

Our commitment to improve outcomes

In this decade, our vision is to double the Australian survival rates for people with pancreatic and upper gastrointestinal (GI) cancers – making our survival rates among the best in the world.

We remain dedicated to delivering new treatments that will improve the quality of life for patients and their families. To improving early detection and support clinical trials that will lead to less deaths and one day a cure.

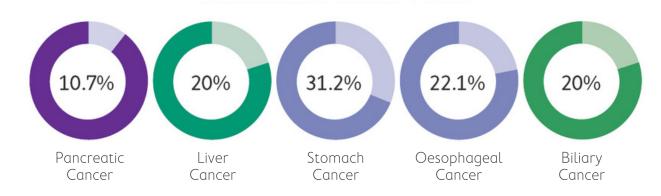
To do this there must be a significant investment over the next three years in pancreatic and upper GI cancer research.

We remain committed to increasing our year by year funding in order to invest \$5 million to research and more importantly, champion to achieve an increase in Australia wide funding to create a \$20 million research fund for pancreatic and upper GI cancers.

Pancare will work tirelessly to make the case for increased investment in these research areas, and show how research spending will improve diagnosis, provide treatments that give people more time with their loved ones, and save many more lives.

This research strategy lays out how, over the next three years, we will work with world-leading researchers and with people affected by pancreatic and upper GI cancers, who know how challenging the fight can be, to fund research that will transform and save lives.

SURVIVAL RATES BEYOND 5 YEARS



Six key aspects of our research program that will lead the way toward breakthrough



Discover new treatments

Novel therapies for treatment of locally advanced and metastatic disease and for prevention of cancer recurrence.



Early detection

Strategies through identification of biomarkers and screening protocols for general population and those at high risk.



Personalised medicine strategies

New approaches to better manage patients' health and target therapies to achieve the best outcomes in the management of a patient's disease or predisposition to the disease.



Optimal patient care

Research designed to reduce variations in the care of patients.



Support future leaders

Attract the brightest and the best to the field of pancreatic and upper GI cancer research.



Support clinical trials

Approaches that increase accrual of patient into well-designed clinical trials.

About upper gastrointestinal cancers

Pancreatic, liver, biliary, stomach and oesophageal cancers are the 'silent' cancers. They're difficult to detect in their early stages, and very aggressive.

In a society where information is just a button away, we remain in the dark when it comes to pancreatic cancer. Maybe it is because there are very few long-term survivors? Finding a person who for example can say they have beaten pancreatic cancer is a rarity, given that this cancer has a 5-year survival rate that is less than 10%.

Pancreatic cancer kills over 3,300 people each year but is not a high priority and remains largely underfunded in terms of research.

Liver cancer

- It is estimated that in 2020 there were 2,662 people diagnosed with liver cancer, with up to 2,297 people estimated to die from liver cancer in 2020. The 5-year survival is just 20%.
- Liver cancer usually originates from cancer of other regions in the body and is present as a result of the cancer spreading. In the case of colon cancer, spread to the liver is the major cause of death, but in some cases is curable.
- Primary liver cancer in the form of hepatocellular cancer is the fourth most common cancer in the world and usually occurs where there is underlying chronic liver damage.

Biliary cancer

- It is estimated that in 2020 there were 1,179 men and women diagnosed with biliary cancer, with up to 294 people estimated to die from biliary cancer in 2020. The 5-year survival rate is only 20%.
- Once bile duct cancers produce symptoms, they are usually too advanced to be removed by surgery.

Stomach

- It is estimated that in 2020 there were 2,246 people diagnosed with stomach cancer, with up to 1,140 men and women estimated to die from stomach cancer in 2020. The 5-year survival rate is only 31.2%.
- More than half of patients with stomach cancer at first diagnosis have a cancer that has already spread to glands or other organs in the body.

Oesophageal cancer

- It is estimated that in 2020 there were 1,587 people diagnosed with oesophageal cancer, with up to 1,351 people estimated to die from oesophageal cancer in 2020. The 5-year survival rate is only 22%.
- Symptoms of oesophageal and stomach cancer often overlap with common experiences of heartburn and indigestion. More pronounced symptoms usually develop in advanced stages.



Unless we make dramatic improvements, pancreatic cancer and liver cancer will become the second and third leading cause of cancer death in our society by 2030, based on US figures (Figure 1).

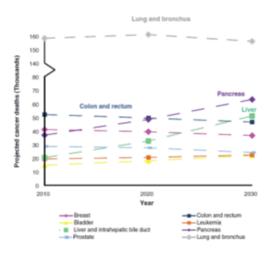


Figure 1. Projecting cancer incidence and deaths to 2030: the unexpected burden of thyroid, liver, and pancreas cancers in the United States. Rahib L et l. .Cancer Res; 74(11) June 1, 2014, 2913-21.

In a world of rapid technological change and medical developments we have seen dramatic improvements in cancer outcomes. Two of the most common cancers, prostate and breast cancer now have over 90% 5-year survival rate. Patients with these cancers generally have a feeling of hope.

While a number of cancer survival rates have improved overall, people diagnosed with cancer such as pancreatic have a less than 1 in 5 chance, on average, of surviving at least 5 years after being diagnosed. (Australian Institute of Health and Welfare 2019. Cancer in Australia 2019. Cancer series no.119. Cat. no. CAN 123. Canberra: AIHW.)

The outcomes for breast and prostate cancer have not just occurred because of chance. They are the result of millions of dollars in research funding and thousands of public awareness campaigns (Table 1.).

Cancer statistics: direct funding to single tumour type research 2006-2011 Compared with Incident, 5 Year Survival, and Deaths (Mortality) for 2019

TUMOUR TYPE	FUNDING 2006-11 (\$M)	FUNDING %	DIAGNOSED CASES IN 2019	DIAGNOSED % IN 2019	DEATHS IN AU 2019	DEATHS % 2019	5-YEAR SURVIVAL RATE
Breast cancer	143.3	27.2%	19,535	13.5%	3.094	6.2%	91.0%
Prostate cancer	67.4	12.8%	19,508	13.5%	3,293	6.6%	95.0%
Colon and rectum cancer	73.9	14.0%	16,398	11.3%	5,489	11.0%	70.0%
Melanoma	43.7	8.3%	15,229	10.5%	1,746	3.5%	91.0%
All others	162.0	30.8%	62,741	43.4%	28,007	56.1%	50.6%
Non Upper GI Cancers	490.3	93.1%	133,411	92.2%	41,629	83.4%	69.5%
Pancreatic cancer	7.2	1.4%	3,599	2.5%	3,051	6.1%	9.8%
Liver cancer	9.7	1.8%	2,589	1.8%	2,161	4.3%	19.0%
Oesophageal cancer	8.4	1.6%	1,687	1.2%	1,470	2.9%	22.0%
Stomach cancer	9.5	1.8%	2,462	1.7%	1,287	2.6%	30.3%
Biliary cancer	1.7	0.3%	965	0.7%	298	0.6%	20.0%
Pancare supported cance	ers 36.5	6.9%	11,302	7.8%	8,267	16.6%	19.1%

Table 1: References: 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. Australian Institute of Health and Welfare 2019. Cancer in Australia: an overview 2019. Cancer series. No 119. Cat. no. CAN 123. Canberra: AIHW.

When we consider Pancare supported cancers, they account for 16.6% of cancer deaths, but have received less than 7% of government research funding. Breast cancer and prostate cancer account for 12.8% of cancer deaths. They have traditionally received approximately 40% of Government research funding.

With massive amounts of Government funding, combined with investment and leadership from not-for-profits such as the National Breast Cancer Foundation and Prostate Cancer Foundation of Australia, it is no surprise why these cancers have attracted Australia's most talented researchers and the focus of Australia's major cancer institutes.

Pancreatic Cancer

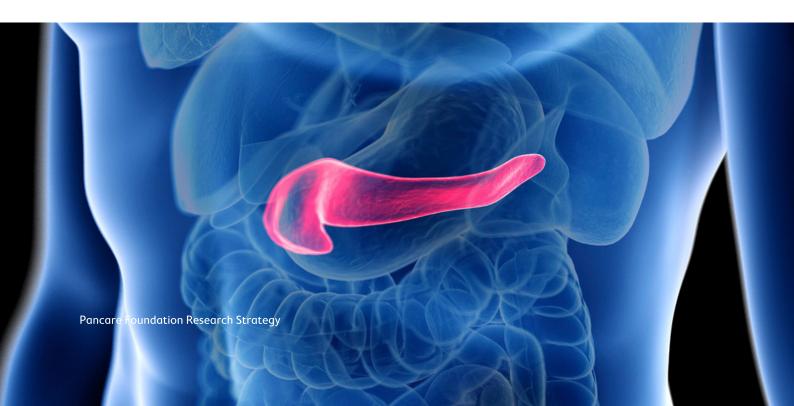
If we focus on pancreatic cancer alone, it becomes clear why it is sometimes referred to as an unfashionable cancer. No one seriously wants the label of this disease. Pancreatic cancer when it develops often produces symptoms very late.

At this late stage, surgery is usually not possible – and this is the only known treatment that has the potential to cure the disease. This means that around 80% of people are diagnosed too late to have the chance of being cured.

The lucky few – 20% of people who have the surgery have a chance of cure. The sad fact remains that not all patients are even offered the best treatment choices in our country. If you live in rural region for example, there is a much higher likelihood that you will not get the same quality care your city dwelling counterpart.

There reasons for this are complex but may largely be the result of the nihilist perceptions that surround pancreatic cancer and a lack of education in highlighting improvements in surgical care. But we must remember that there is always hope.

Not only do we need the tools and knowledge to diagnose people at an earlier stage, but we also need to make the diagnosis process faster so that we don't waste any precious time in moving people onto potentially life-saving surgery or other treatments.



Key focus areas of Pancare's research program

New treatments

Currently surgery is the only way that pancreatic cancer can potentially be cured, yet only 20% of people with pancreatic cancer receive this treatment.

Existing drugs for the condition often only provide small benefits in terms of survival outcomes, and while we have seen new drugs that have given families more time together, there haven't been any dramatically significant advances in decades.

Other cancers have seen great progress in the development of new drugs and new types of treatment that can substantially improve chances of survival – we desperately need to see the same in pancreatic and upper GI cancers.

There are promising areas of research that could deliver the breakthroughs in new treatments that we're hoping for. For example, there has been great interest in therapies that target the genetic changes within the cancer. This research needs funding to progress and deliver these muchneeded treatments.

Current projects funded

Implantable drug-eluting device: localised drug delivery for non-resectable pancreatic cancer

Institution: University of Wollongong Project lead: Dr Kara Perrow

While surgical removal of the tumour remains the only curative option, >80% of patients present with inoperable disease.

This project will test a novel drug delivery system that is capable of locally delivering 2 chemotherapeutic drugs directly to the site of the tumour with the overall goal of reducing tumour size so that patients can undergo life-saving surgery.



Below: Dr Kara Perrow





Improving the treatment of pancreatic cancer by Novel Treatment Therapies including studying the role of Cannabinoids

Institution: The University of Melbourne Project lead: A/Prof Mehrdad Nikfarjam

This research has continuously focussed on investigating the mechanisms involved in the tumorigenesis of cancer to identify novel target to improve treatment and patient's outcomes.

The PAK family of enzymes appears to be overactivated in most pancreatic cancers and is important in cancer growth and spread. Drug therapies that target PAK may significantly improve patient treatment and survival.

Work in this area previously funded by Pancare and undertaken by Professor Baldwin has led to a new research study across Austin Health and The University of Melbourne. This research represents an interdisciplinary collaboration led by a pancreatic surgeon-scientist and a cell biologist with unrivalled expertise in animal models of pancreatic cancer, PAK biology, tumor microenvironment and stromal activation.





Target P-21 activated kinase 1 (PAK1, a protein kinase) in the treatment of pancreatic cancer

The Novel Therapies research has continuously focussed on investigating the mechanisms involved in the tumorigenesis of cancer to identify novel target to improve treatment and patient's outcome. PAK1 was found to play an important role in many human cancer cells. The research has shown that PAK1 stimulated the growth and metastasis of colorectal and pancreatic cancers and contributes to therapeutic resistance.

Therapeutic effect of cannabis in pancreatic cancer

The research explored the therapeutic roles of cannabis in pancreatic cancer aiming to develop more efficient therapeutic regimes to extend patients' survival. Plant-derived cannabinoids have been widely investigated for their anticancer effects. Cannabidiol (CBD) and (-)-trans-**Δ**9-tetrahydrocannabinol (THC) are the mostly studied cannabinoids from plant extracts. Both THC and CBD inhibited pancreatic cancer cells growth in vitro and in vivo through different mechanisms. THC suppressed pancreatic cancer growth via cannabinoid receptor 2 (CB2) while CBD inhibited pancreatic cancer growth synergistically with gemcitabine through antagonizing the G protein-coupled receptor GPR53.



Screening for pancreatic cancer

There are currently no early detection screening options for most patients with pancreatic cancer or the general population. Often patients have vague symptoms such as non-specific abdominal discomfort, back pain, unexplained weight loss, that can easily be associated with various other conditions. Other presenting symptoms such as jaundice (yellowing of the skin and eyes), unexplained development of diabetes, when there are no diabetes risk factors or worsening of diabetes, although more specific, do not guarantee early diagnosis. Risks factors for pancreatic cancer are broad and include, but not limited to smoking, diabetes, obesity and chronic pancreatitis. Only about 10-15% of cases a have genetic or familial component to them.

Current projects funded

Funding the only Familial Screening program in Australia

Institutions:

Active: St Vincent's Hospital (Sydney) Austin Hospital (Melbourne), Royal Brisbane Hospital and Sir Charles Gardiner Hospital (Perth) In development: St Vincent's Hosptial (Melbourne)

Project lead: Dr Alina Stoita

The Familial Screening program was established in 2010 by Dr Alina Stoita at St Vincent's Hospital, Sydney and then expanded to the Austin Hospital, Melbourne in 2014. The Familial Screening was established to capture Australian families with a strong pancreatic cancer family history.

Pancare Foundation Research Strategy









Dr Stoita published a study in 'Hereditary Cancer in Clinical Practice' in 2019 showing that at the time of analysis, 1,059 individuals residing across all Australian states have contacted or were referred to St Vincent's Hospital Familial Screening program. Of these, 286 individuals met the age criteria and either had a family history consistent with familial pancreatic cancer or were known to have a high-risk pancreatic cancer predisposition gene, making them eligible for high-risk screening.

People at high risk of developing pancreatic cancer have an endoscopic ultrasound with blood and urine samples collected.

The stored blood and urine can be used to identify potential novel biomarkers in people at highest risk. Critically, the screening might help determine when prophylactic surgery might prevent the progression of cancer.

What this program has shown is that we need to develop novel biomarkers to detect pancreatic cancer in the broader community at an earlier stage. Some of the samples collected from patients in the screening program may help in biomarker development.

The researchers have also found that individuals with a family history of pancreatic cancer are motivated and engaged and want to be screened for pancreatic cancer. However, 124 eligible individuals (43%) actively or passively declined participation. Factors influencing dropout were reported to be the distance and expense of travel and psychosocial factors (e.g. caring for or grieving the loss of a family member with pancreatic cancer).

Tania's story

Aged 49 years - diagnosed with pancreatic cancer in February 2018, 12 months after enrolment into the screening program, shortly after the loss of her mother after a 2-year battle with pancreatic cancer.

My family and I will forever be grateful for being a part of the familial pancreatic cancer screening as this resulted in my early diagnosis of pancreatic cancer. I was fortunate that this insidious cancer was detected so early as it really is a silent killer. It is comforting to know that through regular check-ups and testing my brothers and I are being monitored and know we are in safe hands through the diligent medical team of specialists.

We are also very lucky to be a part of the Genetic Screening, as my brothers and I also have the BRACA 2 gene mutation. It is comforting to know that regular testing occurs and that my family and I are informed and supported about the options we can take in order to prevent us of being at risk of certain cancers which our family may be predisposed to.

It is so important that Pancare continues to gain funding so that more research and ultimately lives can be saved from this horrible disease. If we can all contribute in some way, we can increase the chances of defeating this cancer.

I'm very fortunate that my early detection allowed me to get the treatment that I required in order to be healthy and be present with my family.



Above: Dr Alina Stoita



Personalised medicine strategies

Personalised medicineis an evolving field in which physicians use diagnostic tests to identify specific biological markers, often genetic, that help determine which medical treatments and procedures will work best for each patient.

Pancreatic, liver, stomach, biliary and oesophageal cancers are not the same in everyone, and so every patient deserves treatments that reflect that.

We need to move forward to a position where patients only receive treatments that are most likely to work based on the type of cancer they have. This will give everyone the best chance of survival, without going through unnecessary treatment.

Our aim is to fund research that will bring us closer to matching the right treatment with each person in order to get the best outcomes.

Current projects funded

PURPLE Translational Registry

Institution: Walter and Eliza Hall Institute (WEHI)

Project lead: Dr Belinda Lee



This first-of-its kind translational registry is a powerful, integrated research tool that consolidates de-identified clinical and research data on a unique data-sharing platform enabling a diverse range of research activities. This webbased registry, a forerunner in Australia, is collecting longitudinal data at more than 27

The PURPLE Translational Registry (Pancreatic cancer: Understanding Routine Practice and

Lifting End results) was established by clinicians

and scientists at WEHI in October 2016, led by

cancer centres in Australasia.

Dr Belinda Lee

The goals of the PURPLE Translational Registry include:

- Improve data sharing and collaboration across laboratories and cancer centres
- Provide a comprehensive information system
- Consolidate data and research in a unique translational registry platform
- Create a system that is efficient and scalable.

As of April 2020, there is de-identified clinical data on 1762 cases in the PURPLE Translational registry. This far exceeds the initial projected expectation of data collection on 800 patients from 10 cancer centres over 5 years. The ongoing ability to accrue this volume of data demonstrates the recognition of the importance of this initiative and buy in from all the participating cancer centres.

Providing informatic support for clinical trials

They have expanded the PURPLE translational registry infrastructure capacity to provide data support to clinical trials – with 15 sites coming on board in the last year with the DYNAMIC-Pancreas clinical trial. This trial is being led by the team at WEHI (Gibbs Laboratory) in collaboration with the Johns Hopkins University (JHU) (Vogelstein Laboratory).

The DYNAMIC-Pancreas clinical trial is investigating the use of circulating tumour DNA after curative intent surgery to personalise individual patient's adjuvant chemotherapy strategies. This large randomised trial is on track and is projected to complete accrual by 2022.



Right: Dr Belinda Lee



Optimal patient care

Current projects funded

Upper Gastrointestinal Clinical Cancer Registry

Institution: Monash University

Cancer types: Pancreatic, oesophageal/gastric (all current); biliary, primary liver cancer (in

olanning)

Project lead: Professor John Zalcberg

Reduce variations in the care of patients and ensure optimal patient care
The Upper Gastrointestinal Cancer Registry (UGICR) is a clinical quality registry (CQR) that operates under the framework defined by the Australian Commission on Safety and Quality in Health Care (ACSQHC).

The UGICR is uniquely placed to make a real impact on the quality of care provided to people with upper GI cancers, not only in Victoria and NSW but potentially to expand across Australia. The School of Public Health in the Faculty of Medicine at Monash University is home to over 30 clinical registries, giving the UGICR access to the expertise needed to run and maintain a registry of this scale.

Pancare Foundation Research Strategy



Clinical quality registries are recognised as an invaluable tool not only in measuring quality, but also in driving quality improvement with benchmarked, risk-adjusted reports identifying areas in which clinical practice can be improved – a feature unique to this registry.

The UGICR will also uniquely collect information directly from patients to further drive quality improvement, which provides a valuable opportunity to inform participants about support organisations such as the Pancare Foundation. In addition, the UGICR provides an ideal platform for a range of clinical research, translational studies, randomised trials and data linkage with biobanks.

The UGICR formally commenced in late 2015 and began recruitment to the pancreatic cancer pilot across 4 Victorian sites in early 2016. Currently, the pancreatic module has over 30 participating hospitals in Victoria and NSW.

Upper Gastrointestinal Clinical Cancer Registry

Primary Aim:

To use real-world data to measurequality of care provided to people with an upper GI cancer and report bench-marked, risk-adjusted data back to participating hospitals & clinicians to drive immediatequality improvement.

Research studies:

Most importantly, the UGICR provides a data spine to examine causes of unwarranted variation. It also provides a platform for hypothesis-based translational studies e.g. link to biobanksand precision medicineprojects.

Cancer types included:

Pancreatic and oesophageal/gastric (all current), biliaryand primary livercancer (future)

Population coverage:

The UGICR aims to capture all eligible people at participating hospitals. The UGICR is on track to capture at least 69% of Victorians with newly diagnosed pancreatic cancer by the end of 2018 and 64% of patients with oesophageal, stomach or biliary cancer. Further resources will allow expansion to approx. 80% capture.

Governance structure:

Steering Committee that includes two consumers (including Pancare representative) and two expert clinical working parties that provide oversight of disease-specific modules (pancreatic cancer and oesophago- gastric cancer). Similar modules will be established for biliary and primary liver cancer in the future.

Quality indicators of care included in reports:

These have been developed by expert working parties of clinicians. E.g. there are 27 indicators that measure compliance with agreed best practice for patients with pancreatic cancer.

Clinical data:

This is collected directly from clinician/hospital medical records by Monash University-trained data collectors.

Patient questionnaires:

The UGICR is planning to begin collecting information directly from participants with pancreatic cancer.











Future leaders in research

To make sustainable improvements to the lives of people with pancreatic cancer we need to train our Professors of the future, now. We call them our Future Leaders.

An important part of the Pancare work has centred on scholarships for science and medical graduates to undertake PhD projects directly related to pancreatic and upper GI cancers.

By funding researchers at different stages of their careers, we support new and creative ideas to come to fruition, and ensure that the best researchers are ready to make the difference that we need in years to come, as well as right now.

We want to attract new and passionate researchers into pancreatic and upper gastrointestinal cancer research. With your help through Scholarships and Young Investigator grants can we fund excellent research and support the best and brightest young minds of the future.

Current scholarships and grants funded

rma Network Scholarship - 3 years

Award recipient:

Dr David Lau

Novel therapeutic targets and biomarkers in biliary tract and gastric cancers – Olivia Newton-John Cancer Research Institute, Latrobe University, VIC

Damien Woodruff Scholarship

Applications opening mid-2021.

Pancare Foundation Research Strategy

Phil Sly Research Scholarship

Award recipient:

Dr Vanessa Chin (2013 – 2017) Biomarker and Targeted Novel Drug Development in Pancreatic Cancer - Garvan Institute NSW.

2021 applications opening mid year.

Young Investigator Grant

In partnership with Cancer Australia, Cure Cancer and Pancare Foundation

Award recipient:

2019 - 2020 Dr Ashleigh Poh, Targeting HCK in pancreatic ductal adenocarcinoma to restrict tumour growth and metastasis - Olivia Newton John Cancer Research Institute and LaTrobe University.



Supporting clinical trials

In the fight against pancreatic cancer, clinical trials often provide the best treatment options, and they give patients early access to cutting-edge treatments that can lead to progress in research, improved treatment options and better outcomes.

Treatments available today were approved through clinicals trials.

Pancreatic cancer clinical trials are necessary to determine whether new treatments developed in the laboratory are beneficial to people living with pancreatic cancer. Data from successful clinical trials will determine whether an experimental treatment should be approved for a specific disease or disorder, such as pancreatic cancer.

Although Pancare strongly recommends clinical trials at diagnosis and during every treatment decision, put simply there are not enough good clinical trials in Australia. This is due to the lack of investment in research for new treatments.



Powering research for the future

The challenge is huge but one that's worth the fight.

If we put far greater efforts and energy into dealing with pancreatic cancer and other upper gastrointestinal cancer, there is a is a real opportunity to make a difference. There is some light amongst all the darkness.

More funding and collaboration are required to insurance all patients receive the best possible care, improve early detection, develop new treatments and support patients and families throughout their journey.

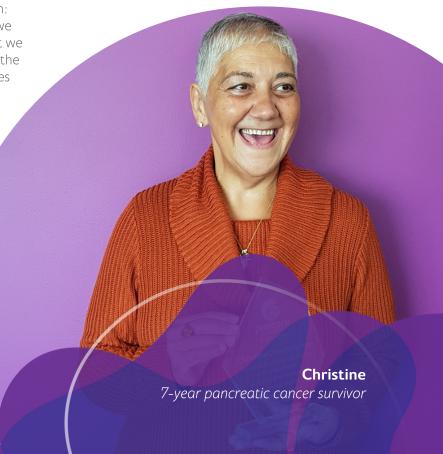
Encouraging talented researchers to focus on pancreatic and other upper gastrointestinal cancer research by providing appropriate financial and organisational support remains a challenge, which we are well-equipped to handle.

Pancare know the next three years are an incredibly important time to invest in research: we are on the cusp of great new discoveries; we have the potential to explore treatments that we have never been able to before; and we have the opportunity to dramatically improve outcomes for people diagnosed and to save lives.

It is only through being bold that we will realise this potential – through funding innovative research, bringing scientists together, involving people affected by the condition, and investing in specific areas, that we can have the biggest impact.

We have bold ambitions for the next three years. Together let's shine the light on these cancers to make long-term survival the norm for patients with pancreatic, liver, biliary and other upper gastrointestinal cancers rather than a rarity.

But we simply will not be able to make the breakthroughs that we need without your support to fund research which will transform diagnosis, treatment and save lives.



Our Medical Advisoary Board

Pancare's Medical Advisory Board provide rigor and governance to our strategic objectives of investment into research; providing a process of assessment and monitoring.



A/PROFESSOR MEHRDAD NIKFARJAM - CHAIR

Liver and pancreas surgeon at Austin Health & Warringal Private
Associate Professor at the University of Melbourne, Department of Surgery.



PROFESSOR NIALL TEBBUTT

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Honorary Consultant Anaesthetist at the Royal Children's Hospital, Victoria, Australia.



DOUG HAWKINS

CEO, Pancare Foundation

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- 2.NHRM Expenditure 2012-2016
- 3. Australia Institute of Health & Welfare 18 December 2018. 'Cancer data in Australia"





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