2017

Medtech Half-Year Review

Elizabeth Cairns & Madeleine Armstrong – July 2017

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EP Vantage Medtech Half-Year Review 2017

At the half-year point it has become clear that 2017 is the year money returned to the medical device sector.

Two venture investments of nearly $1bn have pushed the total raised by private medtech companies to unprecedented heights; the first half's total of $3.8bn makes the previous six-month record – $2.3bn in the second half of 2011 – pale in comparison.

It has been a good period for public companies too. It appears that investor confidence has increased enormously across the board, with stock in big-cap groups rising significantly, in marked contrast to their dismal performance across 2016. Only one big-cap group's shares fell in value, and that was by less than a percentage point. Many of the smaller listed companies have seen extraordinary growth too, showing a clear improvement from previous years.

One intriguing facet of this is that the improvement has been particularly evident in Europe. The Thomson Reuters Europe Healthcare index, a decent benchmark for European medtechs' performance, displayed an astonishing swing from a 12% decrease in 2016 to a 17% uptick in the first half of this year. The fact that an otherwise quiet IPO scene was enlivened by a recent flurry in Stockholm is another indication of this.

On the other side of the Atlantic the FDA has been redoubling its efforts to ease the passage of new devices, with 2017 on course for an all-time high in terms of innovative device approvals – premarket approvals, human device exemptions and de novo 510(k) clearances.

Business development activity, too, is on the upswing. More has been spent on M&A deals in the first half than in all of 2016, positioning 2017 as potentially the second-biggest year for medtech acquisitions in a decade, behind the incredible outlier that was 2015.

As ever, the silver linings come with clouds attached. Though the sums spent on takeovers and VC funding rounds were very high, the absolute numbers of both these types of deals were small.

The number of acquisitions closed in 2017 will likely fall well short of the number for 2016. As for venture fundraisings, the situation is dire: just 132 deals were closed in the first half, the lowest six-month total since the second half of 2007. This means that for the first time more venture cash went into the top ten deals than to the remaining 122.

These trends are interlinked, and augur ill for the medtech industry's future. If start-ups cannot get the funding they need to get off the ground – and with a trade sale a diminishing prospect this will only get harder – the next generation of new devices will dwindle in number.

Unless stated, all data are sourced to EvaluateMedTech and were accessed in July 2017.

Startling reversal of fortunes as large-cap groups soar

Happy days are here again. The first half of 2017 has brought more good news than bad for large-cap medtechs, and compared with the dismal atmosphere of 2016 there is a distinct improvement in sentiment.

It is possible that the medtech industry is benefiting from looking like a safer place for investors than the biopharma sphere. There is still little clarity on what the new US healthcare laws might mean for either sector, but politicians are certainly more exercised about drug prices than about the costs of medical devices.

The difference with previous years is clear in the performance of the healthcare and medtech indices. Across the board this is the best showing since *EP Vantage* started tracking them four years ago. Despite promises of sweeping legislative changes on both healthcare and tax reform in the US having failed – so far – to result in anything concrete the US-listed medtech stocks are going gangbusters.

Share price indices

Source: EvaluateMedTech™ July 2017

Stock index	% change in H1 2017
Thomson Reuters Europe Healthcare (EU)	17%
Dow Jones U.S. Medical Equipment Index	25%
S&P Composite 1500 HealthCare Equipment & Supplies	25%

Investor confidence appears to have returned in a big way in Europe too. The Eurozone is well into recovery mode, and while the ramifications of Brexit will take some years to become clear it seems likely that any downside will be borne by the UK rather than an admittedly slightly shrunken EU.

Almost all of the disorders diagnosed or treated with medical devices are more common in older patients: they are the ones who need hip implants, heart valves or cancer tests. But the big cap company that has seen the biggest rise in its share price over the first half of 2017 has a different section of the population to thank: teenagers.

Align Technology makes Invisalign, a range of devices for straightening uneven teeth without using wires. Align's new range, Invisalign Teen, is not even approved yet in the US. According to *EvaluateMedTech's* consensus data, sales of the Invisalign Teen range are forecast to grow at 23% between 2016 and 2022 to $495m, by far the company's fastest-growing segment.

Intuitive Surgical has had its ups and downs in the past but 2017 has been all up so far. The faster than expected US clearance of its mid-range da Vinci X robotic surgery system helped.

Large cap ($10bn+) medtech companies: Top risers and fallers in H1 2017

Source: EvaluateMedTech™ July 2017

	Jun 30 share price	H1 chg	Jun 30 market cap ($bn)	H1 chg ($bn)
Top five risers				
Align Technology	$150.12	56%	12.06	4.40
Intuitive Surgical	$935.37	47%	34.46	9.89
C. R. Bard	$316.11	41%	22.95	6.44
The Cooper Companies	$239.42	37%	11.70	3.16
Baxter International	$60.54	37%	32.91	8.80
Top 5 worst performers				
Sysmex	¥6,710.00	(1%)	12.71	(0.88)
Olympus	¥4,100.00	1%	12.75	(0.57)
Terumo	¥4,425.00	3%	15.25	(0.52)
Essilor International	€111.40	4%	26.08	0.26
Philips	€31.10	7%	31.36	1.67

In 2015 five big-cap medtech stocks fell in value; last year there were no fewer than nine large medtech fallers. So far this year there has been just one. Sysmex is Japan's top laboratory testing company, and despite being the global leader in blood cell count testing, its revenue growth is slowing.

National trends are also partly to blame. Where all the risers in the first half are US-listed, the three worst performing companies are Japanese. Faced with a demographic problem – nearly 30% of the Japanese population is aged 65 or older – the government has been working hard to limit medical costs.

Where there's muck there's brass

The awesome power wielded by payers is exemplified by the impressive performance of Exact Sciences shares over the past six months. Shares in the maker of the colorectal cancer stool test Cologuard have soared in value, adding nearly $3bn to its market cap, thanks to a 180-degree reversal in US reimbursement decisions.

Last June the US Preventive Services Task Force, an independent panel of experts that determines whether disease prevention services are effective, listed Cologuard on the same level as other colorectal screening tests, reversing an earlier decision and prompting more insurance companies to cover the test.

Elsewhere mid-size and small companies have had a fairly easy six months, with only two mid-caps falling and even then only by 1% each. So far 2017 has done nothing to dispel medtech's reputation as a safe and steady if unspectacular industry for investment.

Other significant risers and fallers in H1 2017 (ranked on market cap)

Source: EvaluateMedTech™ July 2017

	Jun 30 share price	H1 chg	Jun 30 market cap ($m)	H1 chg ($m)
Risers				
Straumann	SFr545.5	37%	8,655	2,264
Exact Sciences	$35.37	165%	4,181	2,733
Orasure Technologies	$17.26	97%	997	508
Intersect ENT	$27.95	131%	804	458
Axogen	$16.75	86%	554	258
Fallers				
Elekta	SKr79.85	(1%)	3,285	(82)
Cantel Medical	$77.91	(1%)	3,250	30
Endologix	$4.86	(15%)	403	(70)
Reva Medical	$0.65	(22%)	267	(89)
Cerus	$2.51	(42%)	263	(187)

Intersect ENT, whose shares jumped 131%, makes an implant similar to a bioresorbable stent, but deployed in the nose rather than an artery. The Propel family of devices are implanted as a patient undergoes surgical treatment for chronic sinusitis, and as well as physically propping the sinus open also leaches an anti-inflammatory steroid.

Intersect is bringing new products to market like clockwork – a new device called Sinuva, designed to be implanted in the doctor's office, has a PDUFA date of January 7. The company has a multi-billion dollar market opportunity to itself: Intersect's products are the only approved devices of their type.

As is usually the case, there are a wide range of reasons for the rises and falls in mid-cap medtechs' stocks. Chances of success can be maximised by sensible deal-making and concentrating hard on product development – but it is crucial to get payers on board, as Exact Sciences has shown.

The story of the first half of 2017 is clearly one of recovery, with a resurgence of the healthcare markets in both Europe and the US. But turbulence could lie ahead. The continued failure of attempts to alter US healthcare legislation has caused a great deal of confusion, and while the current situation appears to be business as usual efforts to make sweeping changes continue.

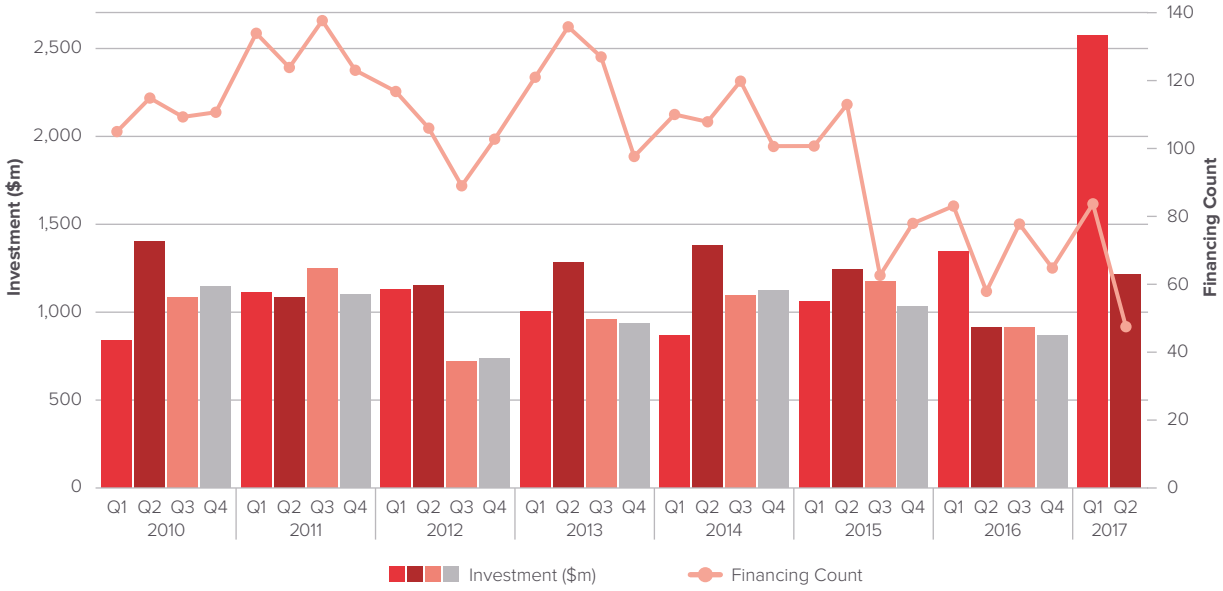
Venture funding total hits all-time high

Analysing the trends in venture fundraising by medical device makers usually throws up falling numbers of smallish rounds punctuated by one or two large deals. In the first half of 2017 that pattern became more extreme. The total raised in the first quarter was over $2.5bn, more than twice as much as the quarterly average over the past seven years.

This was fuelled by Grail's $900m series B and the $800m investment brought in by Google's sister company Verily Life Sciences. But two vast investment rounds do not mean more money for the rest of the sector. As usual, younger companies seeking more reasonable sums have had a hard time finding them, with just 48 fund-raisings in the second quarter – the fewest deals since the second quarter of 2006.

Quarterly Medtech VC Investments

Source: EvaluateMedTech™ July 2017



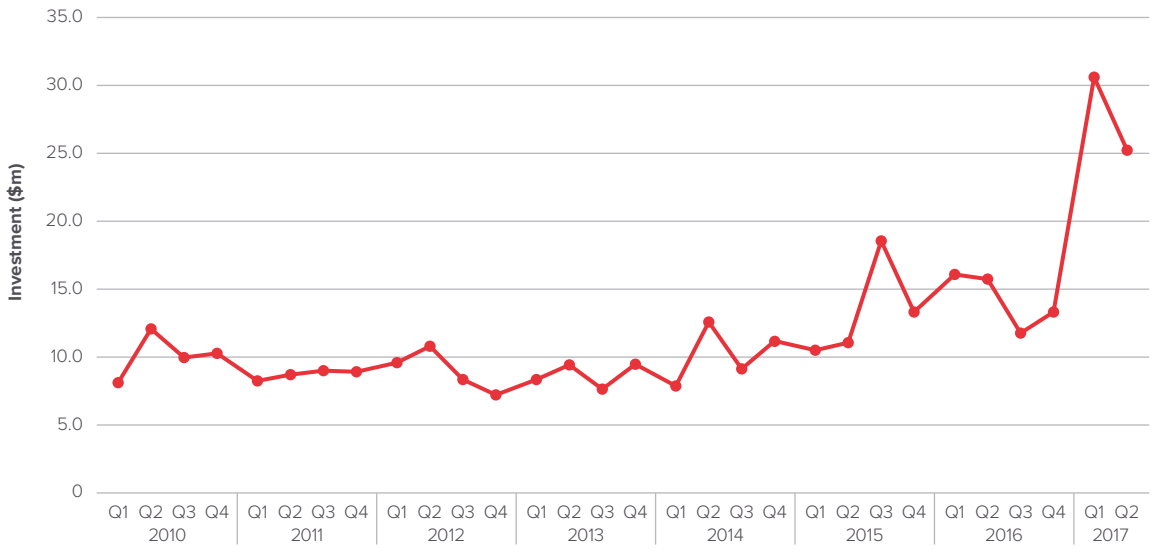
The first half of this year saw the three biggest ever VC rounds in medtech. As well as Grail and Verily's rounds tipping the scales at nearly a billion dollars apiece, Guardant Health hooked $360m in May.

Both Guardant and Grail are developing DNA-based blood tests for cancer – the technology known as liquid biopsy. (10th-placed Epic Sciences is working on one too.) The cheapness and enormous potential of these tests, if they can be shown to work, accounts for investors' ardour.

But when a round is worth $900m the participants are still taking on a substantial financial risk. The largest investor on Grail's round was Johnson & Johnson Innovation; Bristol-Myers Squibb, Celgene, Merck and Amazon also participated. The company still has an enormous amount to prove, with trials in up to 120,000 patients and vast amounts of data that must somehow be analysed.

Average size of Medtech VC rounds ($m)

Source: EvaluateMedTech™ July 2017



The distorting effect of these unusually huge deals is displayed by a look at the average sizes of medtech VC rounds on a quarterly basis over the last few years. Since 2008 this figure has tracked at about $11m. During the first quarter of 2017 it was more than $30m, and in the second quarter $25m.

The figure for the second quarter is explained not so much by the vast total raised as by the sheer paucity of deals.

Proportion of VC cash going to top 10 deals

Source: EvaluateMedTech™ July 2017

Date	Total investment in top 10 deals ($m)	Total investment in all deals ($bn)	% going to top 10
H1 2017	2,406	3.8	64%
2016	900	4.0	22%
2015	1,115	4.5	25%
2014	866	4.5	19%
2013	652	4.2	16%
2012	586	3.7	16%
2011	786	4.5	17%
2010	1,231	4.5	28%
2009	590	3.5	17%
2008	699	3.2	22%

VCs clustering together into fewer, bigger rounds as a means of limiting risk is hardly a new phenomenon. But medtech start-ups are getting a smaller slice of the pie than ever before. In previous years the top 10 rounds have accounted for around one fifth of the total VC cash raised. In the first half of this year the figure was 64% – for the first time, the top 10 rounds have taken more money than all the others.

It seems unlikely that the second half will see deals on the scale of those done by Grail and Verily. Even so 2017 to date has been a record-breaker in a number of ways – and none of them bode well for the average medtech start-up.

Top 10 rounds of H1 2017

Source: EvaluateMedTech™ July 2017

Date	Round	Company	Investment ($m)	Focus
March 1	Series B	Grail	900.0	In vitro diagnostics
January 26	Seed Capital	Verily Life Sciences	800.0	Diabetic care; ophthalmics; patient monitoring
May 11	Series E	Guardant Health	360.0	In vitro diagnostics
May 2	Undisclosed	Outset Medical	76.5	Nephrology
January 9	Undisclosed	NeuroPace	50.0	Neurology
March 16	Series C	Moximed	50.0	Orthopaedics
May 11	Undisclosed	Impulse Dynamics	45.0	Cardiology
May 2	Series E	Advanced Cardiac Therapeutics	45.0	Cardiology
March 8	Series F	Vertiflex	40.0	Endoscopy; orthopaedics
April 28	Series D	Epic Sciences	40.0	In vitro diagnostics

Life is Swede for IPOs

Few device companies have chosen to float so far in 2017, but a look at those that have shows the waning appeal of the US. Remarkably, of the six IPOs that have got away this year, half have occurred in Stockholm.

Bonesupport, which makes bone grafts impregnated with anti-infectives, and Sedana Medical, which makes pumps for delivering anaesthetics, raised $57m and $13m respectively on a single day in June. The orthopaedics group Integrum preceded them by just over a month.

"There's definitely a sort of liquidity to the market – I can only speak from the healthcare side – that likes these life sciences companies," said Richard Davies, Bonesupport's chief executive, at the time.

H1 2017s medtech IPOs

Source: EvaluateMedTech™ July 2017

Date	Company	Amount raised ($m)	Offering price	Exchange	Focus
March 28	Visioneering Technologies	25	Aus$0.42	Australian Securities Exchange	Ophthalmics
May 9	Endra Life Sciences	10	US$5	Nasdaq	Diagnostic imaging
May 15	Integrum	2	SKr20	Nasdaq First North	Orthopaedics; physical medicine
June 12	Myomo	5	US$7.5	NYSE	Cardiology; physical medicine
June 21	Bonesupport	57	SKr29	Nasdaq Stockholm	General and plastic surgery; orthopaedics
June 21	Sedana Medical	13	SKr19.5	Nasdaq First North	Drug delivery

So quiet has the IPO scene been this year that Bonesupport's float is the largest, more than twice the size of second-place Visioneering Technologies, which went out on the Australian exchange in March.

Bonesupport wants to boost its US growth – it has three orthobiologics on the market in Europe but only one in the US. It also needs cash for its US approval trial of Cerament G, a bone void filler designed to elute gentamycin to promote healing. Cerament G is on track for an FDA filing in 2020, with approval expected in 2021.

Bonesupport could have drummed up cash via a venture round – it has raised $72m in VC cash since 2006. But the welcoming nature of the Swedish exchanges is clear.

At SKr29 per share, the deal conferred a market capitalisation of around SKr1.4bn ($162m) on Bonesupport. Sweden generally sees relatively high activity from retail investors, but over 60% of Bonesupport's shares have gone to institutions.

Sedana Medical, another Swedish group, floated on the alternative Nasdaq First North exchange. It makes a device called AnaConDa, which stands for – almost – anaesthetic conserving device; it is designed to administer volatile anaesthetics such as isoflurane or sevoflurane to invasively ventilated patients.

Integrum's tiny $2m IPO was launched on Nasdaq First North in May. The company makes bone-anchored prostheses, such as artificial legs, for amputees.

All of which means Stockholm has seen three IPOs so far this year, worth $72m in total, to three in the entire rest of the world worth a total of $40m. Stockholm is not the new New York, but Swedish medtech companies looking for cash might want to seize their chance to raise money right on their doorstep.

Mergers surge again

After a quiet 2016, mergers and acquisitions are back. The sum spent on deals that closed in the first half has already surpassed last year's total, putting 2017 on track to be the second-biggest year for medtech acquisitions in a decade, behind only a mammoth 2015.

The average deal value in the first half of 2017 was also above that seen last year, even when the biggest takeover – Abbott's $25bn swoop on St. Jude Medical – is excluded. However, the actual number of acquisitions looks set to fall well short of 2016, suggesting either buyers are being pickier or the pool of targets is dwindling.

Medtech acquisitions of last decade

Source: EvaluateMedTech™ July 2017

Completion Date	Value ($bn)	No of deals	No of deals with known value	Average deal size ($m)*
H1 2017	48.8	76	34	1,435
H1 2017 excluding Abbott-St. Jude	23.8	75	34	699
2016	48.1	234	99	486
2015	127.9	233	103	1,242
2015 excluding Medtronic-Covidien	78.0	232	103	758
2014	40.8	221	111	368
2013	23.3	235	101	231
2012	44.9	247	117	384
2011	49.8	272	126	395
2010	24.1	271	127	190
2009	13.9	180	81	172
2008	27.4	231	105	261

* Note: includes only deals with disclosed value

The latter possibility is perhaps not surprising after several years of consolidation and a venture capital squeeze that has made it harder for earlier-stage companies to get funding. The latest figures could represent more bad news for start-ups, suggesting that acquirers are eschewing smaller, technology-focused deals in favour of bigger buys aimed at growing their footprint in a particular area.

A look at the top 10 purchases in the first half of 2017 supports this theory. Apart from the St. Jude buy, which made Abbott the number-two cardiology player, other scale-building takeovers include Johnson & Johnson's acquisition of Abbott's eye care business and two deals from Allergan in the aesthetic surgery arena.

Indeed aesthetics, once at the fringes of medtech, is now a popular area for M&A with 10 takeovers closed in the first half. A field in which patients are willing to pay out of pocket is doubtless attractive as more traditional sectors face growing pricing pressure.

This trend will continue in the second half of this year. Another aesthetics player, Syneron Medical, is being acquired by Apax Partners in a deal that completed in mid-July, and Cutera has been touted as a potential target.

Top 10 deals closed in H1 2017

Source: EvaluateMedTech™ July 2017

Completion date	Acquirer	Target	Value ($bn)
January 4	Abbott Laboratories	St. Jude Medical	25.0
February 27	Johnson & Johnson	Abbott Medical Optics, subsidiary of Abbott	4.3
February 1	Allergan	LifeCell, subsidiary of Acelity	2.9
April 3	Svenska Cellulosa Aktiebolaget	BSN medical	2.9
April 28	Allergan	Zeltiq Aesthetics	2.5
January 31	Grifols	Blood screening business of Hologic	1.9
March 22	Hologic	Cynosure	1.7
January 20	Terumo	Portion of vascular closure business of Abbott	1.1
February 17	Teleflex	Vascular Solutions	1.0
February 6	ICU Medical	Hospira infusion systems business of Pfizer	0.9

Of course, big players will always be interested in promising new technologies, and five smaller deals by J&J should give younger companies hope, although financial details were not disclosed. With six acquisitions in total, J&J was the most prolific buyer in the first half.

Still, the mega-merger is back in vogue and it is notable that nine out of the top 10 deals in the first half were worth $1bn or more, versus only five in the first half of 2016.

If deal activity continues at the same pace, 2017 could see nearly $98bn spent on medtech M&A – double last year's total – but with only around 150 transactions, versus 234 in 2016. It seems that acquirers are willing to shell out, which is good news for the lucky few – but not so much for everyone else.

2017 on course for uptick in approvals

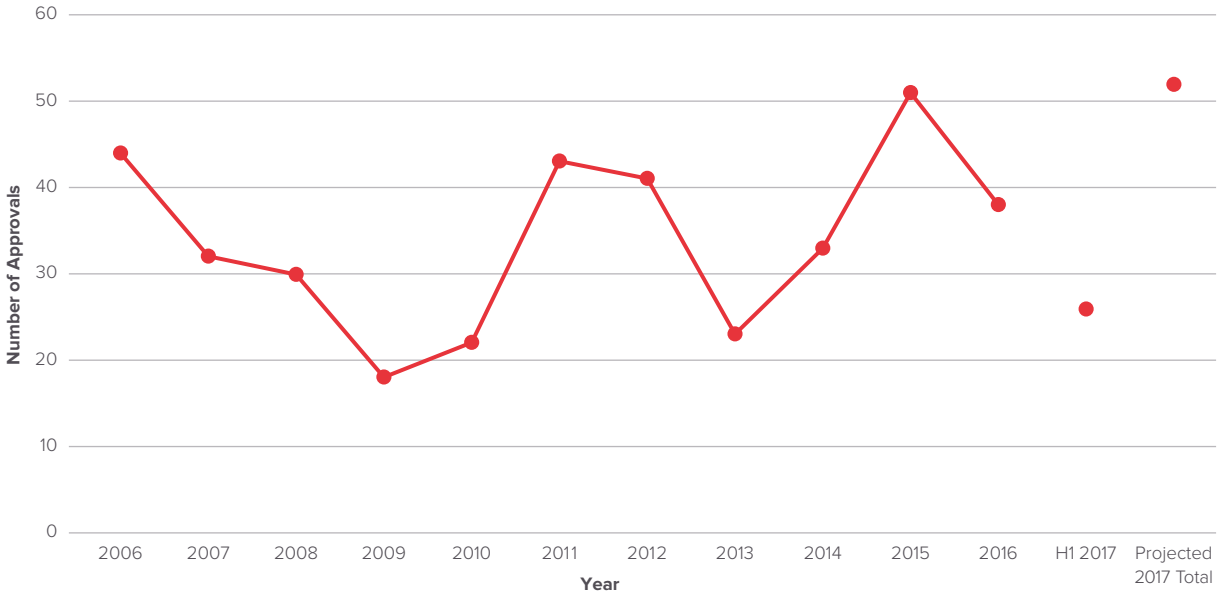
This year could see more innovative medical devices approved by the US FDA than ever before, if the performance of the agency in the first half of the year is anything to go by. After a disappointing 2016 this will be welcomed by companies for whom FDA approval is the key not just to building revenues but to obtaining investment or a trade sale.

So far this year the US regulator has granted 24 premarket approvals and two humanitarian device exemptions – the types of market clearance granted to novel, high-risk medical devices. The newer de novo 510(k) path, used for devices that are innovative but low-risk, was used to get 17 products onto the US market, also an unusually high number.

This puts 2017 on course for 52 PMAs and HDEs combined, narrowly beating 2015's total of 51. And if the de novo clearances also continue to come through at the same rate as in the first half of the year, there will be 34 – again, more than ever before.

Number of PMAs and HDEs granted, 2006-2017

Source: EvaluateMedTech™ July 2017



There is good reason to believe that this will happen. The FDA's new commissioner, Scott Gottlieb, has been explicit in his determination to bring new medical technologies to market as rapidly as possible.

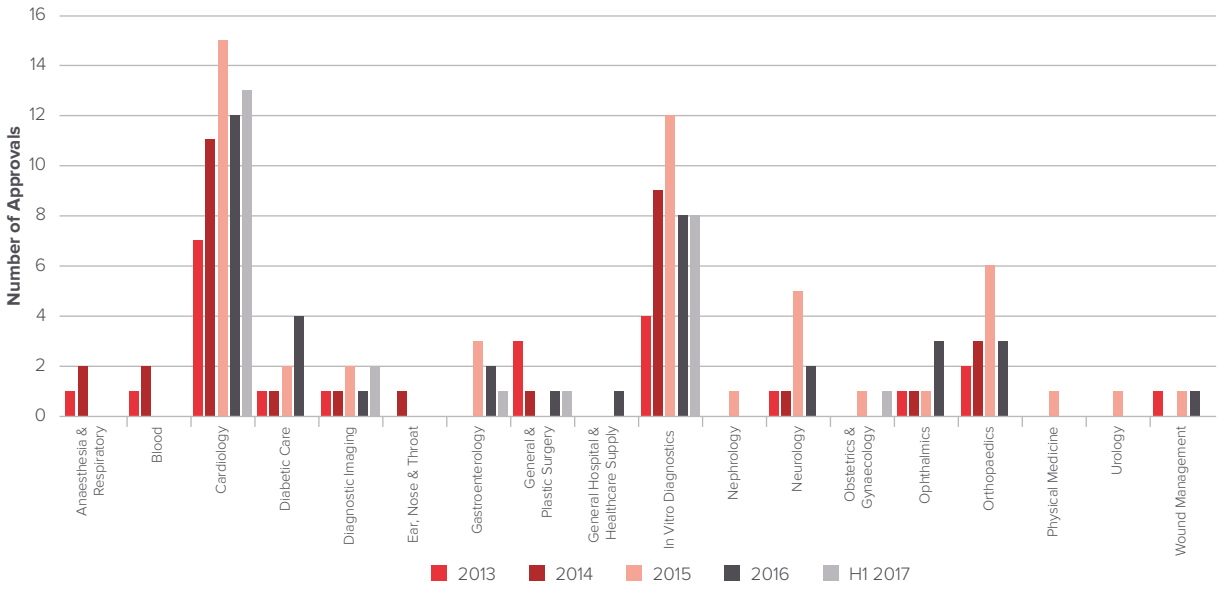
The agency is planning an Innovation Initiative intended to streamline the approval process for drugs, biologics and devices. The specific provisions for the device sphere include building computer-based regulatory models for product evaluation, including the creation of "virtual patients" for device testing.

Moreover, under the new 21st Century Cures Act the FDA's Center for Devices and Radiological Health has amended its regulations to allow more devices to qualify for an HDE, the approval pathway used for products that serve small patient populations.

This suggests that, if anything, the second half of this year might see even more innovative devices approved than the first.

First-time PMAs and HDEs by Therapy Area, 2013 to H1 2017

Source: EvaluateMedTech™ July 2017



A look at the therapy areas that have seen PMA and HDE approvals show clusters in the perennially popular fields of cardiology and in vitro diagnostics – but, intriguingly, none in neurology or orthopaedics.

This is probably due to chance rather than any specific policy or strategic decision. Orthopaedics might not be the most innovative sector but plenty of companies are working to bring new devices to market in this area. And neurology is a hotbed of scientific research and therapeutic innovation. Both these sectors ought to be represented in this analysis when the year is out.

Efforts in recent years to make the de novo 510(k) route faster and more straightforward have also borne fruit, with 17 such clearances having been granted so far this year. These devices include Baebies' Seeker system, used to screen newborns for treatments for lysosomal storage disorders, and Claret Medical's Sentinel device, designed to capture embolic debris and thus prevent stroke in patients undergoing transcatheter aortic valve replacement.

De novo clearances by year

Source: EvaluateMedTech™ July 2017

Year	Number	Ave time (months)
H1 2017	17	10.6
2016	24	13.4
2015	18	10.9
2014	28	13.7
2013	18	9.9
2012	10	15.3
2011	10	12.9
2010	3	14.4
2009	4	12.4
2008	3	6.0
2007	7	4.5

The prospect of more novel devices gaining FDA approval than ever before is a tantalising one, particularly as US approval is often the trigger for an acquisition of its developer. Provided the FDA does not lose sight of the importance of guaranteeing devices' safety – and it should be remembered that it is still much stricter here than the European regulators – this could be good for patients and the industry as a whole.

Looking forward

The money is flowing again, companies are buying again and the FDA is waving through new devices like never before. But all is not quite peachy in medtech.

A huge influx of cash into the medtech sector ought to be a good thing – but this is not getting to the smaller innovators that need it most. This raises the chances that the next generation of new advances in medical devices will be cut down in size, since many of the companies that might have designed and developed them will simply not be able to access funding to keep themselves afloat in the hungry early years.

This means fewer acquisitions to follow, simply because there will be fewer companies to buy. And the growing valuations of listed medtech companies seen over the past six months, particularly among the big-cap cohort, will work against larger scale-building transactions.

That said, six multibillion-dollar deals remain open, including Becton Dickinson's $24bn takeout of C. R. Bard and Abbott's troubled $5.3bn move on Alere. These will ensure that an impressive total is spent on M&A this year, though once again this is of little help to the small fry.

In an uncertain environment on both sides of the Atlantic it is hardly surprising that financiers and executives are unwilling to gamble on smaller companies or with smaller syndicates. Great things will now be expected from companies like Grail, Verily and Abbott – those that have made their mark with deals worth enormous sums. The rest will have to get by as best they can – if they can – until the sector begins to take a more open-minded attitude to risk.

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