

MESSENGER

News and Information from **BERENTT**

Vale Dr William (Bill) Burch *The rest of the story*

In my haste to write Dr William (Bill) Burch's obituary in the last Newsletter, I failed to acknowledge other people instrumental in the discovery and development of Technegas.

As acknowledged by Bill, Professor George Taplin's group at UCLA were instrumental in recognising the importance of V/Q imaging in diagnosis of Pulmonary Embolism (P.E.).

It was Taplin's lecture at the Asia and Oceania Congress meeting in Sydney in 1976 highlighting the mis-match between the quality of perfusion and ventilation images, that motivated Bill to search for a more suitable ventilation agent. Intuitively he recognised that what was needed was a "gas" or "smoke" which could penetrate the intricate labyrinth of the respiratory tract and interact at the point of gas exchange, the alveolus.

Bill's earliest lung ventilation experiments began in 1977 when he generated "Indigas" by doping the end of a cigarette with some dried ^{113m}In Indium eluate, lighting-up and having a puff, inhaling the smoke and scanning his lungs. The Indium had the qualities of short half-life (~100 mins), gamma of 393 keV and a low enough melting point to be swept up by tobacco smoke.

The success of these experiments drove Bill to investigate the utility of ^{99m}Tc Technetium, by then the preferred radioisotope for most nuclear medicine procedures.



At about this time Ian Tetley manufactured a prototype generator for Bill to produce and capture "radioactive smoke" for patient inhalation.

This process involving the spraying of flammable ^{99m}Tc Technetium into an air-stream using a spark igniter to initiate combustion in a closed chamber producing Pseudogas.

But Pseudogas had its shortcomings. Firstly, it contained too much carbon monoxide for patient inhalation. Secondly, the conversion efficiency to inhalable Pseudogas was quite low and if the spark igniter failed, could lead to an explosion in the chamber as happened on one such occasion.

Mr Peter Sorby from the isotopes division of the A.A.E.C. (now A.N.S.T.O.) supplied Bill with some of the combustible material for his studies.

Since the early 80's, Bill had been developing an inhalable technetium aerosol from the combustion of flammable technetium solutions. Ian Tetley who at the time ran Tetley Medical, now Cyclopharm Limited (CYC), developed the first Technegas prototype with Bill who was experimenting with the conversion of pertechnetate solutions from a Technetium generator into flammable solutions. This conversion method was very inefficient and an improved method was sought.

By 1983, Ian Tetley approached Dr Richard Fawdry, the radiochemist at Westmead Hospital requesting his assistance to devise a simpler and safer method for producing an inhalable form of ^{99m}Tc Technetium. At the time Dr Fawdry was working at Westmead Hospital manufacturing freeze-dried kits for use with ^{99m}Tc generators. He recommended vapourising sodium pertechnetate eluate at high temperature from a graphite surface.

Bill and Ian pursued this concept vigorously and the rest is history!! Ian patented the concept for Tech-



Bill's lungs being scanned to assess for any distribution of Technegas out of the lungs.

negas production and kept this uniquely Australian development in Australian hands.

I do not wish to take anything away from Bill's great invention, because it took a great leap of original thinking to put 2 and 2 together and arrive at the great product Technegas is.

During Bill's time at The Royal Canberra Hospital, Chris McLaren, Paul Sullivan and Tim Senden became involved in Bill's work and the team wrote several papers with Bill. According to Chris, Bill had his "light globe moment" when he discovered that a graphite filament, surrounded by an inert gas traps

Technetium within a carbon cluster cloud. Generated at 2,500C it behaves like a gas until it collides with something. This extraordinary combination delivers a gas-like compound that is orders of magnitude smaller than the conventional aerosol. It easily reaches the lung periphery giving clear images thereby greatly enhancing the V/P scan and achieving Bill's stated goal; an unambiguous correlation between ventilation and perfusion images!

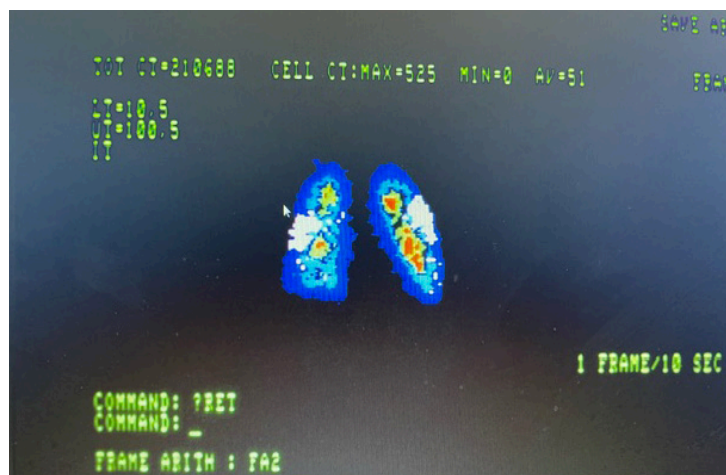
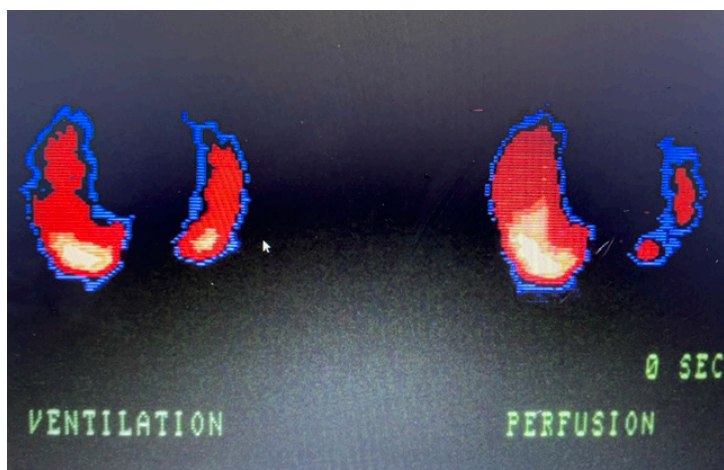
Thanks to Dr Richard Fawdry and Mr Chris McLaren for their valuable contributions, photographs and assistance in preparing this document.

Post-script:
Bill's invention has saved countless thousands of lives through the accurate diagnosis of Pulmonary Embolism (P.E.). Accurate diagnosis, either positive for P.E. or negative for P.E. can mean the life and death decision to treat or not to treat for P.E.

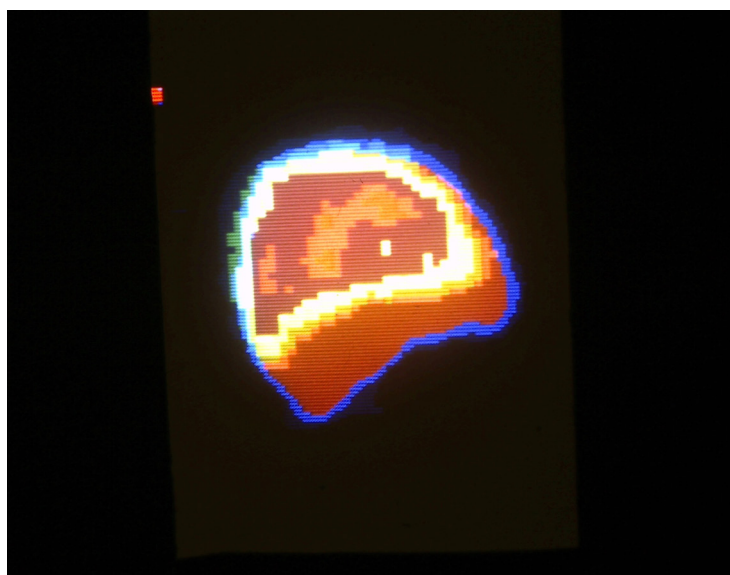


Charles Buttigieg

MSc BSc(Hons)



Overlay images of mismatch Perfusion in purple onto the corresponding Ventilation image. Basic at best but it displays the value of Technegas.



Breath held versus Tidal Images of Bill's lungs using manual stop start with a single-head S.P.E.C.T. camera. Bill managed to hold his breath for each angle for 20 seconds!

Dear Friends in Nuclear Medicine.

I am writing this to you to encourage you to continue your support of Berentt Medical Technology (BMT) with your Patient Administration Kits and service agreements.

Following BMT's betrayal by its trusted Distributor, many of you were falsely led to the conclusion that Berentt Medical Technology no longer existed, that Landauer had sold "its Technegas business including consumables and service" to Cyclomedica Australia P/L (CMAPL) and started supporting CMAPL once again.

Please consider the consequence of your actions: if BMT was to cease trading, Cyclomedica would be able to charge whatever they wanted for consumables and service. To paraphrase the words Don Chip, leader of the Australian Democratic Party, who famously proclaimed in 1980, "It is only Berentt Medical Technology which is keeping the bastards honest".

Look at what Cyclomedica proposes to charge the market in the U.S.A. where they have no competition: USD 11,500.00 (that is more than AUD 17,500!!) per box. Look at countries around the world where Cyclomedica has no competition (yet): Finland € 5,000, Sweden € 5,000, Norway € 5,000 that is over \$8,000.00 per box of 50 consumables!! And those prices were from several years ago and likely much higher in 2024.

BMT has consistently maintained our PAKs consumable prices at \$2,350.00

Your support will ensure that Berentt Medical Technology survives and guarantee that prices for the Patient Administration Kits remain at realistic levels.

Please talk to us BEFORE deciding to go elsewhere.

Reliable Trustworthy and Fair

Berentt Medical Technology (BMT) has maintained its Patient Administration Kit (PAK) prices since 2019.

We have tried to charge a fair price per box of 50 consumables and avoid 'price gouging' simply because we could!!

A box of 50 PAKs which includes 50 X 0.3ml crucibles, a set of solid carbon contacts and delivery tubing (BMT001) - \$2,350.00

NEW OFFER -

Buy 6 Boxes and Receive 7

\$14,100.00

(4 Years Expiry - August 2028)

That is just \$2,015.00 per box.

Pack of 0.3ml large volume crucible X 10 (BMT002) - \$200.00

Set of solid carbon contacts (BMT003) - \$100.00

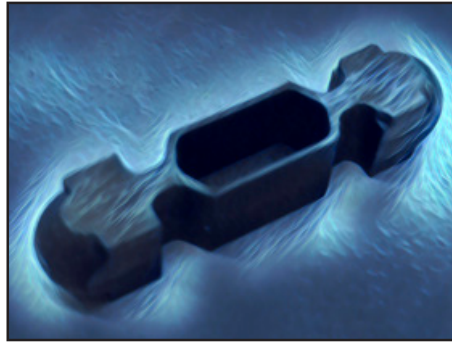
Annual Service Agreement (BMT004) - \$2,000.00

Delivery charge: up to 3 boxes (anywhere in Australia) (BMT005) - \$100.00

Please Note: Prices quoted are ex-G.S.T.

Vent-Medis disposable kit for Ventilation Scintigraphy

**Large 0.3ml
highest purity
graphite crucible**



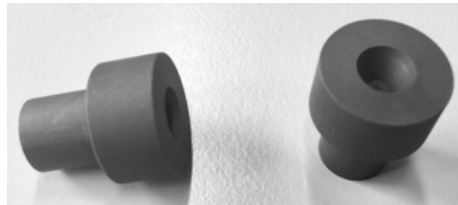
Vent-Medis Kits include the improved high-purity, high-volume carbon crucible with a 0.3ml bowl capacity. This crucible saves time and minimises multiple simmers allowing the use of dilute Tc-99m generator elutions thus reducing operator radiation exposure.

**Rugged design
smooth-bore
patient
delivery set**



The inhalation breathing unit contains a high efficiency HEPA, exhalation filter, T-piece with robust non-return valve, a robust one meter smooth-bore tubing with 15mm inner diameter and the special generator connection. A rigid mouthpiece and a nose clip complete the set.

**High purity
and long life
graphite
contacts**



With every Vent-Medis Box you get one pair of high-purity carbon contacts for 50 scintigraphic examinations. The carbon contacts are very robust and fit the Generator specifications with great contact reliability.

Vent-Medis Kits

**Larger volume crucible
equals more efficient use of
dilute Tc-99m eluate**

High-Efficiency HEPA filter

Time and cost saving

**Less radiation through
reduced simmers**

**Improved and more
reliable crucible contact**

More rugged design

Improved packaging

TGA Certified

Reliability of supply

CE marked

Major price advantage

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Solutions - Not Questions