Technegas® is not commercially available in the USA
Certain views expressed here contain information derived from publicly available sources that have not been independently verified.

The presentation includes certain statements, estimates and projections with respect to the anticipated future financial performance of Cyclopharm Limited and as to the markets for the company's products. Such statements, estimates and projections reflect various assumptions made by the directors concerning anticipated results, which assumptions may or may not prove to be correct. Cyclopharm Limited has not sought independent verification of information in this presentation.

While the directors believe they have reasonable grounds for each of the statements, estimates and projections and all care has been taken in the preparation, no representation or warranty, express or implied, is given as to the accuracy, completeness or correctness, likelihood of achievement or reasonableness of statements, estimates and projections contained in this presentation. Such statements, estimates and projections are by their nature subject to significant uncertainties, contingencies and assumptions.

To the maximum extent permitted by law, none of the Cyclopharm Limited, its directors, employees or agents, nor any other person accepts any liability, including, without limitation, any liability arising out of fault or negligence, for any loss arising from the use of information contained in this presentation.

All references to dollars unless otherwise specified are to Australian dollars.
Cyclopharm Limited (CYC) is a leading diagnostic lung imaging company

- A world leader in functional lung ventilation imaging technology
- Recurring consumables and capital equipment revenue streams
- A profitable and growing company with a history of dividend payments
- Lead nuclear medicine product Technegas® is currently available in 59 countries with significant opportunity to expand into the USA with sales targeted for early 2021 following completion of USFDA New Drug Application review
- Opportunity to broaden Technegas applications beyond pulmonary embolism diagnosis into large addressable markets such as COPD and Asthma

Technegas® is not commercially available in the USA
Our Strategic Priorities

CYC has clear strategy to leverage our position as a leading player in the global nuclear medicine imaging market and lung health space to expand the use of our proprietary products and introduce new innovative technology.

We will do this by:

1. Attaining approval to distribute Technegas in the USA

2. Expanding the use of Technegas beyond the traditional diagnosis of Pulmonary Embolism into significantly larger applications such as COPD\(^1\) and Asthma, Lung Cancer and Pulmonary Hypertension for both diagnosis and patient management.

3. Identifying, developing and commercialising complementary innovative technology such as Ultralute\(^\text{TM}\)

4. Leveraging our core global regulatory strengths, fiscal discipline, strong balance sheet and well developed expertise in nuclear medicine and pulmonary healthcare to seek out complementary technologies and businesses
Technegas

World’s Best Functional Lung Ventilation Imaging Agent

**Patient** inhales extremely small carbon particles labeled with $^{99m}$Technetium\(^1\)

The small size and hydrophobic properties demonstrate gas like-behavior and alveoli deposition into the lungs\(^2-3\)

**Clinicians** can visualise functional ventilation using Technegas


Technegas® is not commercially available in the USA
~3 million cases of PE p.a. but could be much higher

30% of pulmonary embolisms are fatal if left untreated

Symptoms are varied with diagnosis confirmed either through CTPA or a nuclear medicine ventilation-perfusion study

Nuclear Medicine using 3-D imaging is the most accurate method of diagnosis

Technegas® is not commercially available in the USA
FY2019 Results Highlights

Group Sales Revenue
$14.08 million - an increase of 5%

Gross Margin
$11.62 million – an increase of 7%

Gross Margin %
82.5%

Net Loss After Tax
($2.91) million including USFDA investment

Dividends
1.0 cents per share

Underlying Technegas PBT\(^1\)
$0.89 million

FDA Trial expenses
($3.84) million

Strong balance sheet
$12.66 million of cash reserves as @ 31 December 2019

Guidance
The Board expects continuing modest growth in underlying Technegas revenues from existing markets for FY2020

1. Profit Before Tax

Technegas\(^\circledast\) is not commercially available in the USA
Building for Growth – Company Development

Technegas is a substantially de-risked commercial proposition with significant upside in the USA market

- Total global sales of $118 m from 2010
- Technegas currently available in 59 countries
- Over 4,200,000 patient procedures performed since first approved
- 1,600 Technegas generators sold globally since first approved
- Approximately 182,100 patient procedures in 2019
- Europe represents 62% of global revenue in 2019
- Canada was the largest single country market by volume (45,400 patients) followed closely by France (42,500 patients) in 2019
- CYC is growing, the underlying business is profitable and the company has a history of paying dividends
- Stable gross margins of greater than 80% - (82% in 2019)
- Around 80% of historical revenue is recurring consumable sales - (75% in 2019)
**FY2019 Operational Highlights**

**Technegas**
- Record revenues recorded in the key markets of Canada and France

**USFDA**
- All internal documentation completed with a Q1 2020 USFDA submission

**USA Commercialisation**
- USA entity established

**Indication Expansion**
- HMRI completes recruitment – New initiatives commence in Canada and Australia

**R&D Tax Incentive**
- $2.93 received November 2019

**Strategic Partnerships**
- Leveraging our infrastructure through Distribution partnerships – Draximage, Tema and Rotop

**Building a Team for the Future**
- Key resources in place for growth – Sales, Quality, Regulatory and Service

**Guideline Development**
- CANM and European Guidelines naming TG as the nuclear med ventilation imaging agent of choice for diagnosing PE

**Capital Raising**
- $9.2m net of costs received in December following a strategic share placement

*Technegas® is not commercially available in the USA*
During the year, CYC continued to implement its strategic priorities, which are to:

1. Accelerate the path to regulatory approval to sell Technegas into the world’s largest and new highly prospective USA market;
2. Pursue sales of Technegas in new applications: Chronic Obstructive Pulmonary Disease (“COPD”) and Asthma which are significantly larger markets than the Pulmonary Embolism market where CYC traditionally operates;
3. Identifying, developing and commercialising complementary innovative technology such as Ultralute™; and
4. Leveraging our core global regulatory strengths, fiscal discipline, strong balance sheet and well-developed expertise in nuclear medicine and pulmonary healthcare to seek out complementary technologies and businesses.

### Solid Underlying Financial Results

<table>
<thead>
<tr>
<th></th>
<th>2019 $'000</th>
<th>2018 $'000</th>
<th>INC/(DEC) $'000</th>
<th>CHANGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GROUP UNDERLYING PERFORMANCE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SALES REVENUE</strong></td>
<td>14,079</td>
<td>13,404</td>
<td>675</td>
<td>5%</td>
</tr>
<tr>
<td><strong>GROSS MARGIN</strong></td>
<td>11,619</td>
<td>10,855</td>
<td>764</td>
<td>7%</td>
</tr>
<tr>
<td><strong>GROSS MARGIN % SALES</strong></td>
<td>82.5%</td>
<td>81.0%</td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td><strong>UNDERLYING PROFIT BEFORE TAX</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TECHNEGAS®</strong></td>
<td>887</td>
<td>1,406</td>
<td>(519)</td>
<td>(37%)</td>
</tr>
<tr>
<td><strong>ADD BACK NON-OPERATING ACTIVITIES</strong>:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INCOME</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CYCLOPET DIVISION</strong></td>
<td>746*</td>
<td>(335)</td>
<td>1,081</td>
<td>323%</td>
</tr>
<tr>
<td><strong>R&amp;D TAX INCENTIVE GRANT</strong></td>
<td>2,934</td>
<td>2,122</td>
<td>812</td>
<td>38%</td>
</tr>
<tr>
<td><strong>REVERSAL OF CONTINGENT CONSIDERATION ON ACQUISITION OF SUBSIDIARY</strong></td>
<td>-</td>
<td>314</td>
<td>(314)</td>
<td>(100%)</td>
</tr>
<tr>
<td><strong>UNREALISED GAIN ON FORWARD EXCHANGE CONTRACT</strong></td>
<td>-</td>
<td>275</td>
<td>(275)</td>
<td>(100%)</td>
</tr>
<tr>
<td><strong>RECOVERY FROM GERMAN LITIGATION</strong></td>
<td>339</td>
<td>-</td>
<td>339</td>
<td>100%</td>
</tr>
<tr>
<td><strong>EXPENSES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FDA EXPENSES</strong></td>
<td>(3,842)</td>
<td>(2,965)</td>
<td>(877)</td>
<td>(30%)</td>
</tr>
<tr>
<td><strong>BEYOND PE CLINICAL TRIALS</strong></td>
<td>(351)</td>
<td>(251)</td>
<td>(100)</td>
<td>(40%)</td>
</tr>
<tr>
<td><strong>RETIRED/SEVERANCE PAYMENTS</strong></td>
<td>(322)</td>
<td>-</td>
<td>(322)</td>
<td>(100%)</td>
</tr>
<tr>
<td><strong>QUALITY AND REGULATORY</strong></td>
<td>(238)</td>
<td>-</td>
<td>(238)</td>
<td>(100%)</td>
</tr>
<tr>
<td><strong>DEPARTMENT EXPANSION</strong></td>
<td>(827)</td>
<td>(827)</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td><strong>LITIGATION EXPENSES</strong></td>
<td>(1,064)</td>
<td>(410)</td>
<td>(654)</td>
<td>(100%)</td>
</tr>
<tr>
<td><strong>COST OF TERMINATING PUT OPTION</strong></td>
<td>(309)</td>
<td>-</td>
<td>(309)</td>
<td>(100%)</td>
</tr>
<tr>
<td><strong>COST OF LTIP PROGRAM</strong></td>
<td>(378)</td>
<td>(38)</td>
<td>(340)</td>
<td>(895%)</td>
</tr>
<tr>
<td><strong>REPORTED (LOSS)/PBT</strong></td>
<td>(2,425)</td>
<td>118</td>
<td>(2,543)</td>
<td>(2,155%)</td>
</tr>
</tbody>
</table>

*Includes one-off rent abatement of $1,043K

Technegas® is not commercially available in the USA
<table>
<thead>
<tr>
<th>Year ended 31 December ($000's)</th>
<th>2019</th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>12,660</td>
<td>5,855</td>
<td>8,690</td>
</tr>
<tr>
<td>Other current assets</td>
<td>6,950</td>
<td>9,600</td>
<td>8,139</td>
</tr>
<tr>
<td>Non-current Assets</td>
<td>12,918</td>
<td>8,082</td>
<td>6,548</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>32,528</strong></td>
<td><strong>23,537</strong></td>
<td><strong>23,377</strong></td>
</tr>
<tr>
<td>Current Liabilities</td>
<td>3,480</td>
<td>5,219</td>
<td>5,212</td>
</tr>
<tr>
<td>Non-current Liabilities</td>
<td>5,844</td>
<td>1,302</td>
<td>916</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td><strong>9,324</strong></td>
<td><strong>6,521</strong></td>
<td><strong>6,128</strong></td>
</tr>
<tr>
<td><strong>Net Assets</strong></td>
<td><strong>23,204</strong></td>
<td><strong>17,016</strong></td>
<td><strong>17,249</strong></td>
</tr>
</tbody>
</table>

**Financial Foundation to Leverage Growth Strategy**

1. Low debt & cash on hand – provides balance sheet and funding flexibility
2. Funding used toward USFDA clinical trial enrolment and New Drug Application submission
3. Strong financial position supports ongoing investment in R&D and expansion into new markets and indications

Technegas® is not commercially available in the USA
Group Cash Position

Cash Position Funding Growth

<table>
<thead>
<tr>
<th>Year ended 31 December ($000's)</th>
<th>2019</th>
<th>2018</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Activities</td>
<td>(489)</td>
<td>(1,107)</td>
<td>(682)</td>
</tr>
<tr>
<td>Investing Activities</td>
<td>(821)</td>
<td>(1,403)</td>
<td>(1,136)</td>
</tr>
<tr>
<td>Financing Activities</td>
<td>8,091</td>
<td>(353)</td>
<td>5,828</td>
</tr>
<tr>
<td>Net Increase / (Decrease) in Cash</td>
<td>6,781</td>
<td>(2,863)</td>
<td>4,010</td>
</tr>
<tr>
<td>Opening Cash</td>
<td>5,885</td>
<td>8,690</td>
<td>4,591</td>
</tr>
<tr>
<td>Foreign Exchange</td>
<td>24</td>
<td>28</td>
<td>89</td>
</tr>
<tr>
<td>Closing Cash @ 31 December ($000's)</td>
<td>12,660</td>
<td>5,855</td>
<td>8,690</td>
</tr>
</tbody>
</table>

1. Institutional share placement of 8.5 million shares in December 2018 resulting in $9.78m at an 11.7% premium
2. Benefited from expanded R&D tax Incentive Program resulting in Other Income of $2.93 million

Technegas® is not commercially available in the USA
Technegas® is not commercially available in the USA
Benefits of using Technegas

- **Easy**
  to prepare and administer

- **Only need**
  3 to 4 breaths

- **3D images**
  provide functional imaging through to the alveolus

- **No**
  contraindications

- **Cost**
  effective

Technegas® is not commercially available in the USA
**Superior to competitive nuclear medicine products**

**Technegas**
- Easy
- 3 to 4 breaths
- 3D images
- No contraindications
- Cost-effective

**Xenon - 133**
- True radioactive gas inhaled with full face mask
- Constant inhale-exhale breathing for 15 mins

**DTPA Tc99m**
- Wet Aerosol impacts efficacy and clinician interpretations
- Creates hotspots in presence of small airways lung diseases, which is a frequent comorbidity in PE

Technegas® is not commercially available in the USA
Superior to competitive imaging modalities

**Technegas**
- Easy
- 3 to 4 breaths
- 3D images
- No contraindications
- Cost-effective

**CTPA**
- High radiation burden
- Contraindications
  - CTPA should not be performed with pregnancy\(^1\), renal impairment\(^3\), contrast media allergy\(^3\), diabetes\(^4\)
- Acute kidney injury (AKI)
  - AKI occurs in up to 13% of CTPA cases\(^5\)
- Lower clinical sensitivity
  - V/Q planar\(^6\) = 76%
  - CTPA\(^7\) = 82%
  - V/Q SPECT\(^7\) = 93%
- Availability
  - Radiology ED services are generally provided 24/7 vs. nuclear medicine after hours on call service

---


---

Technegas\(^®\) is not commercially available in the USA.
Technegas – USA Market Opportunity

- 4,000,000 patient procedures conducted in the USA per annum to diagnose pulmonary embolism (15% Nuclear Medicine – 85% CTPA)
- 600,000 Nuclear Medicine Ventilation procedures equals $90m USD
- Target market for Technegas in the USA equates to ~480,000 patient procedures of the total 600,000 procedures.
- The USA represents the single largest market for Technegas with half of the world’s nuclear medicine departments
- Subject to a successful FDA approval, the Company is targeting US commercialisation in 2021
- First priority following USFDA approval is to repeat our Canadian experience by displacing Xe133 as the standard of care diagnostic product
- 3D SPECT imaging using Technegas is proven to be clinically superior and safer than CTPA. Once commercialised Cyclopharm will target to double the existing nuclear medicine PE market dominated by CTPA from 15% to 30%.
- Once established in the USA market, the company will seek to expand the use of Technegas into disease states exponentially larger than the existing PE market

600K Nuclear Medicine Ventilation Procedures p.a. = $90m USD

15% 85%
600k 3.4 M

Nuclear Medicine CTPA

Technegas® is not commercially available in the USA
USFDA Clinical trial\(^1\) registered at: [https://clinicaltrials.gov/ct2/show/NCT03054870?term=technegas&rank=1](https://clinicaltrials.gov/ct2/show/NCT03054870?term=technegas&rank=1)

Non-inferiority structural ventilation study comparing Xe133 vs. Technegas\(^1\)

Planned 240 patient study at 9 clinical sites

**200 Patients** enrolled as at 25 February 2020

Currently compiling a 505(b)2 New Drug Application for submission

The 505(b)2 New Drug Application is expected to be sufficient for USFDA approval

Six-month Priority Review application will be submitted with the 505(b)2 New Drug Application

Clinical Trial enrollment will continue whilst the 505(b)2 submission is being reviewed

---


Technegas\(^\circ\) is not commercially available in the USA
USA 2020 Commercialisation Plan

**Build Inventory**
- Materials Resource Planning underway with production targeting 200 Technegas generators roll-out per annum

**Secure Customer Commitments**
- Securing commitments in line with Technegas Generator lead time

**People**
- Hire Key USA Personnel to include Sales and Service

**Distribution**
- Identify and stock 3PL Partners for the USA

**USFDA Regulatory Approval**
- Seeking Priority Review to reduce USFDA review from 10 to 6 months from 60 day initial review

Technegas® is not commercially available in the USA
Three Value Horizons

**Horizon 1**
0 to 5 Years
- **Establish USA**
  - 80% Conversion of Nuc Med Procedures for PE

**Horizon 2**
3 to 8 Years
- **Convert CTPA**
  - Double existing Nuc Med Procedures for PE

**Horizon 3**
>8 Years

**Innovate Beyond PE**
- **Half billion**
  - combined sufferers of Asthma and Chronic Obstructive Pulmonary Disease globally
  - Trials Underway!

**Enterprise Value**
- **$14m AUD**
- **$72m USD**
- **$90m USD**
- **$900m USD**

*USA Revenue Estimates

Technegas® is not commercially available in the USA
Beyond PE: clinical initiatives

**Clinical Trials Sponsored by Cyclomedica**

- **Hunter Medical Research Institute (Newcastle, AU):** Diagnosis and response to therapy in severe asthma and COPD¹
- **Woolcock Institute (Sydney, AU):** Diagnosis and response therapy in mild to moderate COPD³
- **CHUM (Montreal, CA):** Early detection of COPD in asymptomatic smokers⁴
- **Dalhousie (Halifax, CA):** Post-lung transplant patients
- **Firestone Institute (St. Joseph’s Healthcare Hamilton, CA):** Prevalence and clinical relevance of ventilation heterogeneity and luminal cellular inflammation in lung cancer patients pre and post lung resection ²

**Other Non-Sponsored Clinical Initiatives**

- **Macquarie University (Sydney, AU):** ELVR with endobronchial valves in severe COPD patients
- **Macquarie University (Sydney, AU):** Bronchial Thermoplasty procedure in asthma patients

---


Technegas® is not commercially available in the USA
Profitable & Growing MedTech
underlying business is cash positive and issuing dividends

First in class proprietary product sales to 59 countries with over 4.2 million studies to date

Recurring revenue from consumables similar to an annuity model

USFDA approval set to quadruple the size of the existing PE business and further leverage penetration into the CTPA market

Optionality into indications beyond PE into chronic respiratory disease management could deliver exponential growth

Technegas® is not commercially available in the USA
Building from a strong & well-established foundation

Near term opportunities providing significant growth potential beyond PE toward patient management

**USA Market**
- Nuclear medicine ventilation imaging market to diagnose PE equal to $90m USD with reimbursement already in place

**Targeting USA CTPA PE market**
- Opportunity to convert CTPA to nuclear medicine imaging by shifting market to SPECT imaging

**Half billion**
- Combined sufferers of Asthma and Chronic Obstructive Pulmonary Disease globally.
  - Trials underway

Technegas® is not commercially available in the USA
Cyclopharm

Thank You
Technegas® is not commercially available in the USA
What is Technegas?

Particle characteristics

Technegas is composed of Tc-99m cores encapsulated within layers of graphite to form individual hexagonal plate-like particles.¹

These particles agglomerate to reach a dynamic equilibrium with regard to particle size distribution best described as a bell-shaped curve with an average size of 100nm.²

Manufacture and Distribution

Technegas is produced on site at the point of patient administration.

Technegas is manufactured by heating Technetium-99m in a carbon crucible within an argon environment for a few seconds at 2,750 degrees Celsius.³

Because of the very small particle size, Technegas is distributed in the lungs almost like a gas and deposited in alveoli by diffusion, providing for SPECT³ ventilation imaging

Particles remain in the lung until they are cleared by ciliary action or phagocytosis⁴.


Technegas is not commercially available in the USA.
Technegas Product Overview

Cyclopharm’s leading product is the Technegas technology system

- The Technegas proprietary technology provides high quality diagnostic functional lung imaging.
- Predominantly used to diagnose the presence of blood clots in the lung otherwise known as Pulmonary Embolisms (PE). With advances in complementary technology, the potential for use in other indications is rapidly evolving.
- In a clinical setting, the patient inhales, in only a few breaths, an ultrafine dispersion of Technegas particles. Once inhaled and deposited in the lungs, Technegas images are then captured by using conventional nuclear medicine scanning equipment.
- The Technegas images provide the clinician an understanding of how well the patient’s lungs are functioning across a range of disease states.
- CYC sells the Technegas Generator to hospitals as a one-off capital item. Consumable components are inserted into the Technegas Generator which then produce the gas like particles that are inhaled by the patient. The consumables which deliver Technegas are single patient use items.

Technegas® is not commercially available in the USA
Technegas around the world

Technegas was introduced to the medical community in 1986 \(^1\)

Technegas revenues are generated in 59 countries via a combination of direct and distributor sales models

Over 4.2 million patient procedures to date

---


Technegas\(^®\) is not commercially available in the USA
Advantages of Technegas

Technegas provides clinically superior outcomes to its competitors

- Better clinical results at a fraction of the high radiation doses used in CTPA (angiograms)
- No contraindications
- More accurate and sensitive measurement in diagnosing pulmonary embolism
- Particularly effective when CTPA is contraindicated e.g. renal impairment
- Improved patient comfort and tolerance with only 3-4 breaths required for delivery
- Allows for 3D images and regional quantification
- Named as the preferred ventilation imaging agent of choice in the European Association of Nuclear Medicine Guidelines

IP/Generic protection

- Technegas is a system - needs the generator, patient administrator set (PAS) and service capability
- R&D on 3rd generator generation underway set to extend IP protection

Competitive Nuclear Medicine Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Comparison to Technegas</th>
</tr>
</thead>
</table>
| Xenon 133 | - Patient has to continually re-breathe gas causing patient discomfort / anxiety  
- Can’t provide 3D images  
- Costly air-handling infrastructure required in order to administer |
| DTPA | - Inferior images in patients with obstructive lung disease (COPD) |

Technegas® is not commercially available in the USA
Existing Market Development Strategy

- Sales and marketing program targeting referring respiratory physicians
- Implemented educational programs for Distributors
- Updating Technegas distribution contracts to include detailing to respiratory physicians
- Leveraging New Complementary Technologies
- Strengthening relationships with KOL’s and industry bodies
- Guideline Development
- Product Renewal & Enhancements
- Sponsoring pilot clinical trials targeting expanded indications
- Introduction of new products by leveraging off of existing network - Ultralute™

Technegas® is not commercially available in the USA
Technegas – The Canadian Case Study

Canada is Cyclopharm’s largest single country market

- Market leader for diagnosing PE
- 14 consecutive years of PAS growth
- Represents a strong indicator of USA acceptance
- Xe-133 rapidly displaced by early adopters
- Direct correlation with the number of active generators and annual consumable sales
- Market driven by public healthcare sector
- Market launch initiated province by province, leveraging off pilot sites

The Generator and Consumable Relationship

Technegas Growth - Canada

Patients per Annum (thousands)

Active Generators

Technegas® is not commercially available in the USA
What the guidelines say about Technegas:

Endorsed by the guidelines from the European¹-² and the Canadian³ Associations of Nuclear Medicine (EANM & CANM)

“Using 99m-Tc-Technegas is according to clinical experience better than the best aerosols”

“Technegas facilitates interpretation, particularly in COPD”

“For ventilation, 99m-Tc Technegas is the best-aerosol particularly in patients with COPD”

“Liquid aerosols are inferior for SPECT and should not be used unless Technegas is not available”

“The best widely available agent for ventilation is 99m-Tc-Technegas”

“Because of the very small particle size, this agent is distributed in the lungs almost like a gas and deposited in alveoli by diffusion, where they remain stable, thus providing the best possible images for ventilation SPECT”

“Another advantage is that only a few breaths are sufficient to achieve an adequate amount of activity in the lungs, reducing time and personnel exposure to radiation”

“Technegas is considered the agent of choice in the COPD population as there is less central airway deposition, better peripheral penetration, and it does not wash out as quickly as traditional aerosols”

Technegas® is not commercially available in the USA
Pulmonary Imaging With

Technegas® is not commercially available in the USA
Evolution of Functional Lung Ventilation Imaging

- Improvements in 3D imaging techniques, hybrid imaging and the advent of analytical software have dramatically improved the sensitivity and specificity in functional lung imaging with Technegas.
- Traditionally used in the diagnosis of Pulmonary Embolism, nuclear medicine functional lung ventilation imaging utilising improved imaging techniques are expanding the potential clinical utility for Technegas.
- The following Technegas images underscore the advancement in complementary technology Cyclopharm is leveraging today:

Timeline:
- 1980s: Planar Imaging
- 2000: SPECT Imaging
- 2010: SPECT with Low Dose CT
- 2015: SPECT with Low Dose CT & Lobular Quantification

Technegas® is not commercially available in the USA.
Nuclear Medicine Imaging Technology Has Evolved Beyond CTPA in Diagnosing PE

**1986**
- Inherent limitations of 2-dimensional imaging
- Overlap of anatomical segments
- Shine-through from underlying lung segments
- Difficulty visualizing all the lung segments
- PIOPED II recently updated to AUC Trinary interpretation of V/Q findings

**2020**
- Integration of anatomic information
- Decrease the incidence of false positive PE
- Added benefit to identify various other pulmonary conditions
- Further application in other pulmonary conditions and research

**PLANAR**
- Inherent limitations of 2-dimensional imaging
- Overlap of anatomical segments
- Shine-through from underlying lung segments
- Difficulty visualizing all the lung segments

**SPECT**
- Three-dimensional imaging
- Superior contrast resolution
- Improved anatomical detail
- Higher sensitivity and specificity
- Accurate definition of size and location of the perfusion defects

**SPECT/CT**

Technegas is not commercially available in the USA.
Radiation Dosimetry

<table>
<thead>
<tr>
<th>Technique</th>
<th>Effective dose (mSv/MBq)</th>
<th>Effective dose (mSv)</th>
<th>Breast absorbed dose (mGy)</th>
<th>Lung absorbed dose (mGy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilation Technegas (20MBq)</td>
<td>0.015</td>
<td>0.30</td>
<td>0.13</td>
<td>2.2</td>
</tr>
<tr>
<td>Ventilation $^{99m}$Tc-DTPA (20MBq)</td>
<td>0.007</td>
<td>0.14</td>
<td>0.04</td>
<td>0.30</td>
</tr>
<tr>
<td>Ventilation $^{133}$Xe (800MBq)</td>
<td>0.0014</td>
<td>1.12</td>
<td>0.09</td>
<td>0.89</td>
</tr>
<tr>
<td>Perfusion MAA (120MBq)</td>
<td>0.012</td>
<td>1.44</td>
<td>0.60</td>
<td>7.92</td>
</tr>
<tr>
<td>Low dose CT non-contrast</td>
<td>NA</td>
<td>~1.00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CTPA 16 slice</td>
<td>NA</td>
<td>14.4</td>
<td>10-20</td>
<td>10</td>
</tr>
<tr>
<td>CTPA 64 slice</td>
<td>NA</td>
<td>19.9</td>
<td>22</td>
<td>20</td>
</tr>
</tbody>
</table>

Table: Radiation dosimetry data were sourced from Bajc M et al 2009 1; Schembri GP et al 2010 2, Isidoro J et al 2017 3 and Ling IT et al 2012 4.

A nuclear medicine V/Q scan is exponentially lower in dose than CTPA

Technegas® is not commercially available in the USA.
Nuclear Medicine provides better diagnostic outcomes in Diagnosing PE

V/Q SPECT and V/Q SPECT/CT have shown that V/Q SPECT/CT is superior in most clinical settings with better overall diagnostic performance. In situation of acute PE, chronic PE pregnancy, paediatrics and the COPD population, V/Q SPECT, with or without low-dose CT, can be considered as a first-line investigation to detect PE due to:

- Its higher accuracy, sensitivity and negative predictive value when compared to CTPA.
- Its low radiation and no adverse reactions.

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>NPV</th>
<th>PPV</th>
<th>Specificity</th>
<th>Sensitivity</th>
</tr>
</thead>
</table>

Table: Diagnostic ability of V/Q SPECT/CT, V/Q SPECT, CTPA and V/Q Planar to detect PE (adapted from Hess and al, 2016 and from Reinartz et al, 2004)


Technegas® is not commercially available in the USA.
Reclaiming and Expanding Pulmonary Imaging

**Education**
Educating referring physicians to the facts, benefits and capabilities of nuclear medicine will bring back lung imaging to nuclear medicine.

**Utilizing Available Technology**
Leveraging the state of the art techniques to include SPECT, SPECT-CT & Quantification Software.

**CYC Research Strategy Beyond PE**
Exploring new methods and techniques to engage specialists and develop new clinical applications.

**CYC Publication Strategy Beyond PE**
Extending the reach of journal articles beyond the nuclear medicine community, i.e. Respiratory Medicine, Emergency Medicine & Cardiology.

Technegas® is not commercially available in the USA.
Technegas® is not commercially available in the USA
Chronic Obstructive Pulmonary Disease
- 30x the size of total PE market
- 1 in 7 Australians over the age of 40
- In 2008, the total economic impact of COPD was estimated to be $98.2 billion of which $8.8 billion was attributed to financial costs and $89.4 billion to the loss of wellbeing.
- COPD is a leading cause of death and disease burden after heart disease, stroke and cancer
- Global estimates show that COPD will be the third leading cause of death by 2030

Lung Reduction Intervention
- Application in determining ventilation pre and post lung reduction intervention

Asthma
- 334 million people globally
- 1 in 9 Australians have asthma
- $655 million was spent on asthma in 2008-9; which is 0.9% of all direct health spend on diseases.
- 34% of people report that asthma interferes with their daily living, and 21.8% of people aged 15-25 required time off work, school or study due to their asthma

CTEPH
- Ventilation/Perfusion imaging is recommended
- Up to 40 million patients globally

Technegas – Global Indication Expansion

✓ Applications in chronic disease has the potential to dwarf the use of Technegas in Pulmonary Embolism
✓ In 2015 Cyclopharm commenced a clinical program targeting Technegas indication expansion to include:

Technegas® is not commercially available in the USA
Clinical Call for Action

A new way of thinking about respiratory Medicine

Lancet Commission - After asthma: redefining airways disease, September 2017

Executive Summary:
Progress in reducing hospital admissions and mortality in people with asthma have stalled in the past 10 years. This Lancet Commission examines where we are in the understanding of this heterogeneous syndrome and where we need to go to kickstart a new era of examining, monitoring, treating, and ultimately preventing airways diseases. The Commissioners recommend to deconstruct airway disease into component parts before planning treatment with a focus on traits that are identifiable and treatable. This approach will require a complete change in how we think about airways diseases with the goal of achieving real precision treatment with better patient outcomes. In addition, primary prevention and disease-modifying interventions need to become a more important ambition. It is unacceptable that people still die from asthma attacks in 2017.

Functional ventilation imaging using Technegas may provide useful biomarker information in assessing baseline diagnosis and response to therapy in respiratory disease

Assessing Response to Monoclonal Therapy using Technegas

Technegas SPECT/CT Images provided by HMRI

Technegas® is not commercially available in the USA
**Hybrid V/Q SPECT/CT**

**V/Q SPECT** provides **functional** information on ventilation and perfusion of the lungs\(^1,2\)

**Low-dose CT** provides **anatomical** information such as fissures delineation\(^3\)

Combination of functional and anatomical information allow for objective results through **quantitative software**\(^2,3\)

---

**IMPROVES DIAGNOSTIC CAPABILITIES AND OFFERS ANATOMICALLY-BASED QUANTIFICATION OF LOBAR CONTRIBUTION FOR INTERVENTIONAL THERAPIES**


---

Technegas is not commercially available in the USA.
Treatment response in asthma patient

Case 1

CLINICAL HISTORY
Male patient of 25 years old with lifelong asthma

REFERRAL
Evaluation of asthma treatment efficacy

PROTOCOL
Ventilation SPECT/CT imaging at baseline and after methacholine challenge before and after asthma treatment

Images and data were kindly provided by the Woolcock Institute of Medical Research

Bronchoconstriction after methacholine challenge worsened ventilation function and increased ventilation heterogeneity. This was predicted by baseline peripheral ventilation heterogeneity.

After treatment, ventilation improved and is more homogeneous on ventilation SPECT imaging, at baseline and also after methacholine-induced bronchoconstriction.

VENTILATION SPECT/CT TO MONITOR TREATMENT RESPONSE IN PATIENTS WITH LIFELONG ASTHMA

Technegas® is not commercially available in the USA
Planning lung volume reduction surgery

Case 2

CLINICAL HISTORY
Male patient of 64 years old with emphysema

REFERRAL
Assessment of lung ventilation function before planning endoscopic lung volume reduction

PROTOCOL
VQ SPECT/CT imaging with Technegas as ventilation agent

Images and data were kindly provided by Macquarie Medical Imaging

The ventilation SPECT/CT scan reveals the function of the lower lobes is severely affected. The left oblique fissure is intact so the left lower lobe should be a good target lobe for endobronchial valves insertion.

Assessment for collateral ventilation was confirmed using CHARTIS assessment tool during the procedure.

Decision: 3 valves were inserted into the left lower lobe.

Technegas® is not commercially available in the USA
BUILDING FOR GROWTH

Technegas® is not commercially available in the USA