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medical

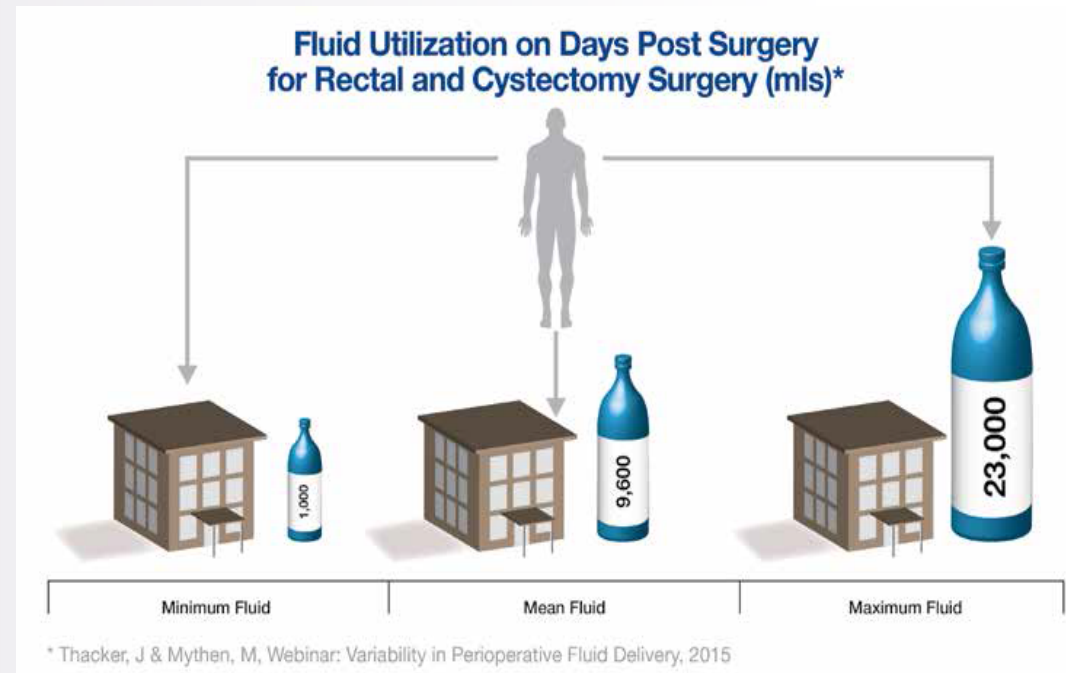
Annual General Meeting
9 June 2017

Ewan Phillips, CEO

Improving Outcomes, Improving Lives
Doppler Ultrasound Measurement of Central Blood Flow

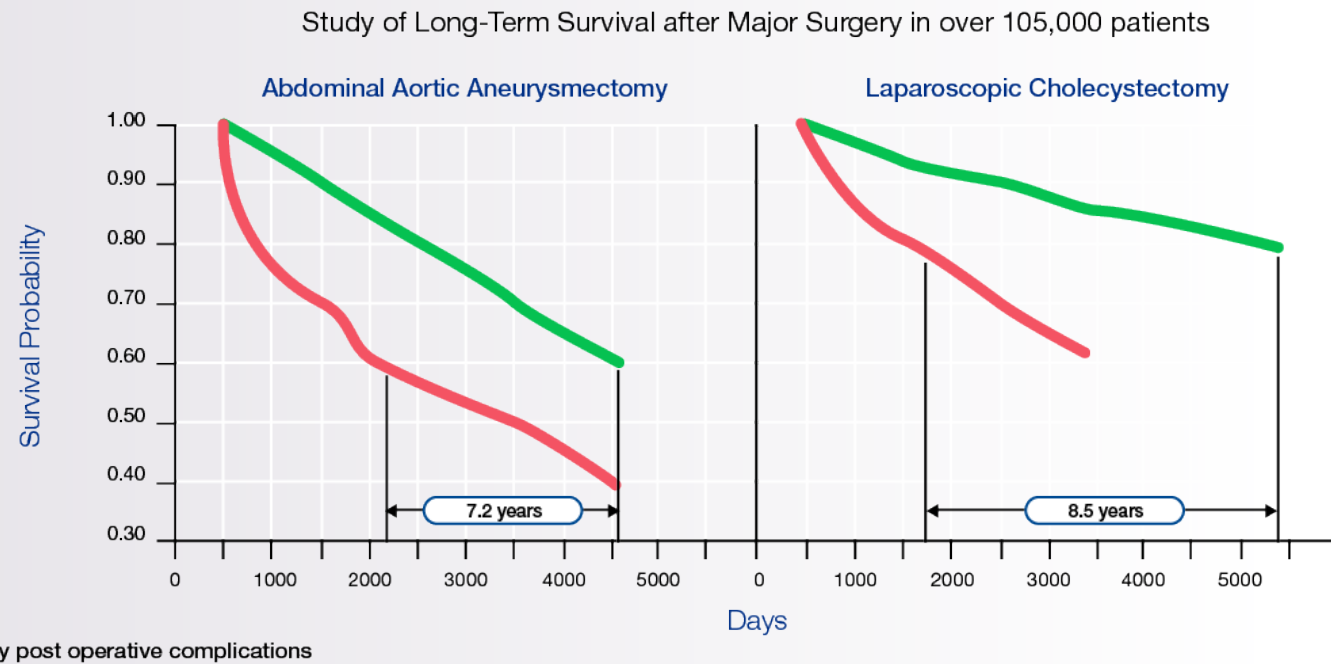
Fluid Variation Affects Lives

- 500 USA Hospitals & 655,000 patients
- **EXTREMELY WIDE** variation in fluid given for the same procedure
- **TOO MUCH** fluid or **TOO LITTLE** fluid are associated with increased complications and worse outcomes



Thacker - 2015 Perioperative Fluid Utilization Variability & Association with Outcomes.
Harris - 2015 Perioperative intravenous fluid prescribing: a multi-centre audit.

Complications Impact Lives



Khuri - 2005 Determinants of Long-Term Survival After Major Surgery and the Adverse Effect of Postoperative Complications.



Complications Impact Lives

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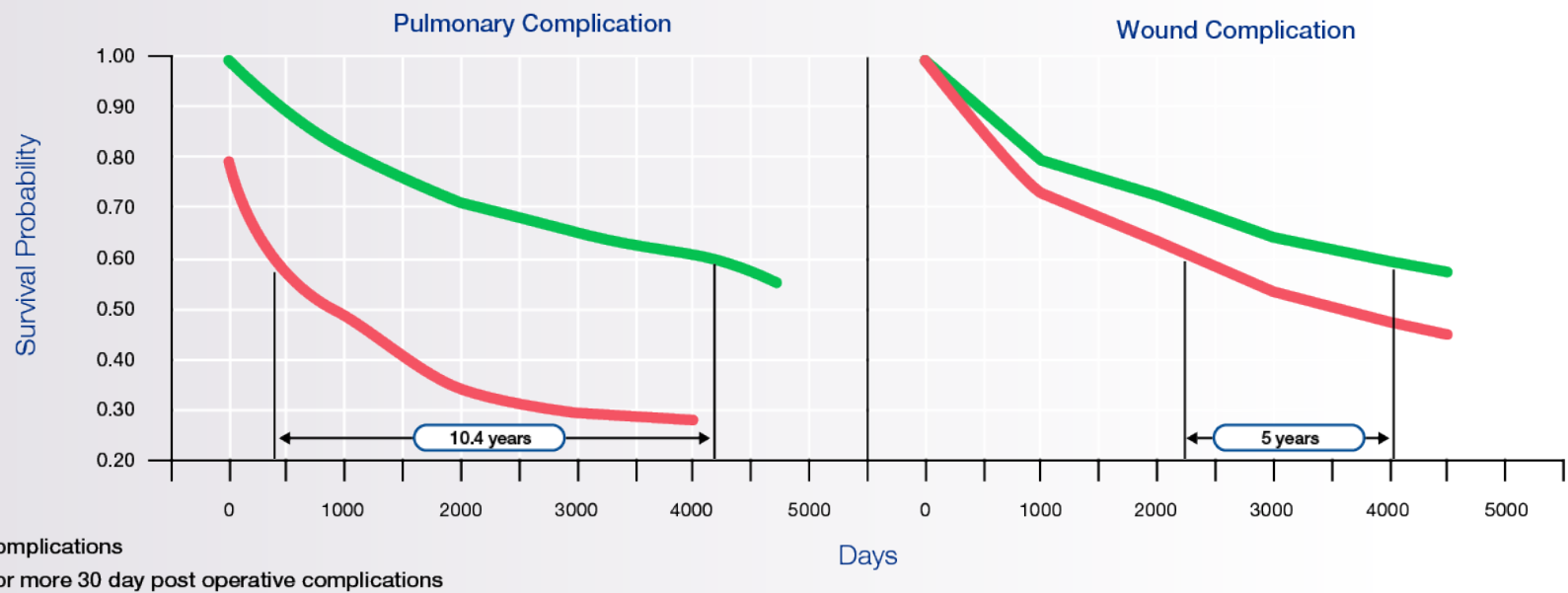
The most important determinant of decreased postoperative survival was the occurrence, within 30 days postoperatively, of any one of 22 types of complications.

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Khuri - 2005 Determinants of Long-Term Survival After Major Surgery and the Adverse Effect of Postoperative Complications.

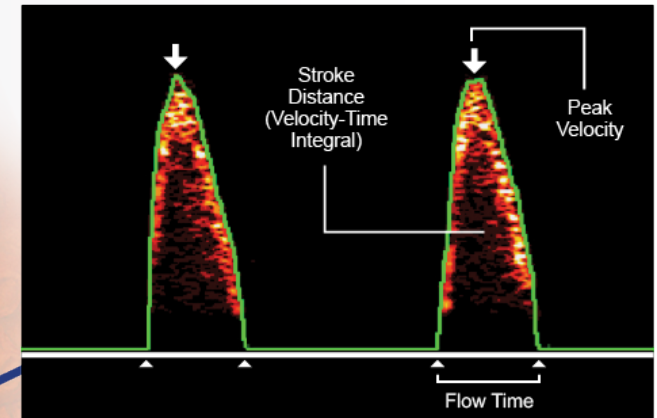
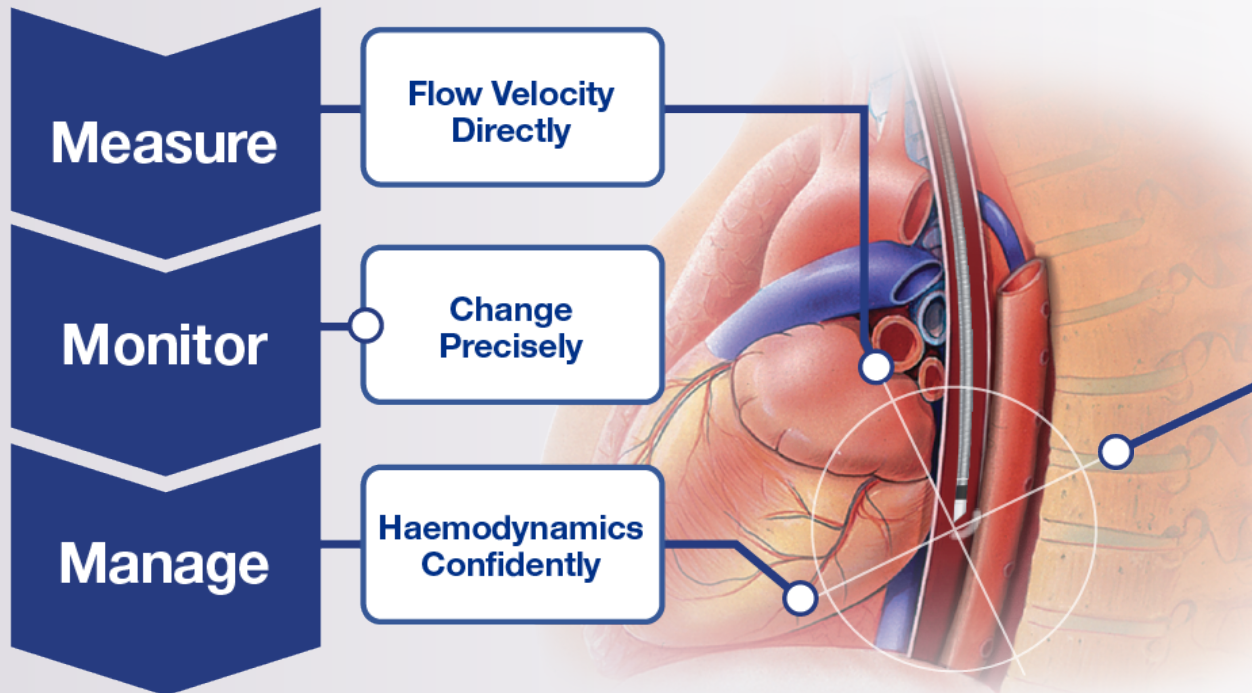
Complications Impact Lives

Study of Long-Term Survival after Major Surgery in over 105,000 Patients



Khuri - 2005 Determinants of Long-Term Survival After Major Surgery and the Adverse Effect of Postoperative Complications.

Doppler Directly Measures Central Blood Flow



Proven: ODM fluid management halves post-op complications



What are benefits of ODM?

Kaufmann RCT 2017

- Thoracic surgery, fluids & vaso drugs
- 60% red'n complications
- 2 day red'n length of stay
- 1 in 5 avoid complication

Spanish multi-centre 2017?

- Multiple surgeries, fluids & vaso drugs
- 70% red'n complications
- 2 day red'n length of stay
- 1 in 8 avoid any complication

St Thomas's comparative 2017?

- Colorectal surgery
- 2 day red'n length of stay

Meta-analysis

- Multiple surgeries
- >50% red'n complications
- 2 day red'n length of stay
- 1 in 7 avoid any complications

NICE

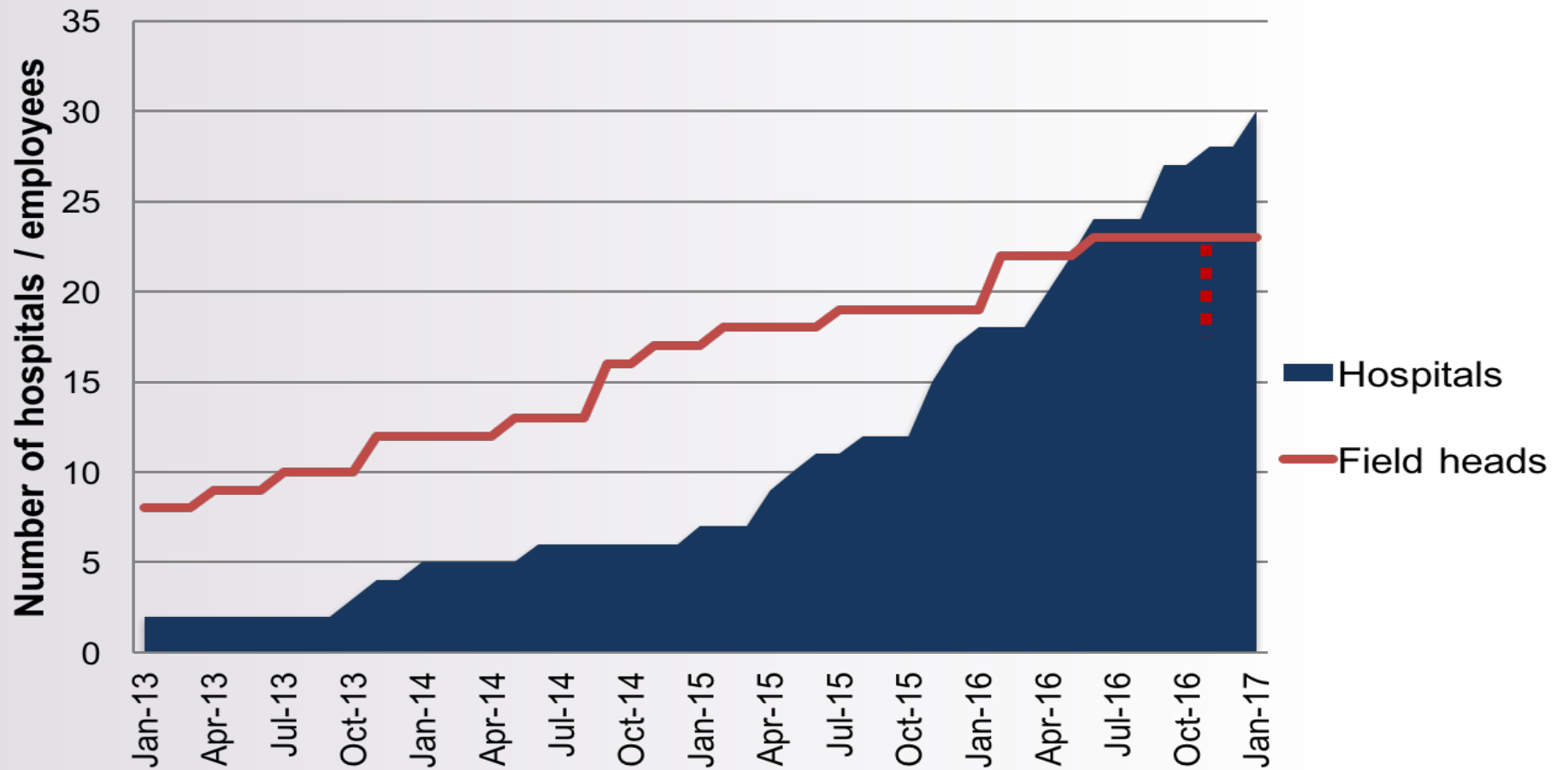
- All major/high risk surgery (>800,000 patients pa)
- 2 day red'n length of stay v 7.5 days
- Save >£1,000 per patient

NHS England: improvement stalled

Category	2010/11 HES data			2014/15 HES data			Absolute difference in mean LoS 10/11 - 14/15	Percent difference in mean LoS 11/12 - 14/15
	Procedures with >1% 30 day mortality No. FCEs	Mean LoS	Total days	Procedures with >1% 30 day mortality No. FCEs	Mean LoS	Total days		
Neurosurgery	16,582	10.9	181,303	17,921	10.9	194,727	0.1 reduction	1%
Endocrine	5,427	9.1	49,205	5,539	9.6	53,240	-0.5 increase	-6%
Thoracic non-lung	2,720	10.3	27,903	2,916	10.2	29,712	0.1 reduction	1%
Thoracic	28,043	6.6	183,966	38,532	5.8	222,665	0.8 reduction	12%
Gastrointestinal	40,198	12.2	488,729	47,582	11.1	528,357	1.1 reduction	9%
Colorectal	47,994	12.0	577,324	47,649	11.0	525,764	1.0 reduction	8%
Hepatic	23,275	7.1	165,650	23,699	7.0	166,707	0.1 reduction	1%
Gall Bladder	15,746	9.3	146,408	18,478	9.0	165,872	0.3 reduction	3%
Pancreatic	2,622	19.7	51,670	2,790	19.0	53,021	0.7 reduction	4%
Spleen	1,223	9.0	11,052	1,132	8.7	9,830	0.4 reduction	4%
Cardiothoracic	50,195	11.1	554,794	50,411	11.0	554,736	0.0 no change	0%
Vascular	134,966	10.1	1,357,219	160,927	10.2	1,644,719	-0.2 increase	-2%
Renal	11,679	6.7	78,694	14,797	6.0	88,209	0.8 reduction	12%
Genito-urinary	6,891	10.0	69,053	7,585	10.1	76,598	-0.1 increase	-1%
Plastic	4,591	4.6	21,326	5,533	3.8	21,097	0.8 reduction	18%
General Abdominal	23,846	10.2	242,301	25,908	10.0	258,462	0.2 reduction	2%
Orthopaedic	136,150	12.0	1,637,710	132,671	11.4	1,506,638	0.7 reduction	6%
	<u>552,148</u>	<u>10.6</u>	<u>5,844,307</u>	<u>604,070</u>	<u>10.1</u>	<u>6,100,353</u>	0.5 reduction	5%



US platform accounts





Operations transformation: progress summary

Investment complete

- **TruVue probe:** easier focus, more stable signal
- **Margin improvement:** probe tip in-house, process re-design
- **High Definition Impedance Cardiography:** UK launch
- **Patent grant:** combination monitor

Substantially complete

- **TruVue display:** combine velocity & pressure, from safer fluids to safer inotropy & compliance
- **Veterinary system:** emerging topic, attractive economic model, September launch

In process

- **Non-invasive Doppler:** snapshot & calibration
- **Non-invasive blood pressure:** fitness for purpose
- **New monitor platform:** haemodynamic workstation, entry level to state of the art

2017 year to date highlights

- US growth rate continuing to improve
 - 30th platform account in place January: rolling programme
 - Adding new accounts: major strategic and targeting systems
 - Probe consumption growing: focused support
 - Moving from investment in staff to contribution
- UK: signs of stabilising but customer in crisis
- Manufacturing margin improvement validated and underway
- Positioned for returns from investment in product development
- Complete haemodynamic solutions differentiated by premium Doppler ultrasound technology

