emerging challenges of ovarian cancer, and will give us a legitimate chance to make a vital difference.

2 year vision	5 year vision	10 year vision
<ul style="list-style-type: none"> • Priorities and strategic activities from the Plan (as identified in Figure 3 and Table 1) have been integrated into local and collaborative research plans. In particular: <ul style="list-style-type: none"> - Progress towards the provision of shared resources to support research including improved experimental models reflective of ovarian cancer subtypes (PDX and cell lines), a national standardised system for managing biospecimens and linking data to clinical registries and increased molecular profiling capacity - Targeted drug discovery programs and Australian-led precision-based clinical trials have been initiated - Improved integration of patient reported outcomes in trial design - Research priorities in Detection have been further developed (informed through clarification of regulatory pathway and the UKCTOCS results) in relation to population screening • Alliances between research organisations, clinicians, researchers, consumers and funders have been enhanced • Collaborative funding models have been implemented, with appropriate evaluation frameworks in place to measure and report on progress and impact • Growth in investment in ovarian cancer infrastructure, research (clinical, preclinical, other) and development has been demonstrated 	<ul style="list-style-type: none"> • Significant progress in priority areas has been demonstrated including: <ul style="list-style-type: none"> - the availability and routine use of a range of experimental models reflective of the different ovarian cancer subtypes - a national standardised system for managing biospecimens linked to clinical registries - new targets for different ovarian cancer subtypes have been validated and there has been an increase in drug development programs based on these targets - increased translational research, in particular, a demonstrated shift from early stage to proof-of-concept for studies involving new treatments, including treatments for resistant subgroups, and studies relating to biomarkers involved in diagnosis, prognosis and measuring response to treatments - expansion of the number Australian-initiated precision-based clinical trials - progress in the identification of risk factors (genetic and environmental) and other population-based studies - QOL studies have identified ways to improve outcomes for women • Improved knowledge of and uptake of clinical practice guidelines • Collaborations and alliances adopting research priorities from this Plan have demonstrated impact • The Plan has been reviewed, progress demonstrated and a new set of priorities developed 	<ul style="list-style-type: none"> • A new standard of care – targeted and immunotherapy treatment options are part of the standard of care for ovarian cancer • The benefits of precision medicine have been realised – molecular profiling, targeted therapies and companion diagnostics are available for women • There are improved tools to support diagnosis, prognosis, treatment and surveillance • Improved clinical outcomes for women diagnosed with ovarian cancer are demonstrated, including reduced incidence of recurrence • A greater understanding of genetic and environmental risk factors has informed new preventive strategies • Survivorship studies assessing the long-term impacts of treatment and other aspects of quality of life have resulted in improved outcomes for women • Improvements in care in alignment with best practice are demonstrated across Australia

Figure 5: Our vision for the future providing short, medium and longer term goals that can be achieved through the adoption of research priorities and strategic activities outlined in this Plan.

A COMMITMENT TO ACTION: AUSTRALIAN CHARTER FOR OVARIAN CANCER RESEARCH EXCELLENCE

The Australian Charter for Ovarian Cancer Research Excellence articulates a set of principles to underpin the planning, funding, conduct, evaluation and reporting of ovarian cancer research in Australia.

Great strides forward will be enabled through the individuals and organisations involved in ovarian cancer research in Australia reviewing their approach to align with these principles, united with our common goals and in the interests of the women we serve.

By developing this Charter we aim to:

- **engage:** through open discussion and setting out stakeholder roles in developing and implementing a national ovarian cancer research agenda
- **guide:** through collective effort, we will promote the efficient use of available infrastructure and resources
- **encourage commitment:** we will seek stakeholder ownership and agreement on planned approaches
- **set out key principles:** we will establish transparency, objectivity, accountability, consistency, collaboration and encourage greater consumer involvement.

These goals are consistent with the philosophy of collective impact which can be applied to ovarian cancer research to encourage collaboration and a common agenda between diverse stakeholders across the ovarian cancer community.

The principles of the Australian Charter for Ovarian Cancer Research Excellence are:

1. Common agenda

- Develop a shared vision for change and a mutual plan of action involving a joint approach. The plan should be adaptive and responsive to environmental change and should deliver a clear value proposition.
- Establish and implement national research priorities with the greatest potential to deliver impact in research, translation and development.
- Participate in regular review and evolution of goals and priorities through established mechanisms.

2. Collaboration

- Explore and develop collaborative approaches amongst funders, research organisations, researchers, clinicians, consumers and the community to appropriately resource, review and deliver high impact research and development programs.
- Enable sharing of resources, information and outcomes as a fundamental basis for an effective research and clinical effort – a strong basic and applied research base, access to patient populations and an integrated and standardised dataset of longitudinal molecular, clinical and outcomes data.

3. Consumer involvement

- Increase meaningful engagement across the spectrum, including in advocacy activities and in research planning, review, participation (e.g. the establishment of appropriate quality of life measures), conduct, evaluation and governance.

4. Consistency

- Align efforts to develop a consistent approach towards the collection of specimens and data and the analysis of results.
- Develop an evaluation framework to span the research and development continuum so as to improve our ability to measure research impact and progress. Research would be assessed to determine what knowledge was produced and how it was disseminated, whether that knowledge contributes to the development of products, policies or clinical guidelines, as well as what health sector, social and/or economic benefits it provides.

5. Transparent communication

- Communicate consistently and openly with funders, research organisations, researchers, clinicians, consumers and the community to engage, build trust, assure shared objectives and to recognise and work to overcome barriers to development.
- Adopt transparent and accountable standards for the public reporting of ovarian cancer infrastructure, research, clinical and development funding and achievements.

6. Backbone support

- Ensure there is adequate resourcing to enable the required support for independent administration, funding, evaluation, reporting and to enable transparent and accountable practice.

We commend to you the National Action Plan for Ovarian Cancer Research. This Plan is the first of its kind for ovarian cancer research in Australia. With your support, it will have the potential to make a significant difference in the lives of women at risk of, or living with, ovarian cancer.

The National Action Plan for Ovarian Cancer Research: The Comprehensive Report can be downloaded at www.ovariancancer.net.au

Ovarian Cancer Australia Ltd ACN 097 394 593
Queen Victoria Women's Centre
Level 1, 210 Lonsdale Street
Melbourne VIC 3000
www.ovariancancer.net.au



Ovarian Cancer Australia