DAWSONJAMES SECURITIES

Member FINRA/SIPC

INSTITUTIONAL RESEARCH

Medical Devices

INITIATION REPORT

Toll Free: 561-391-5555 ♦ www.DawsonJames.com ♦ 1 North Federal Highway - Suite 500 ♦ Boca Raton, FL 33432

PAVmed (Nasdaq/PAVM)

BUY **PAVing the way in Medical Devices**

PAVmed is a medical device company bringing innovative products from concept to commercialization with speed and capital efficiency

August 31, 2017

Robert M. Wasserman
Senior Research Analyst
561-208-2905
rwasserman@dawsonjames.com

Investment Highlights

1) PAVmed has compiled a diverse six-product medical device pipeline, including potential applications in surgical catheters, neurology, ENT, infusion and tissue ablation. In only a short-time since acquiring these assets, the Company has made significant progress in advancing its product candidates toward commercialization. In December 2016, PAVmed submitted its first 510(k) application to the US FDA, in this case for PortIO Intraosseous Infusion System for short-term use, and the Company has continued to work with the agency to demonstrate substantial equivalence to the selected predicate device in the application. In addition, this year PAVmed has continued verification and validation testing for the Company's CarpX device with an FDA 510(k) application submission targeted for the end of Q3/2017, and has continued development work on its DisappEAR device with an FDA submission targeted for 2018.

2) Taking advantage of the deep experience in medical device development and clinical medicine of its co-founders and executives, PAVmed brought over a stable of five medical devices in its portfolio, and the Company has since added a six pipeline product, DisappEAR, through a recent licensing agreement with a number of prestigious medical institutions in New England. PAVmed expects to continue to add to its asset base in the longer-term, through ongoing discussions with innovative clinicians and academic medical centers and by advancing these conceptual phase projects through patent submission and early testing, and finally by exploring synergistic acquisition targets. PAVmed management has developed and in some cases sold several medical products and companies in the very recent past, and the Company also recently completed two financial offerings to boost cash balances and fuel product development activities through next year.

Current Price	**$4.29**
Price Target	**$10.10**

Estimates	F2015A	F2016A	F2017E
Revenues($000s)	**$0**	**$0**	**$0**
1Q March	0	0	0 A
2Q June	0	0	0 A
3Q September	0	0	0 E
4Q December	0	0	0 E
EPS (diluted)	**($0.16)**	**($0.44)**	**($0.70)**
1Q December	(0.01)	(0.06)	(0.32) A
2Q March	(0.03)	(0.10)	(0.08) A
3Q June	(0.05)	(0.14)	(0.14) E
4Q September	(0.06)	(0.13)	(0.16) E
EBITDA/Share	($0.15)	($0.38)	($0.61)
EV/EBITDA (x)	N/A	N/A	N/A

Stock Data	
52-Week Range	$2.54-$14.49
Shares Outstanding (mil.)	13.3
Market Capitalization (mil.)	$57.2
Enterprise Value (mil.)	$57.1
Debt to Capital (6/17)	0.0%
Book Value/Share (6/17)	($0.38)
Price/Book	N/A x
Average Trading Volume (10-day)	17,700
Insider Ownership	79.3%
Institutional Ownership	90.5%
Short interest	4,650
Dividend / Yield	$0.00/0.0%

Price target and ratings changes over the past 3 yrs:
Initiated - August 31, 2017 - Buy - Price Target $10.10

Conclusion

Possibly due to its newness as a public company, shares of PAVmed have lagged the solid stock price performance of many other medical device companies in recent history, particularly considering the historical success in developing companies shown by the Company's executive management team and advisors. However, with a deep device pipeline of six products, visible development progress on its first three product candidates, an active search for additional product assets and a recently-strengthened balance sheet, PAVmed shares may soon attract growth-oriented and value-investors as news flow continues, and thus we believe PAVM shares may soon follow those of other medical device stocks which have recently exhibited strong price appreciation, and therefore we are initiating coverage on PAVM shares with a BUY rating and 12-18 month price target of $10.10 per share.

Company Business/History

PAVmed (PAVM) is a highly-differentiated multi-product medical device company organized to conceive, develop and commercialize a diversified pipeline of innovative products to address unmet clinical needs and enter attractive market opportunities. The Company's goal is to enhance and accelerate value creation by employing a business model focused on capital and time efficiency. PAVmed intends to continuously explore promising ideas and opportunities that fulfill the Company's project selection criteria without being limited to any target specialty or condition. The Company grew out of Pavilion Medical Innovations (PMI), a medical device-oriented venture capital firm founded in 2009 which spun-out three successful medical device companies after selling an earlier start-up device company in 2007. PAVmed itself was incorporated in June 2014 with five medical device program assets and after initial private funding, completed its IPO in April 2016. The Company added a sixth project through a licensing agreement in November 2016 and in December 2016, PAVmed filed a 510(k) premarket notification submission medical device application with the FDA for its first product, the PortIO Intraosseous Infusion System.

The Company's current pipeline includes the following six lead projects, all of which are the subject of filed patent applications. One of these projects, NextFlo, also has two issued patents and one, DisappEAR is based on a family of patents and patent applications licensed from a group of academic centers. These projects are all in the development phase and have not yet received regulatory approval, and are listed briefly below:

- PortIO: A novel long-term implantable intraosseous vascular access device with no indwelling intravascular component;
- CarpX: Completely percutaneous device to treat carpal tunnel syndrome;
- NextCath: Self-anchoring catheters which do not require suturing, traditional anchoring techniques or costly add-on catheter securement devices;
- DisappEAR: Antibiotic-eluting resorbable ear tubes, developed from a proprietary aqueous silk technology;
- NextFlo: Highly accurate disposable infusion pumps using stored potential energy and variable flow resistors; and
- Caldus: Completely disposable tissue ablation devices which can also be used for renal denervation to treat hypertension.

In addition to the Company's six lead projects, PAVmed is working on projects which are currently in the conceptual phase. As is the case with lead projects, these additional projects cover a wide range of clinical conditions and procedures, including sleep apnea, extracorporeal membrane oxygenation (ECMO), laparoscopic hernia repair, cardiac surgery, interventional cardiology and endotracheal intubation. The chart below outlines the Company's six lead products, their addressable market, and the regulatory path expected to be needed for approval for each:

PRODUCT	ADDRESSABLE MARKET		REGULATORY PATH
PortIO Implantable Intraosseous Vascular Access Devices	Vascular Access Ports/ Emergency Intraosseous Access	$500M/$125M	510(k)
CarpX Percutaneous Device to Treat Carpal Tunnel Syndrome	Carpal Tunnel Syndrome	$1B	510(k)
NextCath Self-Anchoring Short-Term Catheters	Percutaneous Interventional Radiology Drainage Catheters	$200M	510(k)
DisappEAR Antibiotic-Eluting Resorbable Ear Tubes	Pediatric Ear Tubes	$300M	510(k)
NextFlo Highly Accurate Disposable Infusion System	Inpatient Infusion Sets/ Disposable Infusion Pumps	$500M/$1B	510(k)
Caldus Disposable Tissue Ablation Devices	Fistulae	$300M	510(k)
	Renal Denervation	$1B	CE Mark / Emerging Markets

Source: PAVmed

PortIO – Implantable Vascular Access Device

PortIO is a novel, implantable, intraosseous (intra-bone marrow) vascular access device, which, unlike existing long-term vascular access devices, does not have a component residing in a vein. The intraosseous route provides a means for infusing fluids, medications, and other substances directly into the bone marrow cavity which communicates with the central venous circulation via nutrient and emissary veins. This route, which has been used for decades, is well established and has been shown to be bio-equivalent to the intravenous route. PortIO is designed to be highly resistant to occlusion, thus the product may not require regular flushes or radiologic confirmation. It can be inserted and removed without the need for surgical dissection and provides a limitless number of potential access sites in chronically ill patients that often have poor or no central venous access. PortIO may have the potential to decrease costs by shifting the procedure to a less expensive office or bedside setting.

Long-term vascular access devices, including peripherally inserted central catheters, tunneled catheters or implanted ports, are used to deliver various medications, fluids, blood products, nutrition or other therapeutic agents to patients with a wide variety of clinical conditions over multiple episodes spanning a period of weeks

to months. A report by iData Research Group estimates the market for such devices to be several billion dollars annually. The market is moderately fragmented and highly commoditized, with slight premium pricing for modest features, including anti-infective coating, antithrombotic properties, tip location and power injector compatibility.

The decades-old core technologies underlying currently available long-term vascular access devices have several limitations which relate directly to the intravascular component of the device. Up to 10% of such devices become infected, which can lead to costly and severe complications and even death (van de Wetering, *Cochrane Database 2013*). Since they are in constant contact with the blood stream, current devices require regular flushes to clear stagnant blood and prevent thrombus formation and occlusion. Despite these maneuvers, up to one-third of long-term vascular access devices become occluded at some point during their implantation period (Baskin, et al., *Lancet* 2009) and the resulting clot can dislodge as an embolism causing further downstream complications. This complication requires treatment with clot-dissolving agents or removal and implantation of a new device at an alternative site which in turn can lead to additional complications. Many chronically ill patients requiring long-term vascular access devices have poor or no central venous access as a result of repeated instrumentation of the veins or the presence of pacemaker and defibrillator leads, resulting in thrombosis or scarring. Finally, most long-term vascular access devices require surgical insertion and removal, radiographic confirmation of tip placement and careful handling by trained clinicians to prevent the introduction of air into the circulation.

Vascular access devices typically are used in short-term durations, for days to a week, including applications such as acute in-hospital infusions, emergency care, or treatment for traumatic injuries. A common medical device used in short-term, or emergency vascular access is an emergency intraosseous device such as the hand-held instrument shown to the left. These types of devices employ a technique which infuses fluids directly into the bone marrow cavity, allowing rapid, direct drainage into central venous circulation. Use of these types of devices and procedures have become well established over decades of use, primarily in trauma situations (especially military use) and in pediatric emergency settings, and are characterized by low complication rates and bio-equivalency to intravenous infusion. Due to these attributes, intraosseous vascular access devices have seen expanding in medical use outside of non-emergency situations, but currently marketed devices have the disadvantage of being able to be used only once or a few times for medical procedures and are not applicable to longer-term use. Devices of this type can address a market in the US as large as $130 million per year, including sale of the device itself and applicable disposable supplies or needles used along with the device.

On the other hand, long-term duration vascular devices (used for weeks or months) due to their flexibility, address a much larger portion of the US medical device market, with 400,000 – 500,000 procedures annually, or an addressable market as large as $500 million. Longer-term vascular access can include applications such as chemotherapy, antibiotics, intravenous nutrition, biologics and other medications. Common long-term vascular access devices include:

- Implantable Ports (“Port-a-Cath”);
- Tunneled Central Venous Catheters;
- Peripherally-Inserted Central Catheters (PICC); and
- Central Venous Catheters, or CVCs.

Often complicated and expensive to use, common long-term vascular devices have the disadvantage of a number of limitations and side effects, including:

- Occlusion, leading to more serious complications such as thrombosis and in many cases required clot-busting medications or a repeat procedure;
- Infection, in up to 10% of cases – with chemotherapy patients particularly at high-risk;
- Poor venous access – In 10% or more of situations, central veins may be inaccessible; and
- Difficult resource utilization, requiring surgical insertion and removal, radiographic tip confirmation, and maintenance of the site needed with regular flushing.

Currently available intraosseous devices pass through the skin into the bone and are therefore limited to short term use. PAVmed's PortIO, however, is a novel, implantable intraosseous vascular access device which does not require accessing the central venous system and does not have an indwelling intravascular component. It is designed to be highly resistant to occlusion and may not require regular flushing, and also that the absence of an intravascular component will result in a very low infection rate. PortIO (the entire system including disposables is shown to the right) features simplified, near-percutaneous insertion and removal, without the need for surgical dissection or radiographic confirmation. It provides a near limitless number of potential access sites and can be used in patients with chronic total occlusion of their central veins.

Source: PAVmed

PAVmed's PortIO system includes no intravascular component, and offers the following advantages over existing vascular access devices:

- Subcutaneous - Resides under the skin, patient can swim/bathe;
- Components - Titanium body with internal conical needle guide, no fluid reservoir, Self-tapping/drilling hollow titanium bone screw, and Silicone septum;
- Implanted into bone - Over a guide through a small skin incision. An insertion kit is provided; and
- Accessed in the same manner as traditional port through a Huber access needle inserted through skin, septum and channel, accessing bone marrow cavity.

To date, the Company has filed a final non-provisional patent application and advanced the product from concept to working prototypes, benchtop, animal and cadaver testing, commercial design and development and verification and validation testing. In December 2016, PAVmed filed a 510(k) premarket notification submission to the FDA for PortIO and expects to receive clearance and initiate commercialization later this year. The Company's initial submission was for short-term use but PAVmed plans on submitting additional data for longer-term use of the product in the near future. Once this product is commercialized, it is believed that it will have lower cost-of-goods than existing implantable vascular access devices and premium pricing based on improved outcomes and reduced costs. The initial target for the device will be patients with poor venous access, but the addressable market also includes all patients requiring long-term vascular access. Marketing advantages attributed to the product may someday include:

- Fewer complications, including fewer occlusions and the accompanying potential for fewer, less serious infections;
- Less invasive system, with a simple, near-percutaneous (skin) insertion and removal;
- More versatile device - Rapid, predictable, repeatable use allows for a near limitless number of potential access sites critical in patients with poor veins; and

- More cost effective, including no need for regular flushes, no radiographic confirmation, and the ability to shift certain procedures out of the operating room to a less expensive area of the healthcare system.

CarpX — Percutaneous Device to Treat Carpal Tunnel Syndrome

Carpal tunnel syndrome (CTS) is the most common cumulative trauma disorder and accounts for over half of all occupational injuries. The carpal tunnel is an anatomic compartment in the wrist through which tendons and the median nerve pass. Cumulative trauma leads to inflammation which manifests itself clinically through its compressive effect on the median nerve, resulting in motor and sensory dysfunction in the hand. A survey published in the *Journal of the American Medical Association* reported that 2.5% of US adults, or approximately five million individuals, have CTS, and about 350,000 surgical procedures are performed annually in the US for CTS. According to the CDC, CTS accounts for two million office visits per year, and annual workers' compensation costs in the US related to CTS treatment and lost work time are as much or more than $20 billion annually (Agency for Health Care Policy and Research). The diagram below depicts location of carpal tunnel syndrome relative to a patient's hand:

Source: PAVmed

Current first-line treatments in the US for CTS include physical therapy and other non-invasive treatments; failing these methods patients who have not been able to improve with initial treatments may be candidates for interventions which seek to relieve the compression of the median nerve by cutting the transverse carpal ligament, which forms the superficial wall of the carpal tunnel. Traditional surgical approaches are effective, but they are also invasive and must be performed in a surgical operating room. Endoscopic approaches are less invasive, but are more technically challenging, more expensive and have been associated with higher complication rates. These approaches still require a surgical incision and some surgical dissection before the endoscope is passed into the carpal tunnel. Two less-invasive devices are currently on the market, including:

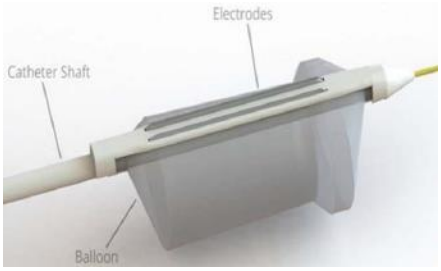
- A device which attempts to use trans-illumination to guide blind passage of a protected knife; and a
- Second device which passes a saw-like device blindly or by ultrasound guidance.

Technical limitations have hindered market acceptance of both of these devices.

CarpX is PAVmed's completely percutaneous (under the skin) device to treat CTS. The Company believes its CarpX device will allow a physician to relieve the compression on the median nerve without an open incision or the need for endoscopic or other imaging equipment. To use the device, the operator first advances a percutaneously placed guidewire through the carpal tunnel under the ligament. The CarpX device is then advanced over the wire and positioned in the carpal tunnel under ultrasonic and/or fluoroscopic guidance. When activated, it creates space within the tunnel, confirms that the nerve is protected from the cutting element and divides the ligament.

Components of the CarpX medical device system, which is shown to the right, include:

- Balloon catheter with bipolar radiofrequency cutting electrodes;
- Handle with electronics and controls; and
- Connections to standard electrosurgical generator and balloon inflation device.



As a completely percutaneous technology, CarpX has been designed to allow procedures which will be significantly less invasive than existing treatments, and also allow for more extensive lateral dissection within the tunnel and more reliable division of the ligament, resulting in lower recurrence rates than some of the endoscopic approaches. A complete listing of techniques to be used with CarpX, shown to the left, are described below:

- Inserted over guidewire under ultrasound guidance;
- Balloon inflated with contrast under fluoroscopic guidance;
- Ligament stretched over the electrodes;
- Nerve stimulation signal delivered to confirm median nerve safely pushed away;
- Electrosurgical current delivered, cleanly cutting ligament from inside out in a few seconds; and
- Cutting confirmed by pressure drop in balloon and fluoroscopic image.

To date, PAVmed has filed a non-provisional patent application and advanced the CarpX product from concept to working prototypes, successful benchtop and cadaver testing confirming that the device consistently cuts the transverse carpal ligament, and through commercial design and development. The Company has begun pre-submission verification and validation testing and anticipates 510(k) FDA submission, clearance and initial commercialization this year or early next year. Marketing advantages attributed to the product, once commercialized, may someday include:

- Decreasing procedural costs by shifting the procedure from the operating room to an office setting while retaining similar reimbursement to traditional surgical approaches;
- Reducing post-operative pain;
- Accelerating a patient's return to full activity; and
- Lowering the threshold for intervention for patients "suffering in silence" who chose to delay surgery until symptoms become debilitating.

The CarpX device may also be applicable to other clinical situations where percutaneous division of a fibrous structure can be used for therapeutic effect, such as plantar fasciitis and extremity compartment syndromes resulting from trauma or ischemia.

NextCath - Self-Anchoring Short-Term Catheters

A wide variety of short-term catheters are used in clinical practice to infuse fluids, medications or other substances into a vein or other structures, to monitor physiologic parameters and to drain visceral organs or cavities. Interventional radiology catheters, in particular, are widely used to drain various structures and cavities including the pleural space, obstructed kidneys and abscess cavities. There is an increasing appreciation, however, of the importance of catheter securement in preventing complications of all indwelling catheters, and

in recent years a large number of separate propriety devices marketed to facilitate catheter securement have been developed. A report by iData Research Group estimates the catheter securement market to be approximately $4.0 billion annually.

However, currently marketed short-term catheters are not self-anchoring, as they have been traditionally anchored to the skin with simple tape or some other adhesive incorporated into the sterile dressing. According to a report by Dr. Gregory J. Schears, a pediatric anesthesiologist and expert on catheter securement, both microscopic and macroscopic movements from inadequate catheter securement can lead to complications, including vascular injury and dislodgment. Catheter dislodgement leads to increased pain, increased costs and potentially more serious complications arising from interruption of critical treatments or bleeding, which in turn can also adversely impact quality of care. Monitoring catheter patency and security and reinserting dislodged catheters is labor intensive. Many types of catheters are sutured to the skin, a process which leads to increased pain and exposure to needle sticks. Dislodgement of interventional radiology catheters are a significant concern since they can lead to serious complications and may require another visit to the procedural suite to replace or reposition the catheter. A wide variety of catheter securement devices are currently marketed - some have been shown to decrease complications relative to traditional techniques, but add cost and complexity to the process.

PAVmed is developing self-anchoring short-term catheters which do not require suturing, traditional anchoring techniques or costly add-on catheter securement devices. (See diagram to the right) The Company is initially focusing on interventional radiology catheters, which are less commoditized and result in significantly greater risk when dislodged. PAVmed's self-anchoring technique, however, is applicable to most, if not all, short-term catheters. The self-anchoring mechanism is integral to the catheter, allowing insertion with standard techniques and the use of simple clear sterile dressings. It allows the hub of the catheter to be flat and the tubing to come out eccentrically, or parallel to the skin, improving patient comfort and catheter management.

Source: PAVmed

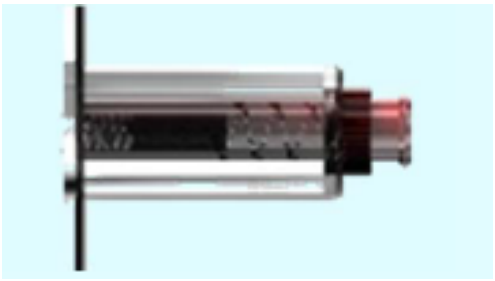
PAVmed has filed a non-provisional patent application on its device, completed initial design work on the interventional radiology drainage catheter and completed head-to-head testing of retention forces, comparing the working prototype to several competing products, which has validated the approach. The Company has begun design and development of the commercial embodiment. Once this product is commercialized, PAVmed believes that it will garner premium pricing based on fewer complications and reduced overall costs.

NextFlo - Highly-Accurate Disposable Infusion System

Each day, over one million patients receive some type of infusion and 90% of hospitalized patients receive an intravenous infusion at some point during their hospital stay. (Husch et al. *Quality & Safety in Health Care 2005*; 14:80-86). Unlike twenty years ago, nearly all inpatient infusions, including routine ones which do not require flow adjustment, are delivered by expensive electric infusion pumps instead of with simple gravity. An increasing number of these patients are receiving infusions of medications or other substances outside of a hospital, in ambulatory facilities and at home. In addition, disposable infusion pumps (DIPs) have many attractive features that favor their use in these settings over outpatient electric infusion pumps. Patients tend to favor DIPs because they are small, disposable, simple to operate, easy to conceal, and allow for greater mobility. They are used to deliver medications including antibiotics, local anesthetics and opioids. According to a report by Transparency Market Research, the overall global infusion market is estimated to be over $5.0 billion annually. DIPs account for approximately 10% of this market and inpatient infusion sets for about 20%.

Infusion pump errors are a serious ongoing problem and represent a large share of the overall human and economic burden of medical errors. Electronic infusion pumps have become expensive, high-maintenance devices and have been plagued in recent years with recalls due to serious software and hardware problems. These pumps are designed for fine titration of infusions in complex patients such as those in a critical care setting. However, using these complex devices for routine administration of medications or fluids in many cases may be technological overkill. The Company believes a significant market opportunity exists for a simple, disposable device which can be incorporated into a standard infusion set and eliminate the need for expensive, problem-prone infusion pumps for routine inpatient infusions. In terms of outpatient infusions, currently marketed DIPs are powered by elastomeric membranes, compressed springs, compressed gas or vacuum and controlled by mechanical flow limiters. The primary limitation of DIPs is that they can be highly inaccurate in actual use because they can be susceptible to changes in operating conditions (e.g. temperature, atmospheric pressure, viscosity, back pressure, partial filing and prolonged storage). As a result, their safety profiles make them unsuitable for use with medications, such as chemotherapeutics, where flow accuracy is critical to achieve the desired therapeutic effect and avoid complications. The FDA's MAUDE database includes numerous reports of complications and even deaths as a result of DIPs infusing a particular medication too slowly or too fast. Thus, there may be a significant market opportunity for highly accurate disposable infusion pumps for outpatient use.

PAVmed is developing highly-accurate infusion systems with variable flow resistors. The Company has acquired US Patent #8,622,976 (issued January 7, 2014) as well as associated US and international patent applications entitled "System and Methods for Infusion of Fluids Using Stored Potential Energy and a Variable Flow Resistor." The Company has subsequently built on the principles underlying this patent and developed a new concept whereby the variable resistor does not have to be mechanically-linked to the infusion drive mechanism. (see depiction to the right) This concept simplifies the design and expands the range of potential follow-on products. PAVmed has performed extensive computer simulation testing on various embodiments and has demonstrated highly-accurate flow rates across a wide range of driving pressures, and the Company has advanced the design and development of the device, including a redesign which dramatically simplifies the product, lowers the projected cost of goods, and expands its application to routine inpatient infusion sets. Once this product is commercialized, PAVmed believes that it will command a premium price over existing inpatient infusion sets and low-accuracy DIPs. Infusion sets incorporating this product may permit hospitals to return to gravity and eliminate expensive infusions pumps for most inpatient infusions. In addition, the accuracy of the NextFlo device incorporated into DIPs may allow them to be used with a broader range of drugs, thereby significantly expanding the addressable market.



Caldus - Disposable Tissue Ablation Devices

Tissue ablation involves the targeted destruction of tumors or benign tissues with pathologic impact (e.g. gastrointestinal, endometrial and cardiac) using one of a variety of commercially-available ablation devices based on a specific energy source (e.g. radiofrequency, microwave, laser, ultrasound, cryoablation). With the exception of cryoablation, all of these devices act through a common pathway of cellular hyperthermia. A 2014 report by Transparency Market Research estimates the tissue ablation market generates $4.0 billion to $5.0 billion in annual revenue. One target which has not been successfully treated with ablation, however, are fistula tracts, specifically fistula-in-ano. Up to 100,000 patients each year develop this condition, and recently, the renal nerves have been identified as a therapeutic target for ablation in patients with refractory hypertension. Despite a widely publicized clinical trial which failed to meet its endpoint, many believe that renal denervation

remains an attractive clinical and commercial opportunity with approximately 10 million patients in the US and 100 million worldwide experiencing resistant hypertension (Pimenta et al. *Circulation 2012*; 125-1594-96).

All commercially-available devices or those under development for renal denervation rely on some form of a console to generate the ablation energy. These consoles, whether sold or leased as capital equipment or incorporated into the disposable costs, represent a significant portion of the cost of the technology and the procedure. In particular, these costs can significantly impact procedural margins and marketing in emerging countries with limited biomedical staff.

Another limitation of current devices is that they depend on maintaining the conductivity of energy through the tissue during the ablation period. For example, radiofrequency ablation depends on electrical conductivity to generate heat, but creating too much heat near the probe can generate charring which increases impedance and decreases the effective range of the ablation. A wide variety of technologies and techniques have been developed to accommodate the challenges of ablating across large distances using radiofrequency (e.g. multi-electrode probes, cooling, irrigation and complex power algorithms). As a result, these tissue ablation modalities typically require a complex, external console to assure the precise amount of energy is delivered to the tissue. In addition, the consoles require on-going maintenance and monitoring by the manufacturer and local facility technical staff to assure they remain safe for use in patients. This can be particularly burdensome when commercializing such devices in emerging markets where access to qualified technical personnel may be limited.

PAVmed is developing completely disposable tissue ablation devices, including for renal denervation, based on direct thermal ablation of the tissue using heated fluid. This technological solution takes advantage of the fact that all currently available devices, except those utilizing cryoablation, ultimately act by increasing the tissue temperature to cytotoxic levels for a given period of time. Caldus, the Company's solution, uses a proprietary infusion device to continuously deliver heated fluid to a specially designed balloon catheter which heats the target tissue above its cytotoxic threshold according to a specified pattern. (See diagram to the right)

The Company has to date completed proof-of-concept work, thermal fine element analysis simulations validating its approach and working prototypes of the infusion device and balloon catheter. PAVmed has filed two provisional patent applications and has initiated design work on the proprietary infusion system and balloon catheter. The Company has decided to initially target fistula tracts, namely fistula-in-ano, as the most promising opportunity for this technology. It is believed that the balloon catheter will provide circumferential ablation of the tract which is difficult to do with other ablation technologies and will result in a much less invasive, and less painful treatment option than the current surgical approach.

PAVmed anticipates its filing strategy for Caldus will include an FDA 510(k) pathway for traditional tissue ablation targets and a PMA pathway in the United States and European CE mark for renal denervation. Regarding the renal denervation application, the Company will be closely monitoring the progress of technologies working their way through US regulatory clearance and tailor its regulatory and commercial strategy accordingly. PAVmed anticipates that, in the early phases, its strategy will likely focus on European regulatory clearance and target emerging markets where the clinical opportunity (high incidence of hypertension with less coordinated primary care) and commercial opportunity (difficulties acquiring and maintaining capital equipment) may be greatest. Once this product is commercialized, the Company believes that its completely disposable system will have significantly lower procedural costs and higher margins than existing technologies. In addition, PAVmed anticipates applying the Caldus technology to other target tissues including endovenous ablation and soft tissue tumors, as resources permit. (See a prototype design for Caldus depicted in the diagram to the right).

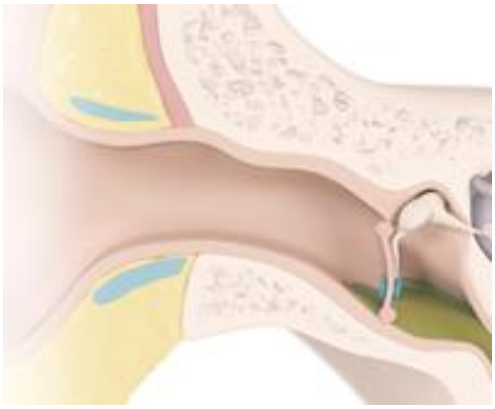
DisappEAR - Antibiotic-eluting Resorbable Ear Tubes

Each year up to one million children, generally between the ages of 2 and 5, with persistent ear infections (otitis media) or middle ear fluid collections (effusions) undergo placement of metal, plastic or latex bilateral ear tubes to ventilate and drain the middle ear. This procedure, formally known as bilateral tympanostomy, is the most common pediatric surgical procedure in the United States. The procedure is performed under general anesthesia. After the procedure, the patients are typically treated with a one-week course of antibiotic ear drops administered twice a day. The tubes are regularly monitored and allowed to remain in place for at least one year until the natural drainage pathway of the middle ear (the Eustachian tube) opens up as the child grows and the surrounding tonsillar tissue regresses. A second procedure, again under general anesthesia, is often necessary to remove the tubes once they are no longer needed or if they become dislodged and do not fall out of the ear canal on their own. Although the tubes themselves are marketed as a moderately priced item, the antibiotics course can cost $300 or more. Thus, there is a significant market opportunity of up to $300 million annually for a system which can replace the post-operative antibiotic drops and reduce the need for future procedures.

Currently available pediatric ear tubes require general anesthesia for insertion and removal and a course of antibiotic ear drops. The ear drops can be quite difficult for parents to administer in children of younger age which can lead to poor compliance. Furthermore, tube dislodgement is not uncommon. When the tube dislodges into the ear canal it can get embedded in wax and lead to inflammation, obscured visualization of the ear drum, pain and bleeding. When the tube dislodges into the middle ear, where the fragile bones that transduce sound to the inner ear reside, parents and physicians become concerned about long-term damage and hearing loss. As a result, both situations usually require a second procedure, again under general anesthesia. Up to 50% of patients undergoing ear tube placement require a second procedure.

In November 2016, PAVmed entered into a licensing agreement with a group of leading academic institutions, including Tufts University and two Harvard Medical School teaching hospitals - Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital. The agreement provides PAVmed with an exclusive worldwide license for the life of the underlying patents to develop and commercialize antibiotic-eluting resorbable ear tubes based on a proprietary aqueous silk technology conceived and developed at these institutions. One of the researchers behind this technology, Dr. Christopher J. Hartnick, Professor of Otolaryngology at Harvard Medical School and Chief of Pediatric Otolaryngology at Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital, joined PAVmed's Medical Advisory Board in October 2016.

The Company is working closely with Dr. Hartnick along with Dr. David Kaplan, Stern Family Professor of Engineering, Chair of the Department of Biomedical Engineering and Director of Bioengineering and Biotechnology Center at Tufts University. PAVmed has presently committed to a timeline with certain milestones on the path to commercialization. Once commercialized, the institutions will receive royalties based on revenue and a portion of certain additional proceeds from the sale or sublicensing of the technology to a third party.



Overall, the Company believes that its DisappEAR antibiotic-eluting resorbable ear tubes (see diagram to the right) will eliminate the need for a second procedure to remove retained or dislodged tubes in most patients. Having the antibiotics eluted from the device will eliminate the difficult-to administer post-procedure antibiotic ear tube regimen. The Company's academic/institutional partners in development had previously completed successful animal studies using working prototypes of the device, and subsequently the Company has completed its market, regulatory and manufacturability analysis including target cost of goods and average sale price. PAVmed has also engaged a design and contract manufacturing firm to initiate the design and development of the device. Once this product is commercialized, it is believed that it will garner premium pricing based on improving compliance and eliminating the significant cost related to the post-procedure antibiotic regimen, the need for second procedure and fewer complications.

Intellectual Property

In order to protect its proprietary technologies' intellectual property rights in patents, trademarks and copyrights, the Company intends to file and prosecute (if necessary) patent applications in the United States, as well as filing counterpart patent applications in Europe, Canada, Japan, Australia, China and other countries worldwide. Foreign filings can be cumbersome and expensive and will be pursued if warranted to balance the Company's international commercialization plans with the desire to protect the global value of the technology as available through registration in the United States and internationally. PAVmed will seek patent protection, as appropriate, on:

- the product itself including all embodiments with future commercial potential;
- the methods of using the product; and
- the methods of manufacturing the product.

Going forward, PAVmed intends to continuously reassess and fine-tune its intellectual property strategy in order to fortify this position in the United States and internationally. In addition, prior to acquiring or licensing a technology from a third party, the Company will evaluate the existing proprietary rights, its ability to adequately obtain and protect these rights and the likelihood or possibility of infringement upon competing rights of others.

The Company will also rely upon trade secrets, know-how, continuing technological innovation, and may rely upon licensing opportunities in the future to develop and maintain its competitive position. PAVmed intends to protect its proprietary rights through a variety of methods, including confidentiality agreements and/or proprietary information agreements with suppliers, employees, consultants, independent contractors and other entities who may have access to proprietary information.

Operations

PAVmed's current plan is to commercialize its products, if approved, through a network of independent US medical distributors. The Company's present focus is on high-margin products which are particularly suitable to this mode of distribution, and this is expected to allow the Company to properly incentivize its distributors, which in turn will allow the Company to attract the top distributors with the most robust networks in targeted specialties. Eventually, however, the Company may choose to build or acquire its own sales and marketing team to commercialize some or all of its approved products, or alternatively, enter into distribution agreements with larger strategic partners. Such agreements may include regional carve outs, minimum sales volumes, margin splitting and/or an option or right of first offer to purchase the technology at a future date.

Similarly, the Company currently has no plans to manufacture its own products, if approved, as fixed overhead costs and the limited flexibility that comes with owning manufacturing facilities is not consistent with a capital-efficient model. Rather, the Company intends to use its existing relationships with many contract manufacturers, who are able to take advantage of significant economies of scale in terms of purchasing, machining, tooling, specialized personnel, sub-contracting or even off-shoring certain processes to lower-cost operators. Moreover, PAVmed intends to work closely with its contract manufacturing partners to establish and manage the product supply chain, to design and build product manufacturing lines including subassembly, assembly, sterilization and packaging, and to work closely with them to manage quality systems, to assure compliance with all regulations and to handle inspections or other queries with regulatory bodies.

Recent Results and Balance Sheet/Cash Flow

In its most recent quarterly financial release for its Q2/2017 (ending June), PAVmed reported financial results for the quarter and also provided a progress update on its product pipeline. For the quarter, PAVmed reported a non-GAAP adjusted loss of $1.77 million or ($0.13) per share, as compared to a non-GAAP adjusted net loss of $1.1 million or ($0.09) per share in the prior year period. However, EBITDA for Q2/2017 was $987,000, a decrease in negative EBITDA from $1.3 million in the same period one year ago, after factoring out non-cash expenses including stock-based compensation expense and changes in value for warrant and preferred stock liabilities. General and administrative expenses during Q2/17 increased to $1.3 million from $1.0 million in Q2/17, primarily due to higher outside professional services (such as advisory, investor relations, and marketing fees), while R&D costs also increased during the quarter to $700,000 from $355,000 in Q2/16, due primarily to higher non-cash stock-based compensation expense. Net operating cash burn for the first six months of 2017 was approximately $2.6 million. At the end of the second quarter, PAVmed held approximately $0.1 million in cash on hand, which was augmented by approximately $5.3 million in net cash proceeds garnered in July 2017 from a Senior Secured Note Payable offering and in August 2017 from a Preferred Stock private placement. PAVmed management has estimated that the Company has sufficient financial resources to last through mid-2018 at current levels of operating cash burn.

Product development milestones during the quarter included continued work with the FDA related to a 510(k) application submitted for PortIO in December 2016, verification and validation testing for the Company's CarpX device with an FDA 510(k) application submission targeted for the end of Q3/2017, and continued development work on DisappEAR with an FDA submission targeted for 2018.

The Company's balance sheets for the periods Q4/2016 ending December 2016 and Q2/2017 ending June 2017 are shown below:

Balance Sheets
($000s)

Assets:	12/31/16	6/30/17
Current Assets		
Cash and equivalents	$586	$82
Prepaid expenses and other current assets	155	125
Total current	741	207
Property and equipment, net	18	20
Deferred offering costs	111	0
Total Assets	$870	$226
Liabilities:		
Current liabilities		
Accounts payable	$949	$1,652
Accrued expenses and other current	240	393
Series A warrants	0	2,516
Derivative liability	0	715
Total current	1,189	5,276
Stockholders' equity	(319)	(5,050)
TOTAL LIAB & EQ	$870	$226

Source: PAVmed

Outlook/Growth Drivers

Going forward, PAVM investors can look ahead to the following growth drivers for the Company:

- Advancement of lead products to commercialization, including PortIO, CarpX, DisappEAR, NextFlo, NextCath and Caldus. The Company has already filed FDA 510(k) marketing authorizations for PortIO, and anticipates additional regulatory clearance filings for CarpX and DisappEAR over the next 12 months, while continuing pre-submission development of its NextFlo, NextCath and Caldus product candidates;
- Expansion of product pipeline, including ongoing discussions with innovative clinicians and academic medical centers and advancing conceptual phase projects through patent submission and early testing; and
- Discovery of synergistic acquisition targets.

On a financial basis, we are estimating that expenses for the remaining two fiscal quarters for PAVmed will approximate what the Company reported for the first two quarters of this fiscal year, not including non-cash charges, including a net loss of $1.9 million or ($0.14 per share) in Q3/2017 ending September and a net loss of $2.1 million or ($0.16) per share in Q4/2017 ending December. Both R&D and general and administrative expenses are expected to increase only slightly for the remaining two quarters of 2017 as compared to the first two quarters of 2017.

Management

PAVmed's leadership team is comprised of three accomplished medical device entrepreneurs, Dr. Lishan Aklog, Michael J. Glennon and Dr. Brian J. deGuzman. These three individuals founded Pavilion Holdings Group, a medical device holding company, in 2007 and Pavilion Medical Innovations, a venture-backed medical device incubator, in 2009. Between 2008 and 2013, PHG and PMI founded the following four distinct, single-product medical device companies:

- *Vortex Medical.* Founded in 2008, Vortex created the AngioVac system, designed to remove large volume clots and other undesirable intravascular material. AngioVac received its initial FDA soon after the company's founding and Vortex Medical marketed the system across the US until it was acquired in October 2012 by AngioDynamics (ANGO, Not Rated) for $55.0 million in guaranteed consideration *(Source: PAVmed 2016 10-K).* At the time of its acquisition the company was cash-flow positive, carried no debt and its sole funding source was $3.5 million of capital raised;
- *Saphena Medical* was founded in 2013. Saphena created the VenaPax next-generation endoscopic vessel harvest device for use during coronary artery bypass surgery, which received FDA clearance in 2014. VenaPax was first commercialized at Massachusetts General Hospital in October 2014. VenaPax is currently being marketed across the United States;
- *Cruzar Medsystems* was founded in 2013 and has created a novel peripheral chronic total occlusion (CTO) device for use in peripheral arterial disease, which received its initial FDA 510(k) clearance in December 2015. It was first commercialized in May 2016 and is currently being marketed across the United States.
- *Kaleidoscope Medical* was founded in 2013 and has created a novel, reversible inferior vena caval filter which was submitted to the FDA for 510(k) clearance after only 16 months. It is currently awaiting initiation of a clinical safety study.

PAVmed's management and advisory team includes:

Dr. Lishan Aklog has served as the Company's Chairman and Chief Executive Officer since its inception. Dr. Aklog has also served as a member of the board of directors of HCFP, a financial advisory and investment firm, and as a co-founding Partner of both Pavilion Holdings Group and Pavilion Medical Innovations. Dr. Aklog previously served as Chairman and Chief Technology Officer of Vortex Medical and has been a consultant to AngioDynamics, Biomet, Edwards Lifesciences, On-X Life Technologies, and Atricure. Prior to entering the medical device industry, Dr. Aklog was Associate Professor of Surgery at St. Joseph's Hospital and Medical Center's Heart and Lung Institute in Phoenix, Arizona, Assistant Professor of Cardiothoracic Surgery at Mount Sinai Medical Center in New York, and Assistant Professor of Surgery at Harvard Medical School.

Michael J. Glennon has served as the Company's Vice Chairman and a Director since October 2014. Prior to joining PAVmed, he held sales and marketing executive positions at Accellent, Medtronic, Guidant, Stryker Endoscopy and Storz Instrument.

Dennis M. McGrath has served as CFO of PAVmed since March 2017. Previously, he served in senior level positons at PhotoMedex, AnswerThink Consulting, and TriSpan. He holds the CPA accounting designation.

Dr. Brian J. deGuzman has served as PAVmed's Chief Medical Officer since October 2014. Prior to joining the Company, Dr. deGuzman was a co-founding Partner of PHG and PMI and was Assistant Professor of Surgery, Associate Chief of Cardiovascular Surgery, and Surgical Director of the Atrial Fibrillation Clinic at St. Joseph's Hospital, Assistant Professor of Surgery at Tufts University School of Medicine, an attending cardiac

surgeon at the Lahey Clinic Medical Center in Massachusetts, and a Clinical Associate of Cardiac Surgery at the Cleveland Clinic.

In addition to CEO Dr. Lishan Aklog and Vice Chairman Michael Glennon, PAVmed's Board of Directors also includes **Ira Scott Greenspan**, a Senior Advisor to the Company and also a senior officer of HCFP/Brenner Equity Partners, **Dr. James L. Cox**, a cardiac surgeon, scientific investigator and medical device entrepreneur, **Joshua R. Lamstein**, a General Partner of Isoseles Madefire Investors and BriefCam Investments, **Ronald M. Sparks**, former CEO of Navilyst Medical and CEO of Accellent, **David Weild**, Chairman and CEO of investment bank Weild & Co., and **Dr. David S. Battleman**, a former senior consultant at IMS Health.

Stock Valuation/Comparables

We have compiled a ten-stock comparison group for PAVM comprised primarily of smaller medical device companies, including AngioDynamics (ANGO, Not Rated), NeuroMetrix (NURO, Rating Suspended), Pulmatrix (PULM, Rating Suspended), Alphatec Holdings (ATEC, Not Rated), Invuity (IVTY, Not Rated), Obalon Therapeutics (OBLN, Not Rated), SeaSpine Holdings (SPNE, Not Rated), Stereotaxis (STXS, Not Rated) and two recent buy-outs: Synergetics (by Valeant) and Vortex Medical (AngioDynamics). Since PAVM is not forecast to accrue significant revenues or positive earnings for 2017E or 2018E, we are employing a market capitalization metric to value PAVM, comparing average market cap for our target company with our group of medical device stocks with similar current and potential markets for their devices, in particular surgical specialties. On average, our comparable stock group shows valuation multiples of approximately $135 million in market capitalization, representing a significant premium to PAVM's current market cap, and thus, employing the average market cap of $135 million for PAVM, we have derived a valuation and long-term price target of $10.10 for PAVM shares. Therefore, we are initiating shares of PAVM with a Buy rating and 12-18 month price target of $10.10 per share.

Risk Factors

In addition to normal economic and market risk factors that impact most equities and the common risks shared by PAVmed with other companies in the industry, we believe an investment in PAVM involves the following risks:

- **Reliance on key management** – At present, PAVM relies on several key members of its management team who either founded the Company or have been in key executive positions for an extended period of time. Should one or more of these key executives leave the Company, PAVM could find it difficult to replace their long-standing knowledge of operations and industry expertise.
- **Reliance on future partnerships –** To date, PAVM has not signed major development partnerships and has signed a joint venture development agreement for only one of its medical device product candidates. However, in the future the Company may decide or be required to sign additional such agreements, and as such certain factors related to product marketing and/or new product development may be determined by third parties and out of the control of Company management.
- **Limited stock liquidity** – Trading volume in PAVM stock is comparatively light and these shares have a relatively limited history of trading compared with other healthcare stocks. As such, news regarding PAVM, its target market, partners and/or competitors could lead to significant volatility in the stock price.
- **Competitive markets** – The Company and its potential partners are expected to compete in its target medical device markets with a number of companies, many of which are considerably larger than the

Company. There can be no assurance that the Company and its partners will be able to successfully compete and launch new products into these competitive markets in the future.

- **FDA and regulatory risks** – PAVM and its potential partners are subject to regulatory review for ongoing medical device research and development, principally approval and review processes of the US Food and Drug Administration and other non-domestic regulatory agencies. In addition, the quality assurance and manufacture of the Company's products will be subject to ongoing oversight and regulation, and any negative correspondence from the FDA or other regulatory agencies in the future could have an adverse effect on the ongoing operations of the Company.
- **Lack of historic profitability** - PAVM has not achieved operating profitability since its founding, and according to our forecasts may not be expected to do so in the near future. Although the Company maintains adequate cash reserves at the present time, there can be no assurance the Company will not need to raise additional working capital in the future should operating losses continue.
- **Need to defend patents and other intellectual property** – PAVM currently has applications pending in both the US and International jurisdictions on its medical devices and related technology, some of which may expire in the near future. The Company may be required to defend its patents in the US and overseas in the future, and there can be no assurance these defenses will be successful.

Companies mentioned in this report:

AngioDynamics (ANGO, Not Rated)
Valeant Pharmaceuticals (VRX, Not Rated)
NeuroMetrix (NURO, Rating Suspended)
Pulmatrix (PULM, Rating Suspended)
Alphatec Holdings (ATEC, Not Rated)
Invuity (IVTY, Not Rated)
Obalon Therapeutics (OBLN, Not Rated)
SeaSpine Holdings (SPNE, Not Rated)
Stereotaxis (STXS, Not Rated)
Stryker (SYK, Not Rated)
Zimmer Biomet (ZBH, Not Rated)
Atricure (ATRC, Not Rated)
Medtronic (MDT, Not Rated)
PhotoMedex (PHMD, Not Rated)
Guidant (now Boston Scientific, BSX, Not Rated)

Robert M. Wasserman

PAVmed, Inc.
Consolidated Statements of Income
(In 000s, except per share data)

FYE December	2014	2015	1Q16 March	2Q16 June	3Q16 September	4Q16 December	2016	1Q17 March	2Q17 June	3Q17E September	4Q17E December	2017E	2018E
Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,000
Operating Expenses													
General and administrative	263	1,287	518	960	1,350	1,104	3,931	1,500	1,320	1,300	1,400	5,519	6,000
Research and development	11	489	179	355	578	607	1,720	657	702	700	800	2,858	3,000
Total operating expenses	274	1,777	697	1,315	1,929	1,711	5,651	2,156	2,021	2,000	2,200	8,378	9,000
Income (loss) from operations	($274)	($1,777)	($697)	($1,315)	($1,929)	($1,711)	($5,651)	($2,156)	($2,021)	($2,000)	($2,200)	($8,378)	($5,000)
Other income (loss)	0	0	0	0	0	0	0	(2,140)	980	100	100	(960)	(600)
Net income (loss) before taxes	($274)	($1,777)	($697)	($1,315)	($1,929)	($1,711)	($5,651)	($4,297)	($1,041)	($1,900)	($2,100)	($9,337)	($5,600)
Income taxes	0	0	0	0	0	0	0	0	0	0	0	0	0
Net income (loss)	($274)	($1,777)	($697)	($1,315)	($1,929)	($1,711)	($5,651)	($4,297)	($1,041)	($1,900)	($2,100)	($9,337)	($5,600)
Basic income per share	($0.03)	($0.16)	($0.06)	($0.10)	($0.14)	($0.13)	($0.44)	($0.32)	($0.08)	($0.14)	($0.16)	($0.70)	($0.40)
Diluted income per share	($0.03)	($0.16)	($0.06)	($0.10)	($0.14)	($0.13)	($0.44)	($0.32)	($0.08)	($0.14)	($0.16)	($0.70)	($0.40)
Basic shares outstanding	8,618	11,279	12,250	12,995	13,310	13,318	12,972	13,331	13,331	13,400	13,500	13,391	14,000
Diluted shares outstanding	8,618	11,279	12,250	12,995	13,310	13,318	12,972	13,331	13,331	13,400	13,500	13,391	14,000
Key ratios:													
Revenue growth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
G &A/revenue	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R&D/revenue	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tax Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Deprec, amort & non-cash comp.	200	133	0.1	177	270	304	751	274	260	300	300	1,134	1,200
Cash Flow/share	($0.01)	($0.15)	($0.06)	($0.09)	($0.12)	($0.11)	($0.38)	($0.14)	($0.13)	($0.13)	($0.14)	($0.61)	($0.31)
EBITDA/share	($0.01)	($0.15)	($0.06)	($0.09)	($0.12)	($0.11)	($0.38)	($0.14)	($0.13)	($0.13)	($0.14)	($0.61)	($0.31)

Balance Sheets
($000s)

Assets:	12/31/16	6/30/17
Current Assets		
Cash and equivalents	$586	$82
Prepaid expenses and other current assets	155	125
Total current	741	207
Property and equipment, net	18	20
Deferred offering costs	111	0
Total Assets	$870	$226
Liabilities:		
Current liabilities		
Accounts payable	$949	$1,652
Accrued expenses and other current	240	393
Series A warrants	0	2,516
Derivative liability	0	715
Total current	1,189	5,276
Stockholders' equity	(319)	(5,050)
TOTAL LIAB & EQ	$870	$226

Quarterly Earnings Comparisons

	December	March	June	September	Total
Revenues (in $Mill)					
2014					0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017E	0	0	0	0	0
Earnings per Share (diluted)					
2014					($0.03)
2015	($0.01)	($0.03)	($0.05)	($0.06)	($0.16)
2016	($0.06)	($0.10)	($0.14)	($0.13)	($0.44)
2017E	($0.32)	($0.08)	($0.14)	($0.16)	($0.70)

Source: Dawson James Securities, Inc. estimates; Company documents

Important Disclosures:

Price Chart:

Price target and ratings changes over the past 3 years:
Initiated – Buy - August 31, 2017 – Price Target $10.10

Dawson James Securities, Inc. (the "Firm") is a member of the Financial Industry Regulatory Authority ("FINRA") and the Securities Investor Protection Corporation ("SIPC").

The Firm does not make a market in the securities of the subject company (s). The Firm has NOT engaged in investment banking relationships with PAVM in the prior twelve months, as a manager or co-manager of a public offering and has NOT received compensation resulting from those relationships. The Firm may seek compensation for investment banking services in the future from the subject company(s). The Firm has NOT received any other compensation from the subject company(s) in the last 12 months for services unrelated to the managing or co-managing of a public offering.

Neither the research analyst(s) whose name appears on this report nor any member of his (their) household is an officer, director or advisory board member of these companies. The Firm and/or its directors and employees may own securities of the company(s) in this report and may increase or decrease holdings in the future. As of July 31, 2017, the Firm as a whole did not beneficially own 1% or more of any class of common equity securities of the subject company (s) of this report. The Firm, its officers, directors, analysts or employees may effect transactions in and have long or short positions in the securities (or options or warrants related to those securities) of the company(s) subject to this report. The Firm may effect transactions as principal or agent in those securities.

Analysts receive no direct compensation in connection with the Firm's investment banking business. All Firm employees, including the analyst(s) responsible for preparing this report, may be eligible to receive non-product or service specific monetary bonus compensation that is based upon various factors, including total revenues of the Firm and its affiliates as well as a portion of the proceeds from a broad pool of investment vehicles consisting of components of the compensation generated by investment banking activities, including but not limited to shares of stock and/or warrants, which may or may not include the securities referenced in this report.

Although the statements in this report have been obtained from and are based upon recognized statistical services, issuer reports or communications, or other sources that the Firm believes to be reliable, we cannot guarantee their accuracy. All opinions and estimates included in this report constitute the analyst's judgment as of the date of this report and are subject to change without notice.

Information about valuation methods and risks can be found in the "STOCK VALUATION" and "RISK FACTORS" sections of this report.

The securities of the company discussed in this report may be unsuitable for investors depending on their specific investment objectives and financial position. This report is offered for informational purposes only, and does not constitute an offer or solicitation to buy or sell any securities discussed herein in any jurisdiction where such would be prohibited. Additional information is available upon request.

Ratings Definitions:

1) **Buy**: the analyst believes the price of the stock will appreciate and produce a total return of at least 20% over the next 12-18 months;
2) **Neutral**: the analyst believes the price of the stock is fairly valued for the next 12-18 months;
3) **Sell**: the analyst believes the price of the stock will decline by at least 20% over the next 12-18 months and should be sold.

The following chart reflects the range of current research report ratings for all companies followed by the analysts of the Firm. The chart also reflects the research report ratings relating to those companies for which the Firm has performed investment banking services.

	Company Coverage		Investment Banking	
Ratings Distribution	# of Companies	% of Total	# of Companies	% of Totals
Market Outperform (Buy)	12	80%	3	25%
Market Perform (Neutral)	0	0%	0	0%
Market Underperform (Sell)	0	0%	0	0%
Ratings Suspension*	3	20%	3	100%
Total	15	100%	6	40%
*Suspensions are ratings under review for possible change due to unusual market-moving news, and/or analyst departure/change				

Analyst Certification:

The analyst(s) whose name appears on this research report certifies that 1) all of the views expressed in this report accurately reflect his (their) personal views about any and all of the subject securities or issuers discussed; and 2) no part of the research analyst's compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the research analyst in this research report; and 3) all Dawson James employees, including the analyst(s) responsible for preparing this research report, may be eligible to receive non-product or service specific monetary bonus compensation that is based upon various factors, including total revenues of Dawson James and its affiliates as well as a portion of the proceeds from a broad pool of investment vehicles consisting of components of the compensation generated by investment banking activities, including but not limited to shares of stock and/or warrants, which may or may not include the securities referenced in this report.