BRYAN HENNESSY Why we need patients to take part in cancer trials **P2**

OLIVER O'CONNOR Ireland needs more funding for cancer treatments **P2**

TARA BYRNE Many women are afraid to talk about metastatic breast cancer **P4**

Innovation within Oncology

Eddie Mac Eoin is a patient advocate and cancer trial participant from Cork. Here his grandchildren hold hands as they celebrate International Clinical Trials Day with Cancer Trials Ireland.

Eddie encourages all men over 50 to go and get checked

Former prostate cancer patient, Eddie Mac Eoin, is encouraging all men above the age of 50 to go and get checked as soon as they experience any abnormalities. A simple blood test is all that is required.

After being kept up at night, and feeling increasingly higher levels of discomfort, alarm bells were ringing for Eddie Mac Eoin from Cork.

He went to the doctors where a blood test confirmed that he had significantly high levels of prostate specific antigens (PSA).

After a second blood test and finding out the PSA levels had significantly increased, Eddie was referred to a urologist for further testing where 12 different samples of his prostate were taken, 10 of which were at an aggressive cancer level.

Receiving a diagnosis of prostate cancer

In February 2015, Eddie was diagnosed with prostate cancer.

Eddie Mac Eoin
Former Prostate Cancer Patient

"Talking about it properly helped me cope."

He was 59-years-old. He recalls his initial feelings of terror and shock, as he was told the news that he had an aggressive large tumour in his prostate.

Eddie was consulted by his doctor who offered him with an array of different treatment pathways. At the time of diagnosis, Eddie faced one of the hardest moments in his life, when he had to relay the news to his family. After much deliberation, together they made the decision that the best way forward would be to undergo a clinical trial. Eddie says, "Talking about it and properly informing my family helped me cope. It was important to keep them in the loop every step of the way."

The treatment that led to signs of recovery

The clinical trial that Eddie signed up to was running for cancer patients whose cancer had not started to spread to other parts of their body. He was told that half the cancer patients in the group would receive 'a new drug', while the other half would receive 'conventional treatment'. All participants were to receive the same level of care and monitoring and the only difference was the drug itself. Eddie says, "You'll do anything when you hear news like that, so I opted for the trial. It was a family decision."

After the trial, the positive effects showed early on and it emerged that Eddie had landed in the category that received the new drug. He was told that, after receiving the new treatment, his tumour had been significantly reduced and he was now ready to begin the second half of the trial. Eddie was moved onto radiation therapy which entailed 39 sessions of treatment. The treatment procedure took a heavy toll on his physical and mental state. He found it difficult to keep up his usual walking and golfing hobbies. The radiation sessions left him feeling, "constantly lethargic and fatigued," Eddie says. Despite this, he was reassured that he was slowly but surely on his way to recovery. Among all the hardship the Mac Eoin family were experiencing, the year after Eddie's diagnosis, his first grandchild was born, which lifted spirits. "You become foolish when you have grandkids," Eddie says.

Creating further awareness around clinical trials

Eddie feels that it's important that more people become aware of and educated about the benefits of clinical trials and the role they play in improving patient pathways. For many patients it allows the opportunity to access medicine and personalised care, which they may not otherwise receive.

With new treatments being developed, tested through clinical trials and approved, Eddie thinks of his grandchildren when he hopes that younger generations will be able to have access to the treatments they need to get better.

Today, Eddie is cancer-free

Eddie celebrates his 63rd birthday in July this year, and currently has his hands full with three beautiful grandchildren. He is now cancer-free and back to enjoying a retirement, gardening, golfing and being foolish with his grandchildren. ■

Kate Clements

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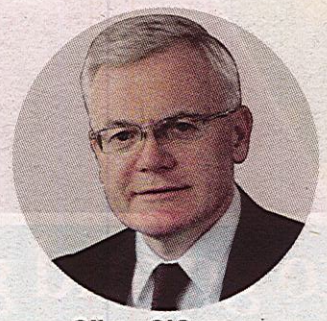
Commitment to new funding will bring in new treatments

Irish cancer patients may not always be given access to the latest drugs coming onto the market because of years of flat growth in the funding of new medicines.

That is according to the CEO of the Irish Pharmaceutical Healthcare Association, Oliver O'Connor. He points out that it is not down to the price of the medicines. The association has agreed with the government to set the price of medicines as an average of their cost across 14 EU markets but, he believes, new drug uptake still falls far below average.

"It's very easy to say that new medicines aren't being taken up because of their cost, and that drugs companies should do more," he says. "The fact is, the prices are agreed as an average of 14 EU countries and, of those countries, Ireland is last among Western European countries for the adoption of new medicines. When our European Association, EFPIA, ranks countries for new drug adoption, Ireland comes around 18th out of 28."



Oliver O'Connor
Chief Executive, Irish Pharmaceutical Healthcare Association

"The money allocated is not sufficient to reverse years of under-investment in new treatments."

Ireland lags behind

In 2016, only around one in five new cancer medicines launched in the previous two years made it on to the Irish market, compared to three in four in EU leader, Germany. For O'Connor, this means there is a risk that Irish patients are being let down because they are far less likely to have access to the latest treatments than other EU citizens. For him, the issue is not so much the cost of drugs but rather the level of investment by the government in new medicines.

"We had years of flat growth in health spending since the global financial crisis and once you get behind, you build up a back log," he says.

"It's a little like a conveyer belt; we had a crunch on public spending from 2009 but the new medicines kept coming along, so we've been playing catch up ever since. The pharmaceutical companies we represent provide discounts and rebates, but there is only a small amount of new Exchequer money coming in. It works out at around €14 million out of a €2 billion budget so it's a pretty small proportion.

"In other EU countries they generally ensure that new medicines funding grows by around 2% to 3% per year, so, effectively, there is a commitment to bringing the latest treatments to their citizens. It is something that would really help the situation in Ireland."

Constructive talks

O'Connor says that more dialogue between the IPHA and the Irish government is needed as indicated by the Minister for Health at the IPHA Annual Conference last year. The aim would be to secure a commitment to better processes and faster adoption of new medicines supported by Exchequer funding growth.

Ideally, funding would grow by a known percentage each year, so the industry knows the funds are available. At the moment, O'Connor laments, the extra money currently allocated is not sufficient to reverse years of underinvestment in new treatments. ■

Sean Hargrave

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More funding is needed for cancer trials in Ireland

Bryan Hennessy,
Clinical Lead, Cancer Trials Ireland

Cancer trials can be the ultimate win-win, with patients getting the best care possible, plus potentially getting access to a new, breakthrough medicine.

Cancer trials are an important part in bringing in new treatments. How is Ireland faring for numbers of patients on trials?

Unfortunately we are lagging behind a lot of Europe. We only get around 3% of people in Ireland with cancer on new drug trials. That's not because 97% don't want to be on them, it's all about funding. You need to get the funding in place to get new medicines trialled in the clinical environment.

We're working hard on – ideally – doubling that proportion over the next few years, but we need the money to do so.

What are the benefits of cancer trials?

You need phase I, II and III trials involving patients to be able to show that a new medicine is safe and effective outside the laboratory. Medicines can show great promise in the lab, but it's not until you get them tried by real cancer patients that we can be sure of their potential.

How do patients benefit from trials?

Patients get a lot from cancer trials because, ultimately, they're going to get far more attentive care. There is always a control group in any trial who don't get the new treatment, but rather a placebo. They're needed to ensure we have something to compare the performance of the new drug against.

Even if you're in the control group, you still get the treatment you would have got if you were not on the trial but with the added bonus of far more consultations and being monitored and scanned far more frequently.

Are some people fearful they are the equivalent of a human guinea pig?

Yes, and that really is the point anyone in cancer care would like to make. Nobody is a guinea pig. The very worst-case scenario is you carry on with your normal treatment but with the bonus of an extra layer of care, so there's no downside.

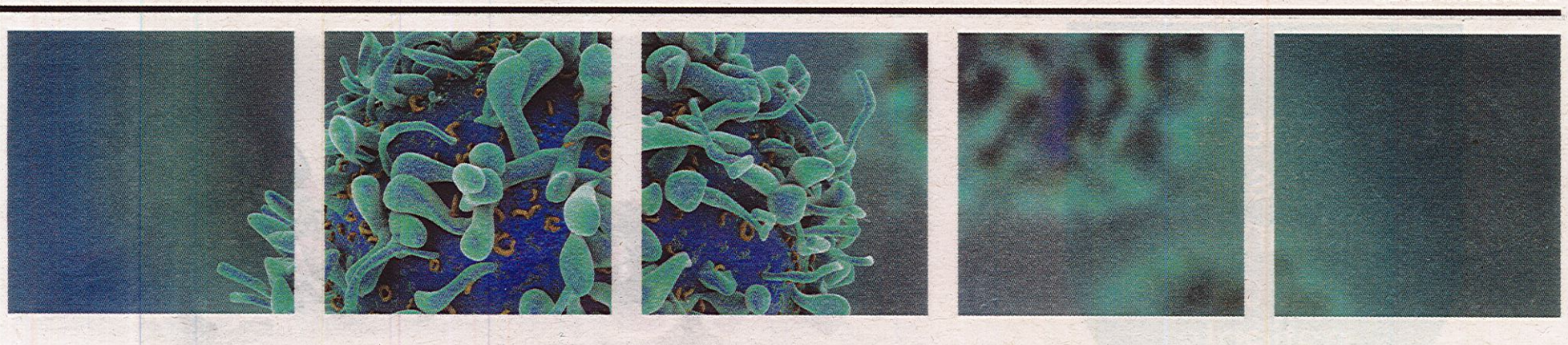
There is, of course, the benefit of knowing that you could be getting the very latest medicine and that you are definitely helping the next generation, no matter what. There's a very strong altruistic urge in cancer patients to get better but to also do the right thing by those who will come after them.

Are the trials only run in Ireland or do you collaborate?

Cancer is a global phenomenon, so no one country is ever going to defeat it on its own. We all need to work together to tackle it.

I'd say around two in three of the trials we're involved with here in Ireland will involve working with colleagues overseas. People may have read recently about the successful Taylor X trials for a new breast cancer treatment. That's a great example because Ireland was involved in that work, along with fellow researchers from the US, Australia, Canada, New Zealand and Peru. ■

Sean Hargrave



Immunotherapy is proving a vital alternative to traditional cancer treatments

Blood cancers are the rarest form of cancer, yet research in the area continues to yield broadly applicable findings throughout cancer research.

Even when combined, cumulatively the blood cancers – such as multiple myeloma, leukaemia and lymphoma – account for less than 10% of all cancers. However, as Michael O'Dwyer, Professor of Haematology at NUI Galway explains, their impact isn't in proportion to their rarity.

"A lot of blood cancers are extremely aggressive and have a disproportionate impact on the mortality rates and costs associated with cancer in general," O'Dwyer says.

Tissues such as blood and bone marrow are much easier to study than solid tumours associated with other cancers, with a number of important discoveries in cancer research having come through the study of blood cancers.

Michael O'Dwyer
Professor of Haematology, NUI Galway and Director, Blood Cancer Network Ireland

Many targeted cancer treatments were pioneered in the treatment of blood cancer before being adapted to treat other cancers.

Examples include the use of kinase inhibitors, monoclonal antibodies and bone marrow transplantation. A more recent example involves harnessing the cancer patient's own immune cells to directly target and kill cancer cells; a treatment that's only become available in the last year.

> "Treatment involves harnessing the patient's own immune cells to kill cancer cells."

'T-cells', or lymphocytes (blood cells) that plays a central role in the immune system, are harvested from the patient before being genetically modified using a chimeric antigen receptor (CAR) to better recognise a patient's cancer cells, and then expanded.

These supercharged CAR-T immune cells are re-infused back into patients, with some of the results for patients in the 'last chance saloon' having been 'spectacular' according to O'Dwyer. "Many patients with resistant leukaemias, lymphomas and myeloma have gone into complete, and in some cases, lasting remission from a position of having no hope."

First used in patients with advanced blood cancers, 'immunotherapy' is still in its infancy. "To use a mobile phone analogy, this is a first-generation product at the moment," O'Dwyer says. He believes that, while well-placed to conduct other innovative clinical trials, Ireland needs significant investment in infrastructure to carry out cellular immunotherapy treatments safely and to ensure Irish patients don't miss out on this revolutionary therapy.

"Cellular therapy is the next 'big wave.' It's important that Ireland jumps on that wave at an early stage," he says.

"We need to put an ecosystem in place that will attract companies involved in cellular therapy to relocate here. The more PhDs and research produced within Ireland, the more inward investment we're likely to attract, as the manpower and expertise is on hand." ■

James Alder

Life expectancy rises for advanced breast cancer patients

Dr Miriam O'Connor
Consultant Oncologist, University Hospital, Waterford

New treatments mean many women with advanced breast cancer are living longer than in the past.

In the past, a diagnosis of metastatic breast cancer was seen as the prelude to an early death, but now, new treatments are prolonging life for more patients.

Dr Miriam O'Connor, Consultant Oncologist at University Hospital, Waterford, who has a special interest in metastatic breast cancer, says: "average life expectancy for patients with this condition used to be quoted as two to three years, but now new treatments mean many women live well beyond that."

Metastatic breast cancer (MBC), also called advanced, stage four, or secondary breast cancer, is the term used when breast cancer cells spread to other parts of the body, such as the bones, lungs, liver, or less commonly, the brain.

It most commonly occurs in people who have already had breast cancer and may occur many years after the initial diagnosis. Occasionally, women present with metastatic breast cancer at the time of diagnosis (de novo MBC).

There are three main types of MBC: a) hormone (oestrogen/progesterone) positive; b) HER2 positive, and c) triple negative type (oestrogen, progesterone and HER2 negative). Molecular profiling allows identification of these subtypes.

All three types of metastatic breast cancer are treated with drugs, but the oncologist must ascertain which subtype it is, how far the cancer has spread and whether there are other medical problems.

The first-line treatment, usually one or a combination of drugs, will be given for an agreed period before being reviewed for effectiveness and side effects. If the initial treatment is not working effectively or the side effects are difficult to manage, second-line, further drugs will be tried.

"This is a frightening and life-changing diagnosis for patients and their families. They will need support from their family, friends and work colleagues.

"The MBC journey is akin to a rollercoaster with ups and downs. It is often scary and overwhelming at the start but there will be periods of stability for months and often for years. But, relapses can occur, which require changes in therapy, with the goal being achieving stability again."

"These women have to learn to adjust their day-to-day life with MBC, its therapies and frequent hospital visits for the duration of their illness," says Dr O'Connor.

"Due to our increased understanding of the subtypes and through the process of clinical trials, successful new drugs are being made available to our patients. This process does take time, but it ensures we can advise patients on what to expect, both from controlling their cancer and side effects management.

"Progress in MBC is being made and patients are living longer, but there is still much work to be done." ■

Linda Whitney

PHOTO CREDIT: DAVE MEEHAN
The Plurabelle Paddlers, a breast cancer support dragon boat club, in action at the Grand Canal Dock in Dublin City.

Enlisting social media to support those living with terminal breast cancer

How social media helps women with metastatic breast cancer help themselves.

Social media and other online platforms could help women with metastatic breast cancer (MBC) access emotional and peer-to-peer support to the levels already experienced by those diagnosed with early breast cancer (EBC), according to Tara Byrne, patient advocate at breast cancer charity, Europa Donna Ireland.

"There is a strong public understanding of early breast cancer diagnosis and there are lots of resources available. Survival rates have greatly improved for EBC but there is a much slower pace of innovation in MBC, so the same improvements in survival rates have not been seen," Byrne says. "The five-year survival rate for MBC is just 25%, which is a devastating prognosis for those diagnosed. This strengthens the need to urgently close the gaps in both clinical and support services".

"While an MBC diagnosis is terminal, more women are living for longer with MBC, and a real challenge for these women is to achieve the best quality of life while managing the disease," Byrne explains. "MBC still carries a stigma and many women are afraid to talk about it."

Social media, messaging systems and specialist apps provide unrivalled opportunities to extend support to those living with MBC and help close the gap with the services provided for EBC, Byrne says. "We need to build support networks to help women with MBC cope with the treatment and side effects of their illness while continuing to fulfil their daily role as partner, parent, colleague, friend, and family/community member. "Without the proper support structures in place for both patients and their supporters, MBC can put enormous strain on all close relationships."

Mutual support online

Digital services have many advantages over conventional support groups. They are available 24/7 and give access to women at a national and international level who will have experienced the same challenges and can share advice and give practical support and encouragement. Byrne points out that 64% of women diagnosed with MBC are under the age of 65, so the digital world is familiar to them.

Tara Byrne
Volunteer Patient Advocate and Committee Member, Europa Donna

"More women are living longer with MBC."

MBC patients can join a social media page (originated in Ireland), which has a public face, and behind which exists a secret group that is accessible only by invitation. In this private space, all women living with MBC can chat confidentially, share experiences, learn from each other and get the support they need. This protected environment allows the women to gain confidence in an enclosed internet community.

The need for social support when living with MBC is also assisted by a messaging network, Byrne says. "It gives a real sense of inclusion. Messages can be sent at any time on any topic – from the serious to the frivolous. This can be a great help in reducing feelings of low self-worth and loneliness. One woman posted that it was her birthday and got more than fifty messages congratulating her, which gave her a great boost. Knowing that such a volume of support is nearby genuinely helps manage the pain and fear of living with a terminal illness."

Emotional? There's an app for that

In collaboration with Europa Donna, Pfizer's app, 'Emotionspace', can be used to help MBC patients cope. It has tools that enable them to track their emotional state, set goals and establish routines to help them get through the day and combat tiredness. "Smartphone technology can help manage daily living and also provide valuable data for the patient, their supporters and healthcare professionals," says Byrne.

Byrne, a marketing professional and patient advocate, was diagnosed with early breast cancer at the age of 35 and made a complete recovery. In search of initial support, she joined a breast cancer support dragon boat racing club, an activity that combines fitness and socialising in more or less equal proportions. But there was a dark side: "Of the core active membership of 50 paddlers, 11 were lost to MBC within four years, the majority of those dying within a really tough, 18-month period," Byrne recalls. "It was then I realised that the MBC group of ladies had a different set of needs."

This led to involvement with breast cancer charity, Europa Donna Ireland, which is an advocacy and support organisation. As a volunteer, Byrne promotes awareness of this terminal disease and is a moderator of the social media platform. "I believe that women with MBC can have an improved quality of life if they get the right support. The accessibility to 24/7 digital tools is proving a crucial support to some of the c. 3,000 women currently living with MBC across Ireland." ■

Chris Partridge

Precision medicine: Using genetics to refine cancer treatment

Breast and ovarian cancers provide different challenges for oncologists. One is very common, the other is rare but harder to cure. Now, genetics and personalised care are helping to tackle both head on.

Since 2008, a mass centralisation of cancer care in Ireland has seen the treatment of breast and ovarian cancer change for the better.

Professor Seamus O'Reilly, Consultant Medical Oncologist at Cork University, says it's improved oncology outcomes significantly. "We're better resourced, and we're seeing quicker diagnoses, referrals and clearer treatment pathways for patients," he says.

Breast cancer and ovarian cancer in Ireland both provide their own challenges. Breast cancer remains the most common form of the disease in women, accounting for 17% of all cancer deaths in Ireland. However, the survival rate continues to improve with the figure now around 80%.

Prof. Seamus O'Reilly
Consultant Medical Oncologist, Cork University Hospital

"Breast cancer survival rates continue to improve with the figure now around 80%."

In ovarian cancer, the death rate is roughly 65%. New ways of treating both diseases will aim to make treatment more personalised; a vital innovation according to O'Reilly. "You're looking for genetic changes in the patient's cancer that are targetable; that's the holy grail for cancer treatment."

In both breast cancer and ovarian cancer, precision therapy is helping to enhance and improve existing treatments. Based on a greater genetic understanding of an individual's cancer, treatments can be modified to best target genetic changes occurring in a patient's cancer cells.

In breast cancer, an increased presence of the 'HER2' gene causes cancer tissues to multiply faster, occurring in roughly 25% of breast cancer cases. 'HER2 testing' establishes whether someone is 'HER2 positive', meaning they have the specific gene abnormality that can play a role in the development of breast cancer. Treatment then targets this genetic abnormality directly.

"In someone with HER2 positive breast cancer, their cancer is likely to come back more quickly than in others. We can now target that abnormality and we're seeing better results from that," O'Reilly says. In ovarian cancer, medicine has been developed to prevent cancer cells from being able to repair themselves.

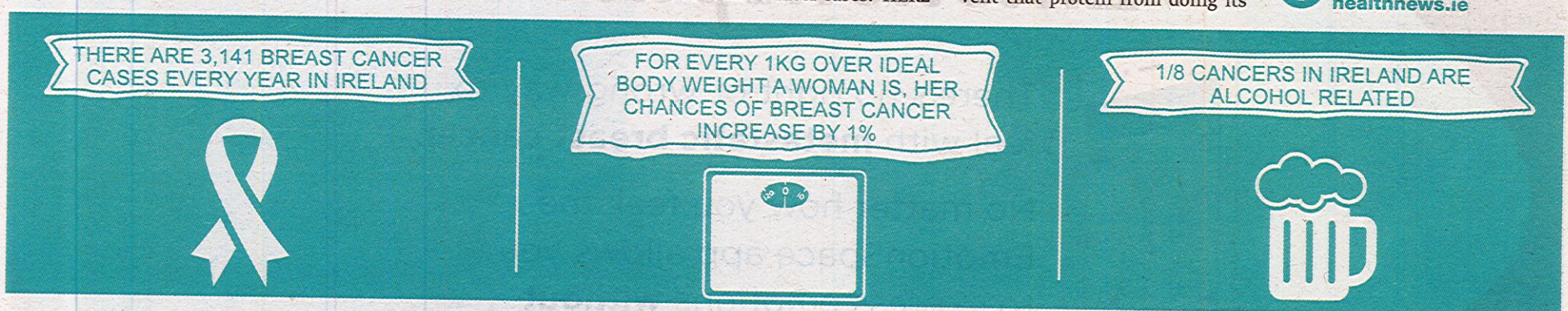
PaRP (poly-ADP ribose polymerase) is a protein that aids cell repair. PaRP inhibitors, the treatment being used in both ovarian and breast cancer, specifically prevent that protein from doing its job on cancer cells – helping to kill them off.

In light of the increased personalisation of care, O'Reilly stressed that innovation must focus on making these treatments more repeatable and accessible in order to maximise their impact.

"Immunology is another area that will play a huge role in ovarian and breast cancer. The challenge with all these new treatments is making them universally accessible and affordable." ■

James Alder

Read more at **healthnews.ie**



Screening those most at risk drastically reduces lung cancer deaths

Quality of life for lung cancer patients has improved hugely in the last ten years, says Brian Bird. Better screening, treatment and harnessing of our own immune systems is helping to tackle a notoriously aggressive form of the disease.

Lung cancer is one form of the disease where the common cause is thought to be relatively unambiguous. Smoking, along with other big risk factors such as asbestos exposure, are commonly associated with the onset of the disease.

However, Dr Brian Bird, Consultant Medical Oncologist at Bon Secours in Cork, says there's a worrying trend rearing its head among the patients coming through his doors.

"We're seeing more and more male and female non-smokers, young people, coming in with lung cancer. As it stands, the reasons for that are poorly understood."

These non-smokers or light smokers are also more likely to have a 'druggable mutation', a mutation in the tumour that can be targeted with specific treatment.

Dr Brian Bird
Consultant Medical Oncologist, Bon Secours, Cork

"Annual chest CT scans can reduce lung cancer mortality by 20%."

"There's often a switch that gets jammed on in a cell, commanding it to divide and grow. If you can turn that switch off, it can enable people to live with the disease for years with less of an affect on their quality of life," Bird says.

As with many cancers, finding the disease early can lead to more effective early treatment. Screening for lung cancer in those most at risk could have an enormous impact on the death rate caused by the disease.

"With those who've smoked heavily for 20 or 30 years, even if they've stopped smoking, providing annual chest CT scans can reduce lung cancer mortality by 20%," Bird says.

This will enable more oncologists to stop cancers spreading and becoming less manageable.

"Catching it early helps us establish whether we can simply cut it out or – if that's not an option – use radiotherapy to essentially 'cook' the tumour, which is almost as effective as surgery itself."

Better screening and treatments are seeing lung cancer patients' quality of life improve, despite there being room for further innovation in both areas.

Screening through blood tests would mean less exposure to radiation for patients, but this is something that's still a way off being available.

Currently, much focus is on alerting and enabling patients' immune systems to fight their lung cancer. It is an area of constant development.

Our body's immune system constantly receives messages to 'stand down' where it's not needed. Cancer can manipulate these 'brakes' put on the immune system, meaning it can divide and spread unchecked throughout the body.

"With a better understanding of how lung cancer evades the immune system, we'll be able to 'take the brakes off' the immune system and allow it to fight the cancer itself."

A core area of focus, it's thought that between 20 – 40% of patients benefit from immunotherapy. ■

James Alder

Read more at healthnews.ie

¼ OF NON-SMOKERS/LIGHT SMOKERS WILL HAVE A MUTATION IN THEIR TUMOUR THAT IS TREATABLE WITH DRUGS

MUCH FOCUS IS ON ALERTING AND ENABLING PATIENTS' IMMUNE SYSTEMS TO FIGHT THEIR LUNG CANCER

LUNG CANCER MORTALITY CAN BE CUT BY 20% BY GIVING LOW-DOSE CT SCANS TO LONG-TERM, HEAVY SMOKERS

Doctor's input vital to driving targeted, innovative research

Breakthrough Cancer Research are working to bring clinicians closer to those working to beat cancer in the lab. Orla Dolan, Chief Executive, tells us how that's helping to bring innovative treatments to the table.

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breakthrough CANCER RESEARCH

Orla Dolan knows better than most that no one is exempt from cancer. The Chief Executive of Breakthrough Cancer Research saw her father, a world renowned cancer surgeon himself, set up a research centre before dying of the very disease he dedicated his life to fighting.

That research centre looked to bring clinicians and researchers together to enhance innovation in treatment of the most persistent and difficult cancers.

Orla Dolan
Chief Executive,
Breakthrough Cancer Research

With the charity having been set up with the same ethos and approach, Orla explains why she sees research as being so pivotal: "We want to save the people we can't save today." The challenge her father identified – how to better engage doctors on the front line with clinical research – is still just as present today.

> "At its most fundamental level, cancer research is about saving the lives we can't save today."

Ireland's doctors and surgeons are spread incredibly thin in comparison to other EU nations, making the job for researchers and clinicians even harder. "The passion is there, but the time isn't," she says.

Despite its size, Ireland punches above its weight in terms of innovative research. "We're a small country, but we have incredibly innovative, passionate people."

The stakes are high if you work in cancer research. To encourage an entire country or health system to take on a new treatment, you first have to prove that it will work and you need researchers, clinicians and patients involved.

One recent clinical trial in Dublin provides a clear example of why clinicians' links to research is so vital.

Observations of patients oesophageal cancer saw chemotherapy have varying success rates, despite patients being at the same stage and level of health.

Researchers found that some of the cancer cells themselves were different from patient to patient. The standard chemotherapy aims to set off the cancer cell's 'self destruct' function, but it was being blocked by some of the cancer cells, while working on others.

A combination of a bi-polar drug and a chemotherapy drug now aims to target the rogue cells, which if successful will mean doctors simply need to establish which type of cell is present in order to treat the cancer.

"That could have taken five years to establish in research alone. The clinical input brought that forward and made it happen much faster," Orla says. ■

James Alder

Read more at **breakthroughcancerresearch.ie**

Tumour genetics mean targeted treatments are closer than ever before

Genetic testing is already helping oncologists screen for cancers and even prevent some from developing. But, how does it work? Professor David Gallagher explains some of the mystery and limitations of the evolving genetic testing landscape.

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Hermitage MEDICAL CLINIC

Cancer is occasionally hereditary, and a number of responsible genes have been identified. One is BRCA2, notable identified in an Irish family being cared for in St. James's Hospital.

Breast, ovarian, colorectal and prostate cancers often originate where an individual has inherited 'faulty' genes that can't perform their protective function against abnormal mutations.

In cancer treatment or prevention, there are two core types of genetic testing available to clinicians, each with their own specific purpose. Germline genetic testing, which is performed on normal cells, generally obtained from blood or saliva; and tumour genetic testing, using biopsies of tumour tissue.

Germline genetics covers our core genetic make-up, with tests predominantly focusing on those with a family history of cancer. This DNA is determined at our conception and doesn't change until our death.

Tumour genetics, on the other hand, measures alterations to core DNA. It's the study of how that germline DNA mutates and becomes abnormal in a cancer cell. This is a more investigational field of genetics, using biopsies of tumour tissues and is an area of active research.

Both the study of germline and tumour DNA can aid clinicians in determining which course of action to take in either preventing or treating cancers.

Prof. Dr David Gallagher
Consultant Medical Oncologist and Geneticist,
Hermitage Medical Clinic

Professor David Gallagher is a Consultant Medical Oncologist and Geneticist at Hermitage Medical Clinic in Dublin, an oncology department providing a wide range of cancer treatments.

He says the tests help him build up a genetic picture of his patients.

"Principally, germline genetics help us identify those that are genetically predisposed to cancer. Once you've identified someone as carrying a gene that makes that more likely, you can either screen for cancer or take action to prevent cancer developing."

Screening for certain cancers, such as ovarian cancer, isn't always possible. This can mean crude, preventative measures – such as organ removal – as the only option.

Tumour genetic testing, an area of constant change and evolution, is primarily focused on looking for mutations in certain genes that may allow clinicians to use certain, targeted treatments on an individual patient.

However, Gallagher says this changing area of testing carries its own challenges. Tests don't yet consistently indicate whether results will predict a response to a treatment that targets a specific gene.

Yet, oncologists often end up prescribing that treatment in the hope that it will.

"We have a lot of targeted treatments available, but we don't yet always know which specific mutations or alterations those targeted treatments should be used for," he explains.

"If we can figure that out, then there's the potentially huge prize of us having more targeted, individualised treatments." ■

James Alder

Find out more at **hermitageclinic.ie**

Hermitage Medical Clinic

"As part of its strategic intent in the development of research and innovation, the Hermitage Medical Clinic has signed a collaboration agreement on Genomic Cancer Testing with Sanford Health, one of the largest rural health systems in North America. Through this collaboration we are now able to bring patients, in Ireland, a world-class Genomic Cancer-Testing service."

Eamonn Fitzgerald
Chief Executive, Hermitage Medical Clinic