**Market data**

EPIC/TKR	AVO
Price (p)	46.0
12m High (p)	92.0
12m Low (p)	9.5
Shares (m)	80.9
Mkt Cap (£m)	37.2
EV (£m)	48.0
Free Float*	57%
Market	AIM

\*As defined by AIM Rule 26

**Description**

Developing next generation proton therapy systems for use in radiation therapy of cancers. The first system is expected to be installed in Harley Street, London during 2019; to be operated through a joint venture company with CircleHealth.

**Company information**

Exec. Chairman Michael Sinclair  
 CEO Nicolas Serandour

+44 203 617 8728

[www.advancedoncotherapy.com](http://www.advancedoncotherapy.com)**Key shareholders<sup>†</sup>**

Directors	14.5%
Yantai CIPU	29.9%
AB Segulah (+Mijesi AB)	12.6%
Brahma AG	7.2%
MK Trust	3.3%

†Following completion of capital increase

**Diary**

4Q 17	Harley Street update
4Q 17	PPS newsflow
4Q 17	Beam through SCDTLs

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**Advanced Oncotherapy****Distribution agreement and capital increase**

AVO is focused on delivering a more affordable, novel, proton-based radiotherapy system, based on technology originally developed at the world-renowned CERN. Major milestones have been achieved in 2017 and the company remains on track with its development plan to deliver and install the first LIGHT system in 2019. Confidence has been enhanced greatly with integration of the first three structures, overcoming technical challenges of accelerating the proton beam. Announcement of a distribution agreement for China, and a sizeable capital increase should resolve the market's concerns about long-term funding of this important project.

- **Strategy:** To develop a compact, modular and affordable proton therapy system that generates superior patient outcomes. AVO benefits from the technology know-how developed by ADAM, a medical spin off from CERN, and relies on a base of world-class suppliers.
- **Distribution agreement:** Taking advantage of the considerable opportunity for proton therapy in China, mainly, plus Macau, Taiwan, Hong Kong & South Korea, AVO has signed an exclusive agreement with Yantai CIPU, an experienced international medical equipment investor, for a £16.5m up-front payment.
- **Capital increase:** Concomitantly, AVO is issuing 69.6m new Ordinary shares @30p per share to raise gross new funds of £16.8m and convert the AB Segulah loan (£4.1m), subject to shareholder approval. Yantai CIPU is subscribing for 45.0m shares and will own 29.9% of the enlarged share capital.
- **Risks:** The funding risk has now greatly reduced, although release of cash from the People's Republic of China requires approval from the Government. The more complex technical challenges of the LIGHT project have been overcome, but there is still risk in completing integration of the four structures.
- **Investment summary:** Demand for Proton Therapy is increasing worldwide and the need for a small, flexible, and affordable machine is apparent. AVO has attracted strong partners and discussions with potential customers globally have already started. Resolution of the financing requirement allows management to focus all its efforts on delivering the first LIGHT system on schedule.

**Financial summary and valuation**

Year end Dec (£m)	2014	2015	2016	2017E	2018E	2019E
Sales	0.11	0.00	0.00			
EBITDA	-5.06	-6.41	-10.83			
Underlying EBIT	-5.18	-6.59	-11.18			
Reported EBIT	-6.45	-8.51	-13.09			
Underlying PBT	-5.06	-6.72	-11.27			
Statutory PBT	-7.56	-8.63	-13.18			
Underlying EPS (p)	-14.91	-7.13	-11.26			
Statutory EPS (p)	-22.29	-12.25	-14.37			
Net (debt)/cash	0.48	7.96	0.91			
Capital increase	10.16	21.06	13.54			
P/E (x)	-1.0	-2.0	-1.3			
EV/sales (x)	-	-	-			

Source: Hardman &amp; Co Life Sciences Research

## Distribution and funding agreement

From inception, Advanced Oncotherapy has set out to develop a compact and modular proton therapy system at an affordable price for the payor, whilst being financially attractive to the operator, with the ultimate goal of generating superior patient outcomes. To date, the company has made considerable progress and, although there have been inevitable technical difficulties with such a complex process, the Achilles heel has been funding. We calculate that £55-60m has been invested into the project so far, in addition to an unknown quantum invested previously by CERN on the technology.

Hitting a number of technology milestones in 2017 has considerably de-risked the project and has increased confidence in a successful outcome, which has improved discussions around funding and commercialisation. This has culminated in a significant capital increase to resolve the company's funding requirements and a distribution agreement covering the important market opportunities for proton therapy in China and SE Asia.

AVO has raised a headline total of £37m and signed a distribution agreement with Yantai CIPU Medical Technology Co. Ltd (Yantai CIPU) to commercialise its LIGHT proton therapy system in a number of countries in China and SE Asia.

- ▶ **Up-front payment:** Yantai CIPU has agreed to pay AVO £16.5m for an exclusive distribution agreement to commercialise LIGHT in the China, Macau, Taiwan, Hong Kong and South Korea
- ▶ **Equity raise:** AVO has announced the issue of 56.0m New Ordinary Shares at 30p per share to raise £16.8m gross funds; Yantai CIPU is subscribing for 45.0m (ca.80%) of these and will own 29.9% of the enlarged share capital
- ▶ **Loan conversion:** The consortium of investors led by AB Segulah that made a loan facility of £3.9m available to AVO in July 2017, will convert the loan and related interest into 13.56m new Ordinary shares, equivalent to £4.1m
- ▶ **Approvals required:** The up-front payment and investment in AVO will require approval from the Government of the People's Republic of China for the transfer of cash overseas; the transaction will also require shareholder approval at a General Meeting
- ▶ **Metric Capital:** AVO still has the possibility of drawing down the £24.0m loan facility originally signed with Metric Capital in May 2016. Both parties have confirmed their intention to work together to revise the Terms & Conditions to reflect the considerable progress that has been made since the original agreement was signed

## Capital increase

- ▶ Issue of 56.0m new Ordinary shares @30p to raise gross funds of £16.80m
- ▶ Conversion of AB Segulah loan of £4.1m into 13.56m New Ordinary Shares
- ▶ Total number of shares in issue following completion will be 150,501,672
- ▶ Investment by Yantai CIPU is subject to approval from the Government of the People's Republic of China
- ▶ The share issue, together with the equity investment by Yantai CIPU, is conditional on shareholder approval at a General Meeting

AVO has announced the issue of 56.0m new shares at 30p per share, representing a premium of 2% to the volume weighted average price (VWAP) during the last month, to raise £16.8m gross funds. The main contributor to this equity increase will be AVO's new distribution partner in China, Yantai CIPU, which is subscribing for 80.4% of the equity issue, with the remainder largely being taken up by Directors, senior management, and other existing shareholders.

Concomitantly, the consortium of investors led by AB Segulah that made a loan facility of £3.9m available to AVO on 19<sup>th</sup> July 2017 will convert the whole loan and related incurred interest into new Ordinary shares at 30p – even though the original terms stated that AB Segulah and associates could convert at 25p – equivalent to ca.£4.1m. It should be noted that this portion does not represent any new money as the loan has been funding the working capital requirement of the group over the last few months.

#### Change in share capital

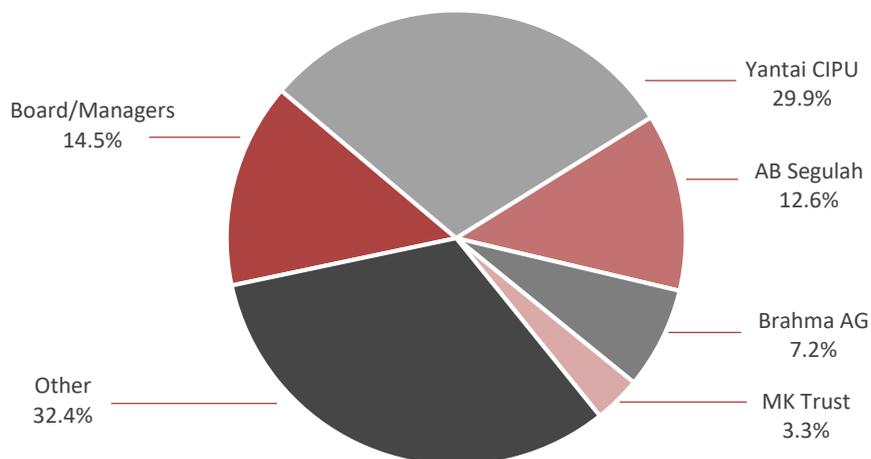
	Ordinary shares	Raised	% Enlarged share capital
<b>Current Ordinary shares</b>	<b>80,935,194</b>	-	
Yantai CIPU	45,000,000	£13.50m	29.9%
Directors/Managers	4,279,050	£1.28m	14.5%
Other investors	6,731,812	£2.02m	
<b>Equity raise</b>	<b>56,010,862</b>	<b>£16.80m</b>	
Loan conversion (AB Segulah)	13,555,617		12.6%
<b>Enlarged share capital</b>	<b>150,501,672</b>		

Source: Advanced Oncotherapy RNS; Hardman & Co Life Sciences Research

Following completion, Yantai CIPU will be the largest shareholder with 29.9% of the enlarged share capital. In addition, Mrs Zhang RenHua and Mr Chunlin Han will be joining the Board of AVO provided they satisfy the requisite due diligence requirements for the appointment of Directors of an AIM listed company. Directors and senior management will also hold a significant stake in the company with 14.5% of the enlarged share capital

Subject to approval from the Government of China, and shareholder approval, the fund raise is provisionally expected to complete during 1Q 2018.

#### Key shareholders – Enlarged share capital\*



\*Subject to shareholder approval

Source: Hardman & Co Life Sciences Research

**China has the capacity and need for at least 100 proton therapy centres**

## Distribution agreement

From the outset of its strategy to deliver an affordable proton therapy system that addresses the needs of the patient, the operator and the payor, AVO has recognised that the People’s Republic of China represents a significant opportunity with the need for at least 100 proton therapy centres. The appointment of Yantai CIPU Medical Technology Co.Ltd. (Yantai CIPU), an experienced health industry investor, particularly in high-end medical equipment companies, as the exclusive distributor of LIGHT in China, Hong Kong, Macau, Taiwan and South Korea is an important step for AVO to take advantage of this opportunity.

Yantai CIPU will make an up-front payment of £16.5m – again subject to approval from the Government of the People’s Republic of China – in exchange for this exclusive right to market and sell LIGHT in the stated territories.

We understand that Yantai CIPU has made investments in other international medical equipment companies, suggesting that it clearly knows the process involved.

### About Yantai CIPU Medical Technology Co. Ltd.

Based in Yantai, the company is ultimately owned by the Han family. The Han family is led by Mr. Xu Han, Chairman of Realcan Pharmaceutical Co. Ltd, one of China’s largest medical equipment and pharmaceutical product distributors, and is listed on the small and medium-sized board of the Shenzhen Stock Exchange (SHE:002589), with a market capitalisation of approximately £2.1 billion. Mr. Xu Han and his family own a combined 42% of Realcan.



Source:www.whereiq.com

## Cancer statistics in China

According to the latest data from the National Cancer Registry Center for 2011 there is a cancer incidence rate of ca.250 per 100,000 of population and mortality rate of ca.157 per 100,000 of population.

China – cancer incidence and mortality rates			
	per 100,000 of population		
	2011	2010	2009
Incidence	250	235	286
Mortality	157	149	181
<b>Cancer patients</b>			
Incidence	3,370,000	3,090,000	3,120,000
Mortality	2,110,000	1,960,000	2,700,000

Source: The National Cancer Registry Centre

**Around 3.4m diagnosed with cancer each year in China and 2m deaths**

The following table outlines the key drivers as well as obstacles for adoption of proton therapy in China.

Proton Therapy in China – Drivers and Obstacles	
Drivers	Obstacles
Growing cancer prevalence	Installation costs
Growing use of radiation therapy	Rural population
Under penetrated	Economic benefit yet to be fully elucidated
Technological innovation (imaging solutions, dose delivery, robotic positioning systems)	Reimbursement rates

Source: Hardman & Co Life Sciences Research

### The opportunity

China is currently under-equipped to deal with the growing incidence of cancer with many patients often enduring protracted waiting times for radiotherapy. It is estimated that radiation therapy is required in 45% to 55% of newly diagnosed cancer cases. Currently only around 20% of cancer patients receive some form of radiotherapy in China.

According to the IAEA<sup>1</sup> there are currently 1,040 radiotherapy centres in China with 1,014 accelerators (Linacs: linear accelerators) providing X-ray (photon) radiotherapy. In a peer reviewed article<sup>2</sup> the authors suggest that China needs 3,808 additional radiotherapy systems by 2020. These can be either traditional radiotherapy Linacs or proton therapy (PT) systems.

Therefore, China is a huge potential market for proton therapy. According to the Particle Therapy Co-operative Group (PTCOG), there are currently three operational proton therapy centres in China. With a population greater than 1.4bn, the medical need is obvious. Added to this there is a strong effort by the Chinese Government to accelerate the availability of radiotherapy including PT centres in the country – indeed, precision medicine has been identified as one of the strategic industries to receive support in China’s 5-year plan for economic and social development.

#### Reported particle therapy facilities in China

Facilities	Number of facilities	Treatment room
Facilities in operation	3 (1 Proton, 1 C-ion, 1 dual)	7 rooms
Facilities under construction	7 (6 Proton, 1 C-ion)	28 rooms
Facilities at planning stage	4 (4 Proton)	12 rooms

Source: PTCOG website, Hardman & Co Life Sciences Research

Yantai CIPU and AVO disclosed that they have identified already eleven potential sites across the territories under the distribution agreement. Following regulatory approval of the LIGHT system in China, Yantai CIPU has committed to target three installations over the first four years following regulatory approval and the financing of ten additional systems. Yantai CIPU is incentivised to achieve these goals. As part of the agreement, AVO will issue it with 500,000 warrants for every purchase agreement up to a maximum of eleven machines. The warrants will be exercisable for five years at a price equal to 130% of the one-month average share price prevailing on the date of delivery of each LIGHT system.

## Metric Capital

In May 2016, AVO announced that it had secured financing for its Harley Street project. Metric Capital Partners, a Pan-European private capital fund manager, agreed to a 5-year £24.0m loan to be drawn in two tranches to support the development and installation of LIGHT in Harley Street. The agreement was subject to the customary representations, and to an additional £25m cash or capital injection to fund the development of a manufacturing base.

Now that AVO has secured sufficient funding to satisfy some of the original Terms for the potential drawdown of this facility, AVO has re-entered negotiations with Metric Capital. AVO and Metric are seeking to update the Terms & Conditions to reflect the advancements made in the development of Harley Street since the

<sup>1</sup> [www-naweb.iaea.org/nahu/dirac/map.asp](http://www-naweb.iaea.org/nahu/dirac/map.asp)

<sup>2</sup> Datta et al 2014. International Journal of Radiation Oncology Biology Physics, 89-3, 448-457

original agreement was signed, which would allow this £24.0m facility to be drawn down.

## Risks

Readers need to be aware that the transfer of cash to the UK is subject to approval from the Government of People's Republic of China and there is no certainty on the timing of this. In addition, the necessary shareholder approval can only be obtained once the approval from the Chinese Government has been received, which will add a further delay to the timing for completion.

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