All Patients should be on remote follow up only:

For

Stuart Allen

The Manchester Heart Centre

Winning a debate?

- A philosophical quote from a highly respected academic
- Research that cant be argued with
- Lots of graphs/ pictures (some may bare no relevance at all to the debate)
- Interrupt a lot

The philosophical quote by a highly respected academic

"I don't understand why, just because the earth has gone round the sun once a device patient needs to be followed up?"

Dr Adrian Morely-Davies – BHRS council meeting April 2011

Research that cant be argued with!

A title for a really great piece of research, just the best, really

Donald J. Trump
Trump University

Introduction

The current research, and it is really great research, it really is. It relies on the theory – and I have the best theories, you know, I use the best theories in my research. It really is quite amazing just how great the theory is, but I'm not really, in fact – it is a theory. A really good one and I've talked to people and, lots of people actually, and they all think what I said. It has a lot of appeal. It's really just all there and what it is. If people, you know, losers and whatever, if they don't get it, then what are you going to do? It's not like the idea isn't there and that, you know, it's what it is. I have to shake my head. Everyone is just shaking their heads. It really is.

Along with the theory, there's other work. Existing data – and again, I have the best data. You would really, if you had the same great data, be completely happy and the data are there. And they are really, you know, data and we have all kinds. The best kinds. And that is what we base the current work, which is great work, that I did and it's great. If other people want to be walked through like babies or something, then I don't know what their problem is. The data just are there so get off your lazy butts and stop looking for handouts. I'm not here to give handouts, you shouldn't expect that.

There are other people who have data that, at least on first glance, and if you believe the haters and losers who want to stop what I am doing. Sure, I could terminate these

know, the people in charge. And we had the cameras, really just the best cameras – we had everything, and the people were, now I don't want to say too much about it, but we had

everything and it was better, and still cost less – because I am the one paying for this. It is money out of my pocket. And my pockets are deep because I am, and have been, a huge success in everything that I have done. I don't owe, even a cent, to funding agencies at all, this is all mine so I'm not beholden to anyone. The research, and I know research, and this is top-shelf research was the best. One of the best research papers in the world, by the way. Make no mistake. Make no mistake at all – this is what those other people wish they had done or what they wish they were doing, but they aren't because I am. So, you know, they are whatever, not worth the time.

Results

We ran analyses. The best analyses, make no mistake, these analyses were absolutely top notch. And there were, of course, numbers and the best numbers. They really were. The numbers that is. The findings, what the numbers said, they are great. If you look at them, and I have, other people have and it is clear – and you cannot really argue about it – the analyses are, in fact, tremendous. And it is really something. It is. I've seen findings over the years, and I've had a lot of dealings with numbers – big numbers – and, no mistake, these numbers are, even by the standards of bozos who don't believe what they see, these numbers are really great. These are numbers, no doubt. And those are the best numbers. You can rely on those numbers because they are great numbers. It is impressive.

Trump, D.J. (1997). Trump: The Art of the Comeback
Trump, D.J. (2004). Trump: How to Get Rich
Trump, D.J. (2004). Trump: Think Like a Billionaire
Trump, D.J. (2007). Trump 101: The Way to Succes

Central Manchester University Hospitals

The Royal Brompton Hospital

What's our ‘normal’ FU policy

Current

- PPM/ ICD – 3 x RFU, 1F2F
- CRT-P/ CRT-D – Alternate RFU and F2F
- Battery/ lead monitoring/ AF – monthly RFU
- Increasing number of PPM/ ICD on RFU only

Work in progress

- Moving all PPM and ICD onto RFU only
- CRT 1 year post implant – 3x RFU, 1 x FU
- Next – CRT RFU download to coincide with HF clinic – no need for device in-clinic check?

Historical in clinic- device checks

- 5 to 15 mins per patient
- Magnet rate
- Manual threshold/ impedance/ sensing check
- Battery evaluation
- Evaluation of rate histogram (and counters)
- Evaluation of stored episodes
- Site check

Current device in-clinic follow up

- 5 to 30 mins per patient –reality less than 30 mins to evaluate CRT - vast differences across UK
- No magnet rate
- Trend data for Threshold/ impedance/ sensing checks – manual tests rarely needed
- Battery evaluation
- Evaluation of histograms – Rate, Sensor, AF burden, Rates during AF etc
- Evaluation of clinical stored episodes
- Evaluation of HF diagnostics
- Site check
- The vast majority of device in clinics checks/ evaluations do not require a F2F

Analysis of CMFT in-clinic follow up

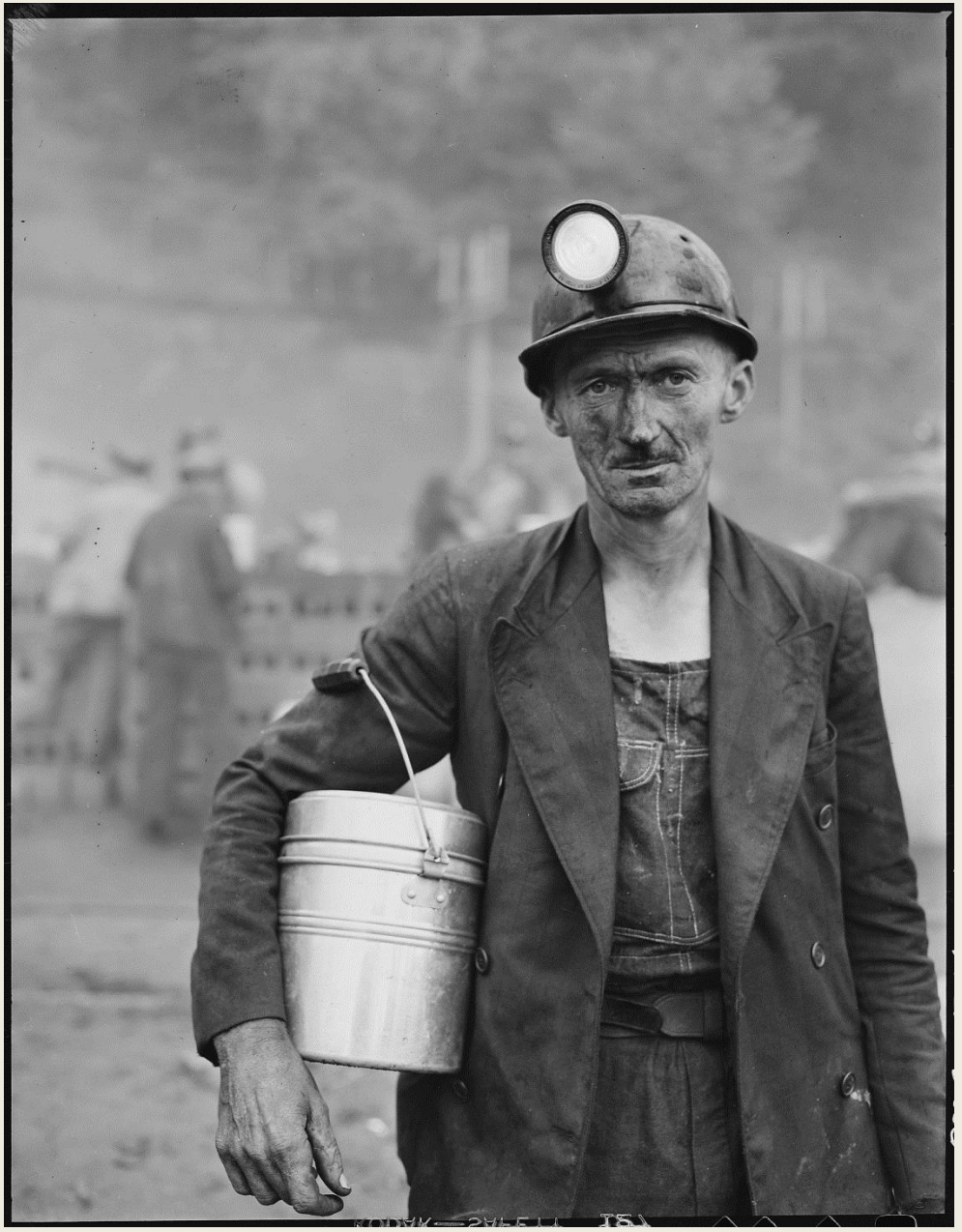
- 60% of PPM patients have no cardiac co-morbidity – the only reason they ever attend the heart centre is for a device check
- 91% of ALL device patients have no further programming changes after 2/4/6 week in-clinic FU
- To facilitate a 2 week appt/ urgent checks clinics have to overbooked

In-clinc device check: Poor value for the patient?? Would patients prefer RFU only?

Average time spent by a **patient in the hospital** from check in to check out.

62% of that time is waiting time.

AND in average **37%** of the consultation time adds value to the patient.



Cost of F2F follow up

	Physician time consumption for an in-clinic FU	34.30	£1.4	Minutes and cost per minute	Boriani et al 2011, Picturenomics UK PwC Report
	Physician time consumption for a remote follow up	8.40	£1.4	Minutes and cost per minute	Raatikainen et al. 2008, Picturenomic UK PwC Report
	Patient mean travel for round trip to clinic	60.80		km from home to clinic and back	MDT UK info available per clinic (base on over 1000 patients
	Cost per km of travel (car)	£0.25		UK HMRC Fuel allowance	http://www.hmrc.gov.uk/rates/travel m
	CO2 emissions per km of travel (car) in grams	149.50		Average new car sold in the UK in 2009	http://www.parkers.co.uk/cars/advic ews/archive/CO2-emissions-down/
	Annual scheduled ambulatory visit	4.00		Routine device checks performed	User entry
	Scheduled ambulatory visits replaced with remote follow-up	3.00		Routine device checks done remotely	User entry
	CO2 emissions savings (grams)	27269			CALCULATED
	Hospital staff time saving from remote follow-up	£107			CALCULATED

Parking

THE UNIVERSITY of York

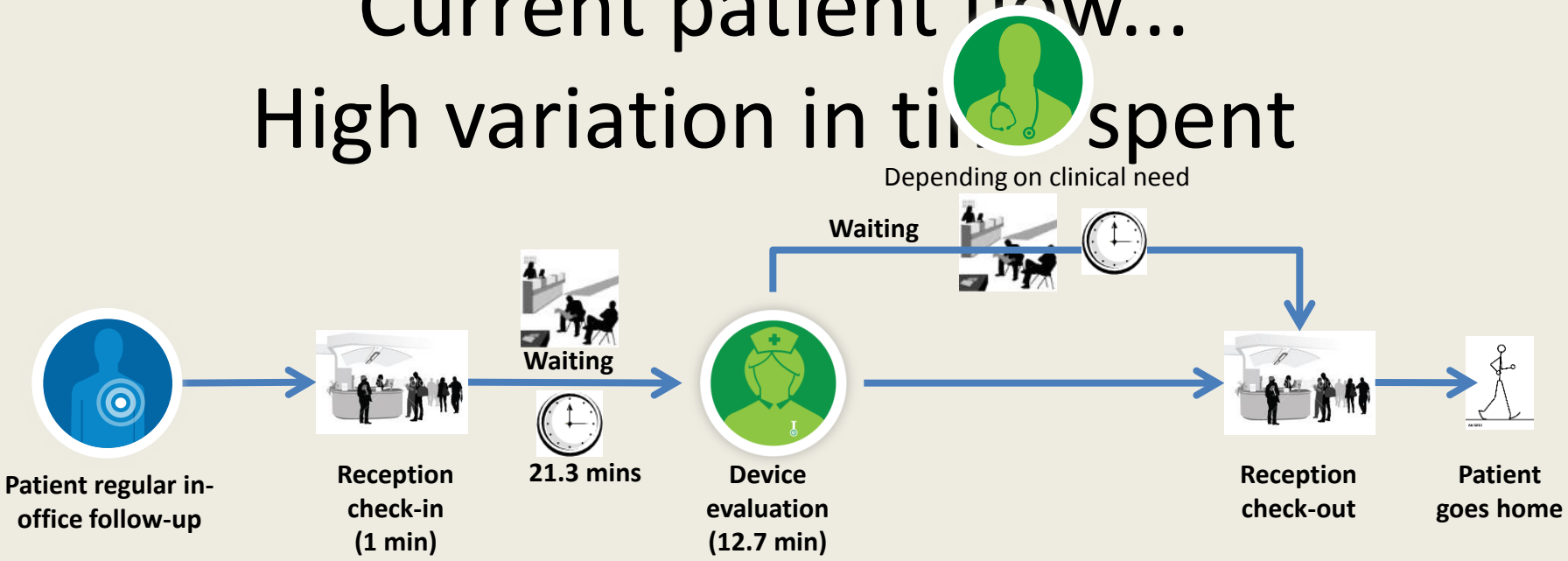
CHE
Centre For Health Economics

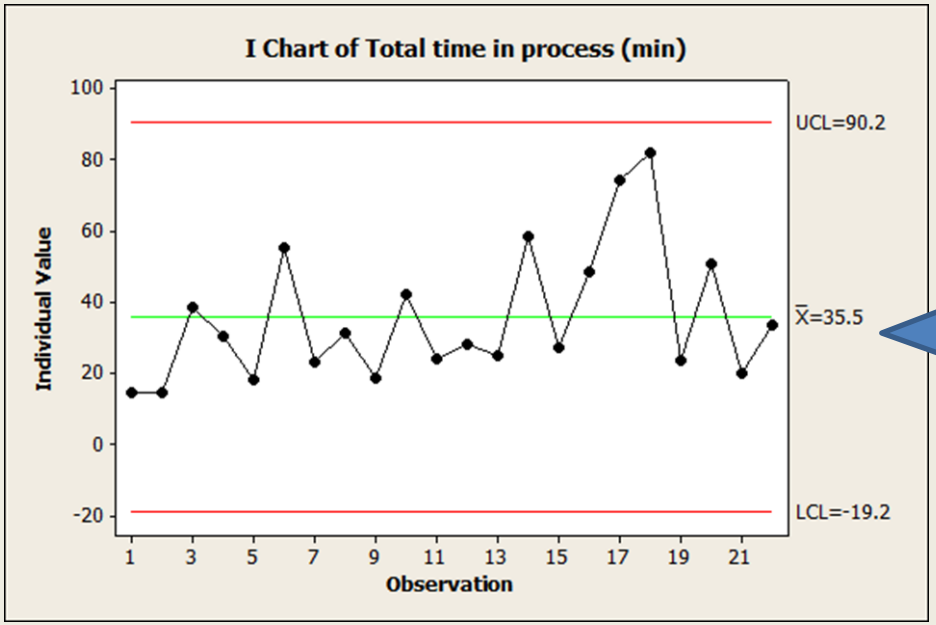
Hospital Car Parking: The Impact of Access Costs

Anne Mason

**Centre for Health Economics,
University of York, UK**

Current patient flow...
High variation in time spent





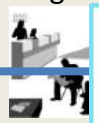
- Unpredictable process, mean of 35.5 minutes but highly variable
- P95= 80.6 minutes
- P50= 29.2 minutes

What contibutes to the variation?

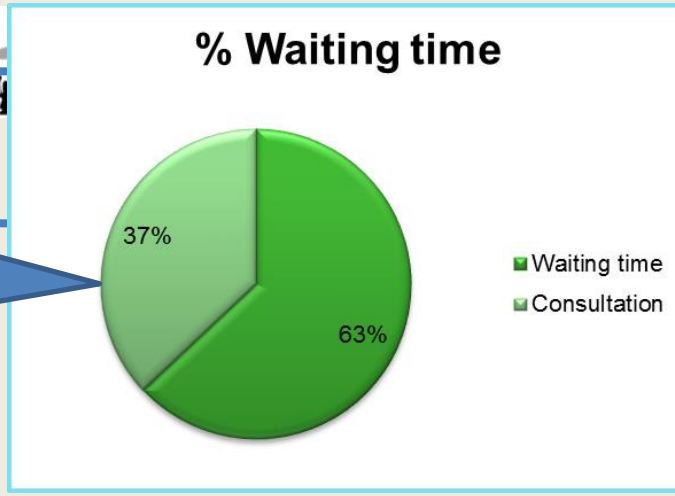
Waiting…?

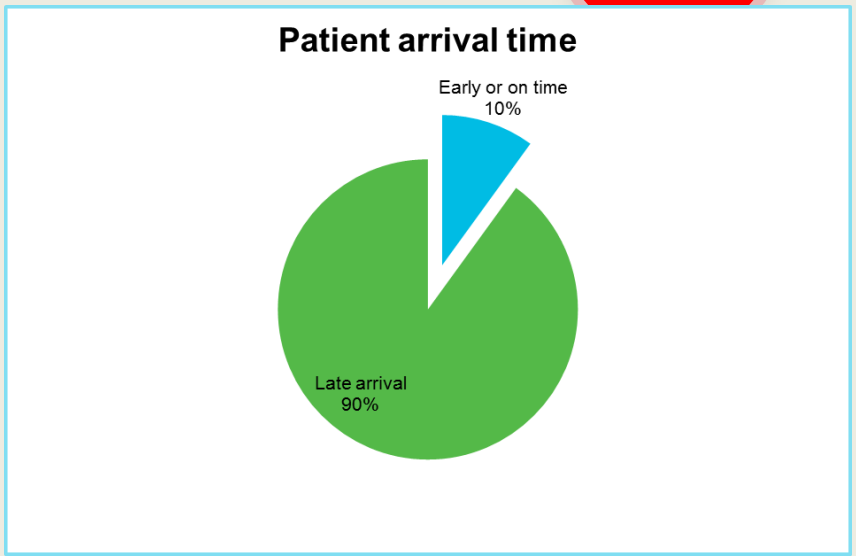
Depending on clinical need

- Average device follow up consultation- 12.7 minutes
- **P95=26.2; P50=11.6**
- Average total time spent waiting= 21.3 minutes



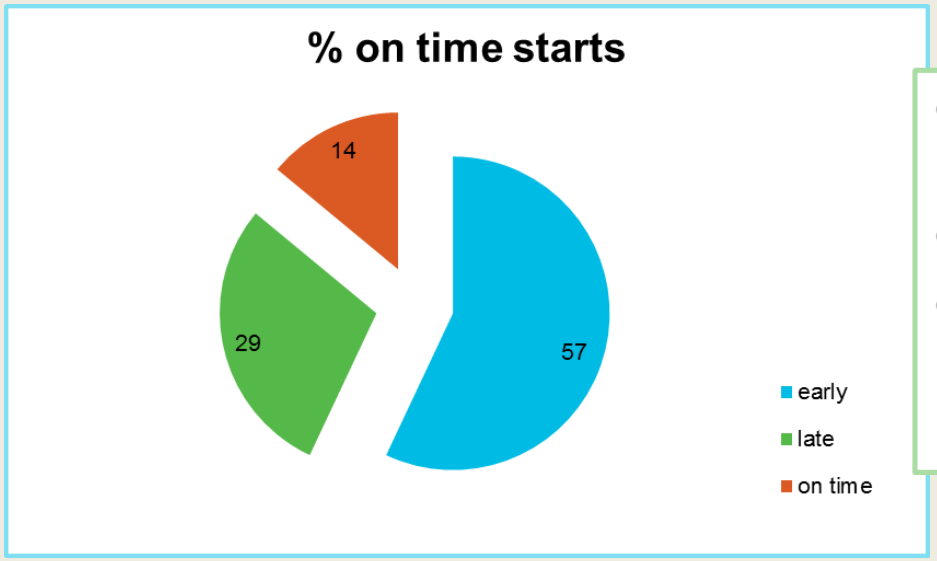
Waiting





- **90% of patients arrive early** or on time: on average 20 minutes early

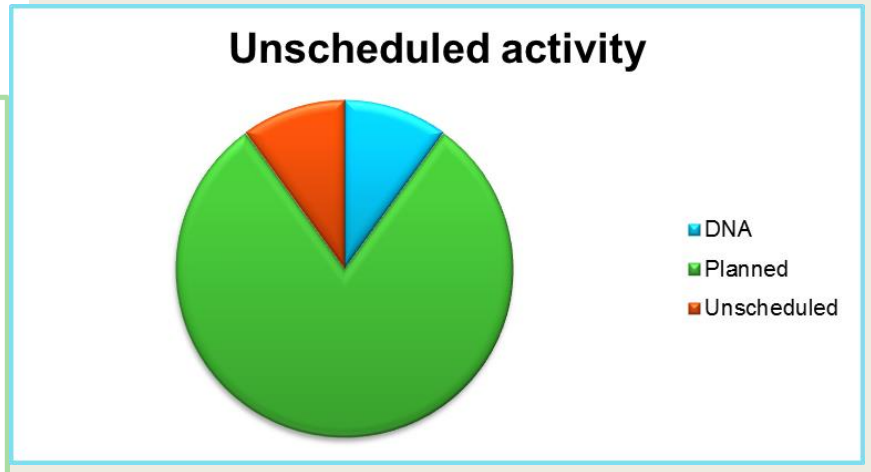
On time starts…?



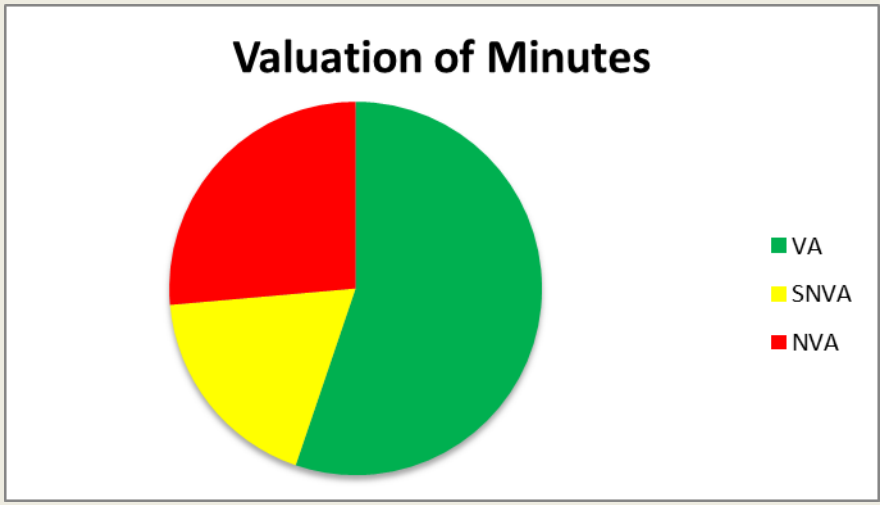
- 71% of appointments start early or on time
- Early average of 16.7 minutes
- 29% start late: 16.2 minutes on average

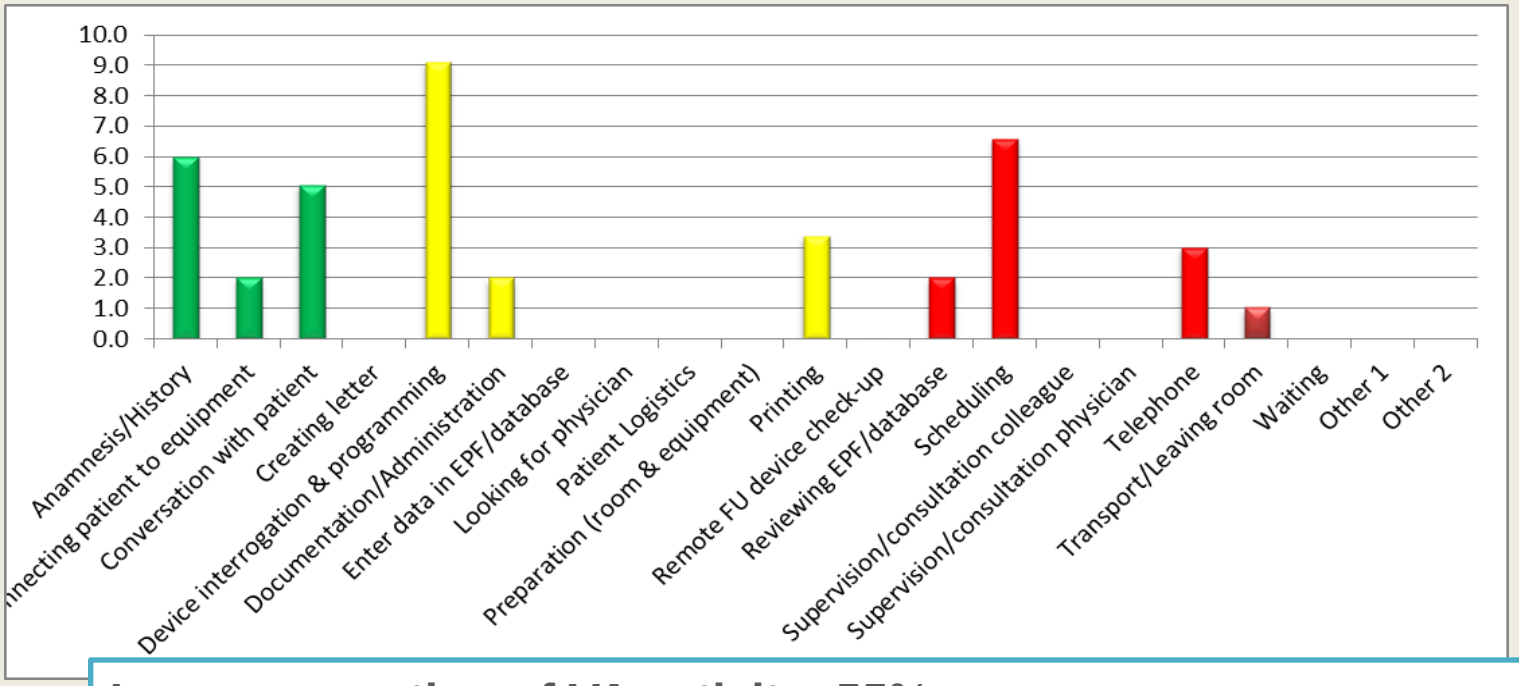
Late starts due to unscheduled activity, urgent checks, problem patients…

- **10% DNA** rate approx
- **10% daily activity is unscheduled** device check: ward checks, urgent visits



Time spent analysis





Large proportion of VA activity: 55%

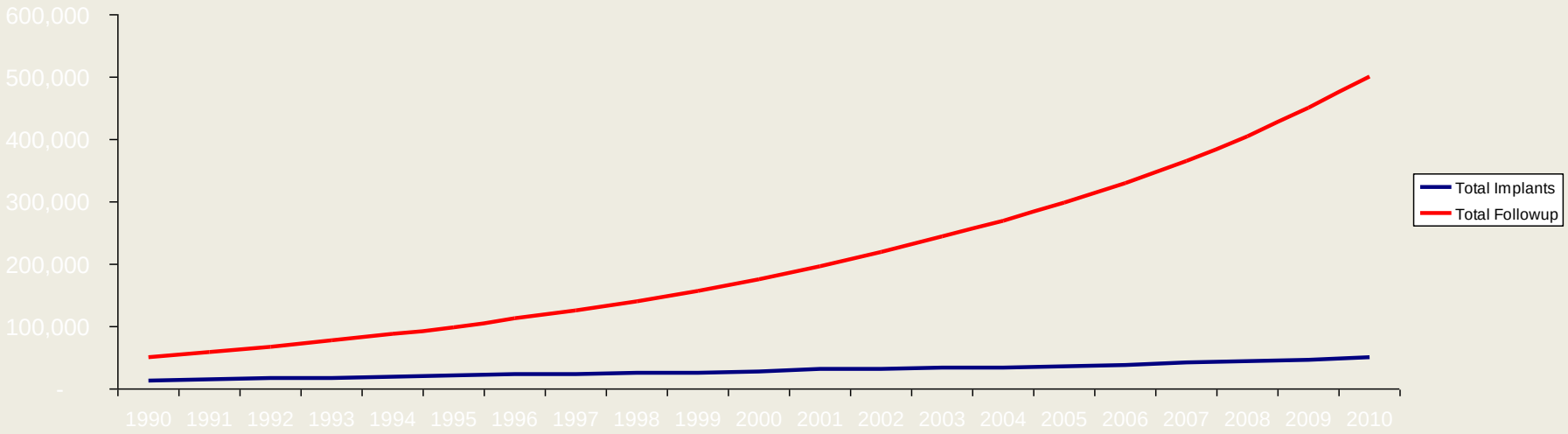
SNVA consist mostly of admin/database entry and scheduling on remote systems for next appointments

Increased use of devices creates a significant growth in demand for device follow-up resources

Growth:

140% (year 2000-2005)- actual

160% (year 2005-2010) - estimated

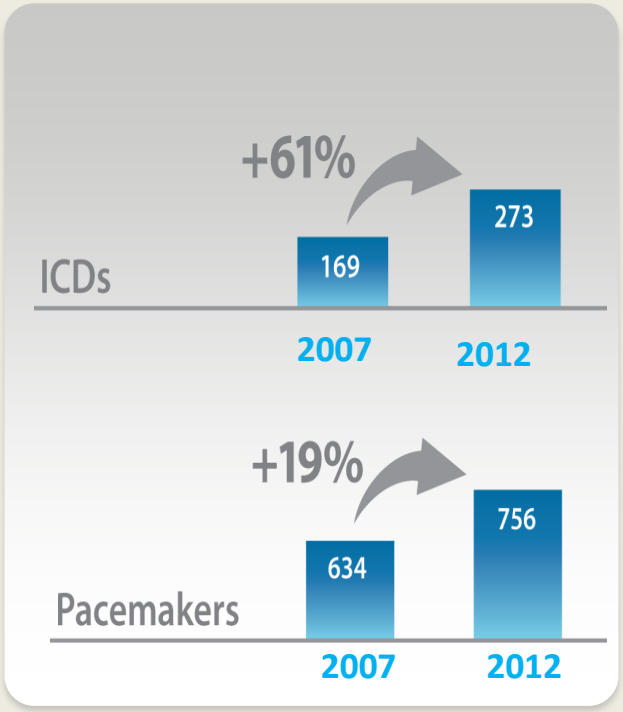


Economic modelling based on CCAD data

NICE recommendations are 5 FU per year – model based on 1.3 pacemaker FU and 3 ICD / CRT FU.

Number of implanted devices is high and still increasing…

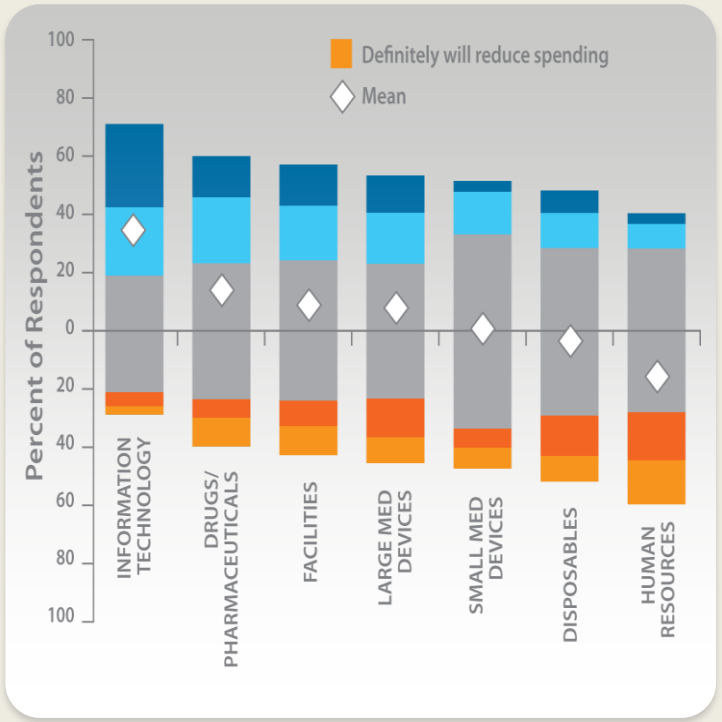
UNITS PER MILLION INHABITANTS[1]



Cardiac device follow-up burden keeps increasing

WHILE

SPENDING PRIORITIES OVER THE NEXT 5 Y.[2]



Human resource spending not a priority

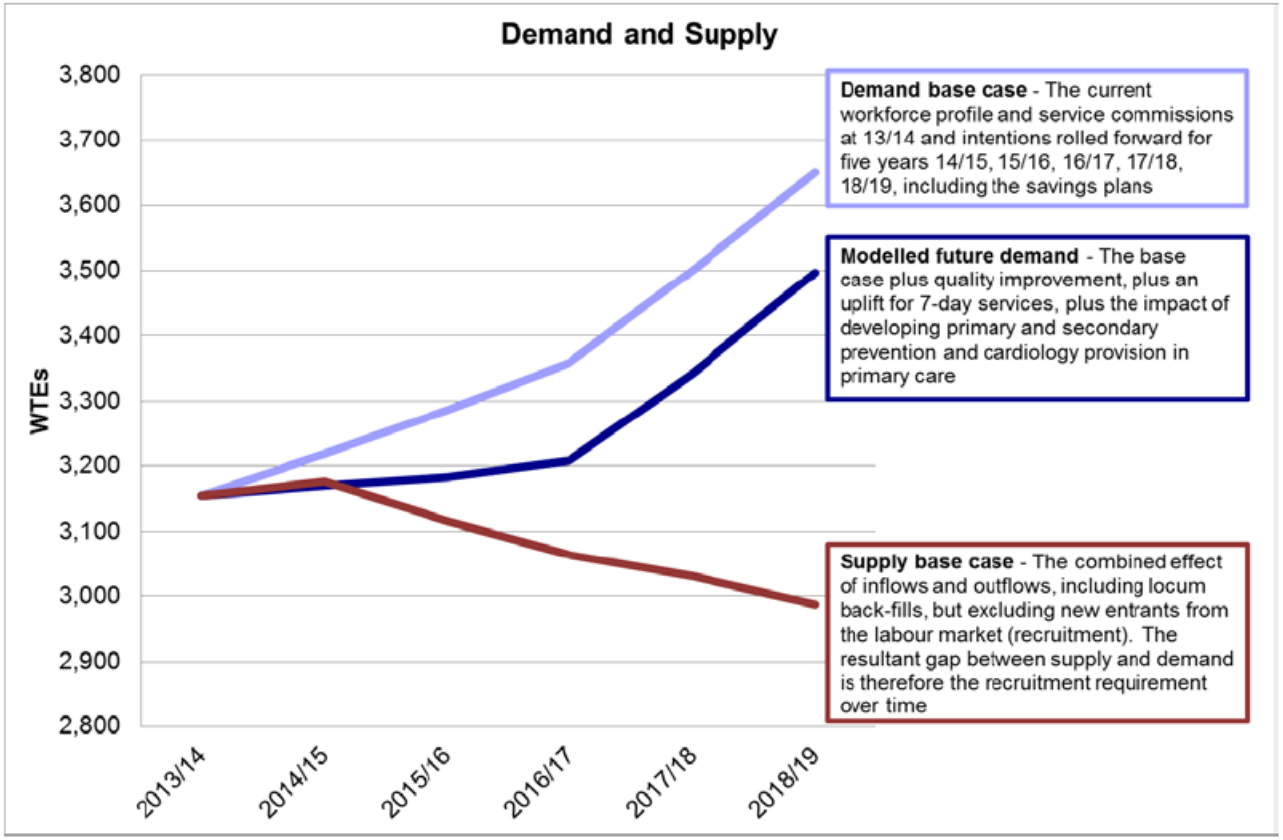
1- http://www.eucomed.org/uploads/_medical_technology/facts_figures/Graphs_CRM_2013.pdf
2- LEK consulting/executive insights Volume XV, Issue 4, 2013

Strategic Review of Cardiac Physiology Services

STRATEGIC REVIEW OF CARDIAC PHYSIOLOGY SERVICES IN ENGLAND: FINAL REPORT

Physiologist workforce

Figure 1: Summary workforce modelling



Remote monitoring

EVIDENCE LANDSCAPE

2008-2009

Swerdlow, et al.[8]
(n = 15,970, ICD)
LIA provides early warning of inappropriate shocks due to lead failure

Marzegalli, et al.[9]
(n = 67, 3m, CRTD)
CareLink associated with high levels of patient satisfaction

OEDIPE[10]
(n = 379, 4w, IPG)
4.1% risk reduction in major adverse events

Raatikainen, et al.[11]
(n = 41, 9m, ICD)
41% cost savings per patient

OFISSER[12]
(n = 190, 1y, CRTD)
58% fewer hospitalizations
44% fewer hospital days

PREFER[13]
(n = 897, 1y, IPG)
26% faster diagnosis of clinical actionable events

2010-2011

Velu, et al. [9]
(n = 92, ILR)
47% reduction in mean time from ILR implant to diagnosis

CONNECT[10]
(n = 1,997, 15m ICD/CRTD)
79% reduction in time from clinical event to clinical decision; 18% reduction in LOS

ALTITUDE[10]
(n = 188,778, ICD/CRTD)
50% higher survival rate

TRUST[10]
(n = 1,339, 15m, ICD)
94% reduction in time from onset to evaluation; 45% reduction of in-office visits

PARTNERS-HF[10]
(n = 694, 12m, CRTD)
Positive combined diagnostic indicates 5.5x increased likelihood of an HF hospitalization in the next 30 days

Ricci, et al. [10]
(n = 119, 1y, IPG/ICD/CRT)
Remote monitoring is associated with high patient satisfaction & security

2012

COMPAS[11]
(n = 538, 18m, IPG)
66% fewer hospitalizations from atrial arrhythmias; 56% fewer ambulatory visits

Petersen, et al. [12]
(n = 385, ICD)
95% of patients content or very content with remote monitoring

Cronin, et al.[12]
(n = 434, IPG, ICD, CRTD)
Remote follow-up takes 56% less time than in-office

EVOLVO[12]
(n = 200, 16m, ICD/CRTD)
39% fewer ED & urgent visits; 21% lower total healthcare utilization; increased QoL

2013

Burri, et al. [13]
(ICD/CRT)
Cost neutral at 11,500 €/ patient at 10 years in UK model

Drak-Hernandez, et al.[13]
(n = 109, ILR)
78% reduction in time from implant to diagnosis; decrease in unplanned visits and ER care

SAVE-HM [13]
(n = 151, IPG/ICD)
55.7% lower total costs

TARIFF sub-analysis [13]
(n = 209, ICD/CRTD)
There are social and economic impacts of in-office device follow-up

MORE-CARE[13]
(n = 154, 1y, CRTD)
93% reduction from event to decision; 37.5% relative reduction in hospital visits

ECOST[13]
(n = 433, 2y, ICD)
24% fewer follow-ups; fewer shocks delivered

IN-TIME[13]
(n = 664, 12m, ICD/CRTD)
60% higher survival rate

2014

Mittal, et al. [14]
(n = 348,742, PM/ICD/CRT)
Patients with high RM adherence had 53% greater survival than low RM and 140% greater survival than no RM

Akar, et al. [14]
(n = 37,742, ICD/CRTD)
67% increased survival rate; 20% decreased 3-yr all cause hospitalization

TRUST sub-study[14]
(n = 1,339, 15m, ICD)
> 25% increase in adherence to all follow-ups

Ladapo, et al. [14]
(n = 13,655, IPG/ICD/ CRTD)
Decrease in healthcare utilization and costs

2015

Parthiban, et al. [15]
(n = 6,469)
RM and IO follow-up showed comparable overall outcomes related to patient safety and survival, with a potential survival benefit in RCTs using daily transmission verification.

Slotwiner, et al. [15]
(n =)
RM represents the new standard of care for patients with CIEDs, with alert-driven IPE replacing most routine office interrogations.

Mairesse, et al. [15]
(n =)
Remote monitoring was reported to lead a reduction of in-office follow-ups for all devices.

■ Medtronic ■ Boston Scientific ■ St. Jude Medical ■ Biotronik
■ Non-Industry or Collaborative

The CONNECT trial

Journal of the American College of Cardiology
© 2011 by the American College of Cardiology Foundation
Published by Elsevier Inc.

Vol. 57, No. 10, 2011
ISSN 0735-1097/$36.00
doi:10.1016/j.jacc.2010.12.012

CLINICAL RESEARCH **Clinical Trial**

Results The median time from clinical event to clinical decision per patient was reduced from 22 days in the in-office arm to 4.6 days in the remote arm ($p < 0.001$). The health care utilization data revealed a decrease in mean length of stay per CV hospitalization visit from 4.0 days in the in-office arm to 3.3 days in the remote arm ($p = 0.002$).

Conclusions Wireless remote monitoring with automatic clinician alerts as compared with standard in-office follow-up significantly reduced the time to a clinical decision in response to clinical events and was associated with a significant reduction in mean length of CV hospital stay. (Clinical Evaluation of Remote Notification to Reduce Time to Clinical Decision [CONNECT]; NCT00402246) (J Am Coll Cardiol 2011;57:1181–9) © 2011 by the American College of Cardiology Foundation

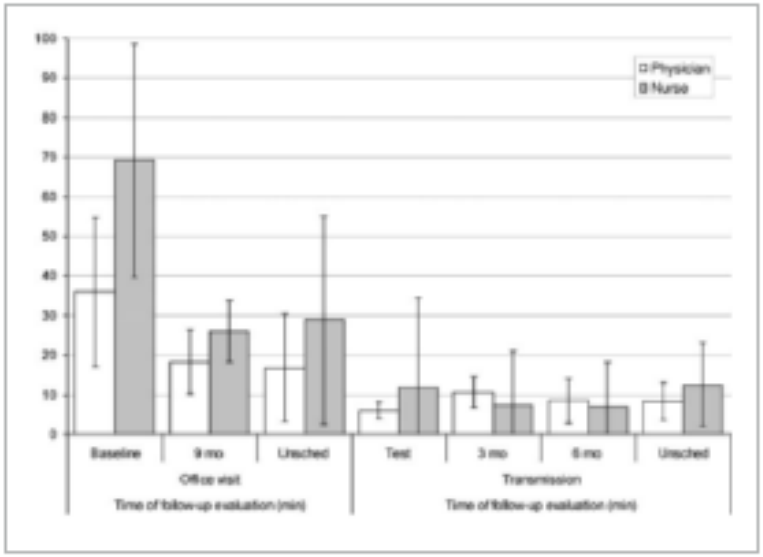
Nashville, Tennessee; Milwaukee, Wisconsin; Minneapolis, Minnesota; and Redwood City, California

Reduced healthcare utilisation

REMOTE MONITORING OF IMPLANTABLE CARDIOVERTER DEFIBRILLATOR PATIENTS:

Aims

Prospective investigation to determine if Internet-based remote monitoring offers a safe, practical, and cost-effective alternative to the in-office follow-up visits of patients with an implantable cardioverter defibrillator (ICD).



Methods

Forty-one patients with previously implanted Medtronic ICDs were followed for 9 months.

Results

- 119 scheduled and 18 unscheduled data transmissions were performed
- There were no device related adverse events
- > 90% of patients found the system easy to use
- Physicians reported the system as being "very easy" or "easy" to use
- All unscheduled data transmissions were addressed remotely
- Compared with in-office visits, remote monitoring required less time from patients (6.9 ± 5.0 vs. 182 ± 148 min, $P < 0.001$) and physicians (8.4 ± 4.5 vs. 25.8 ± 17.0 min, $P < 0.001$) to complete follow-up
- Substitution of two routine in-office visits during the study by remote monitoring reduced the overall cost of routine ICD follow-up by 524€ per patient (41%) over traditional device interrogation in 99% of the cases.

Study Conclusion

Remote monitoring offers a safe, feasible, time-saving and cost-effective solution to ICD follow-up.

Raatikainen MJ, et al. *Europace*. 2008;10:1145-1151

Reduced healthcare optimisation & enhanced patient care

EFFICACY AND SAFETY OF AUTOMATIC REMOTE MONITORING FOR IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR FOLLOW-UP

Aims

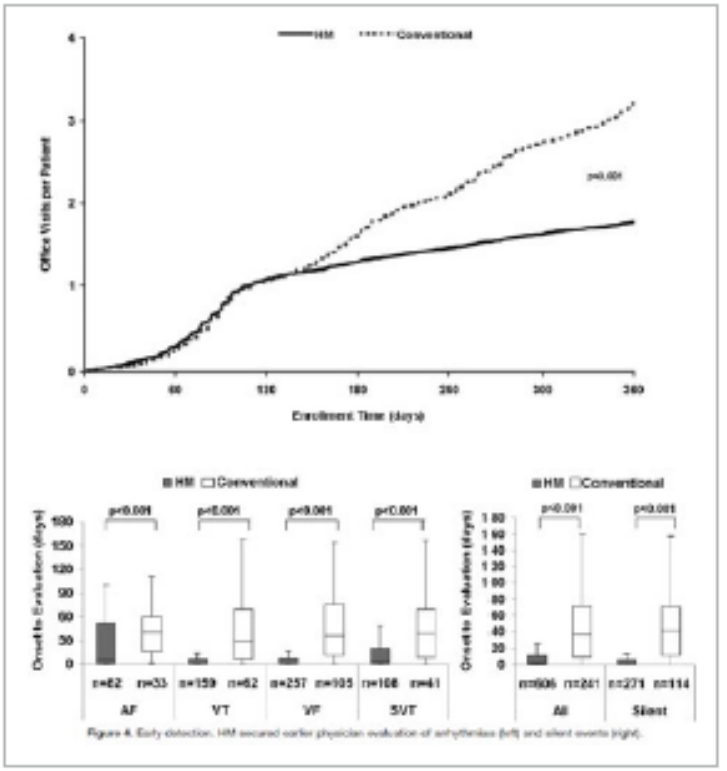
Test the hypothesis that remote home monitoring with automatic daily surveillance (HM) is safe and effective for ICD follow-up for 1 year and enables rapid physician evaluation of significant events.

Methods

- 1,339 Lumos-T ICD patients (BIO) were randomized 2:1 to HM or conventional follow-up
- Follow-up checks occurred at 3, 6, 9, 12 and 15 months after implantation

Results

- HM reduced total in-office visits by 45% without affecting morbidity ($p < 0.001$)
- Median time from onset to physician evaluation was < 2 days in the HM group compared with 36 days in the conventional group ($p < 0.001$)
- Improved compliance to follow-up in RM group (93.5% vs. 88.7%, $p < 0.001$)



Study Conclusion

HM is safe and allows more rapid detection of actionable events compared with conventional monitoring in patients with implantable electronic cardiac devices.

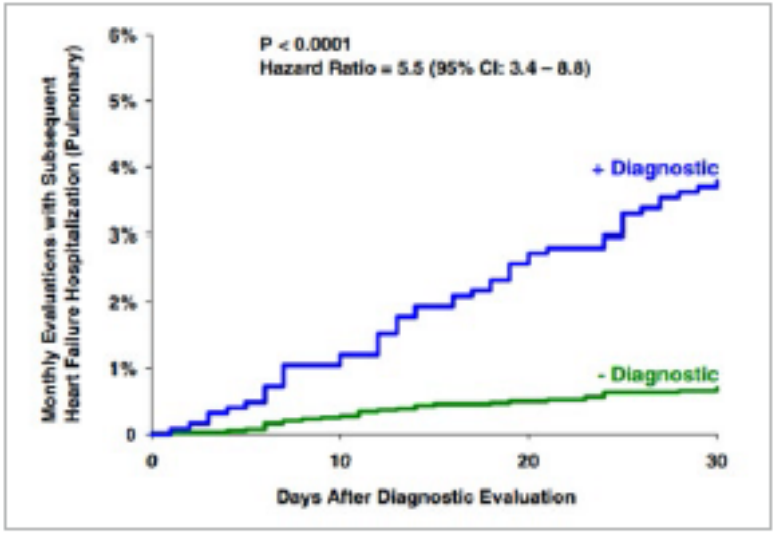
Reduced healthcare utilisation

COMBINED HEART FAILURE DEVICE DIAGNOSTICS IDENTIFY PATIENTS AT HIGHER RISK OF SUBSEQUENT HEART FAILURE HOSPITALIZATIONS

(

Aims

Determine if the retrospective evaluation of combined diagnostics recorded by CRT-D devices can identify HF patients at risk for subsequent heart failure hospitalizations.



Methods

- Prospective, observational study with retrospective review of RM data collected over 12 months (n = 694)
- A combined diagnostic algorithm using 5 Cardiac Compass™ trends was used to assess risk

Results

- Patients with a positive combined diagnostic were 5.5 times more likely to have an HF hospitalization in the next 30 days
- More frequent evaluations enhance risk stratification (15-day evaluation vs. 30-day)

Study Conclusion

Monthly review of HF device diagnostic data identifies patients at a higher risk of HF hospitalizations within the subsequent month.

Whellan DJ, et al. *J Am Coll Cardiol*. 2010;55:1803-1810.

Reduced healthcare hospitalisation

REMOTE MONITORING OF CARDIOVASCULAR DEVICES: A TIME AND ACTIVITY ANALYSIS

Aims

To determine the impact of remote monitoring on device clinic workflow.

Methods

Detailed workflow data were prospectively collected from 434 patients over a 2-week period in a busy device clinic.

Results

- The mean time spent per transmission was 11.5 ± 7.7 minutes, which was less than in-person interrogations (27.7 ± 9.9 minutes; P < .01)
- 27% of transmissions demonstrated clinically important findings
- 5.8% of transmissions were duplicates
- Transmissions that revealed clinically important findings took longer to process than those that did not (21.0 ± 7.4 minutes vs. 10.1 ± 2.1 minutes; P < .05)

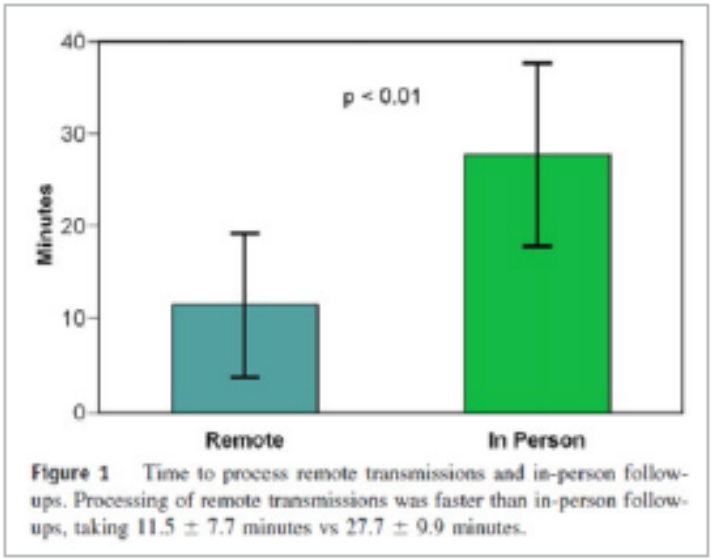


Figure 1 Time to process remote transmissions and in-person follow-ups. Processing of remote transmissions was faster than in-person follow-ups, taking 11.5 ± 7.7 minutes vs 27.7 ± 9.9 minutes.

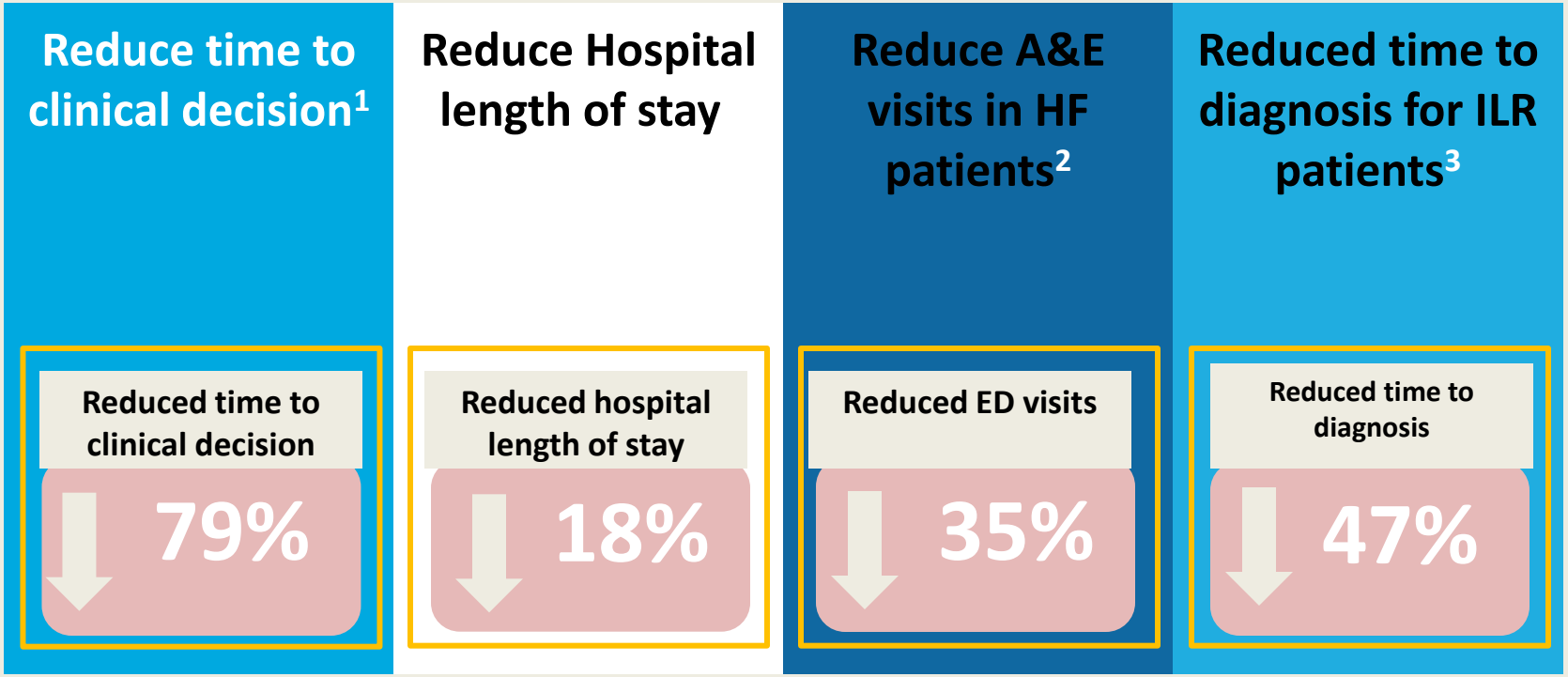
Study Conclusion

- Analysis of remote transmissions has significant implications for the device clinic workflow
- Remote transmissions are rapidly processed, allowing clinicians to focus on clinically important findings
- Poor patient compliance complicates the workflow efficiency

Cronin EM, et al. *Heart Rhythm*. 2012;9:1947-1951.

Clinical evidence: enhanced patient care

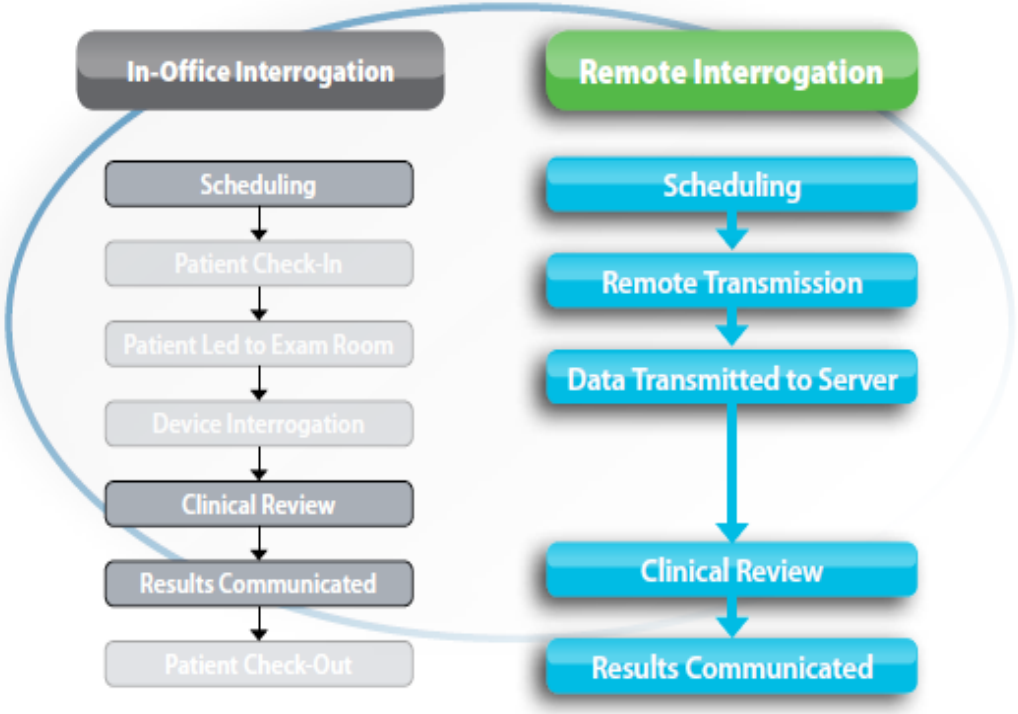
- Carelink remote patient management along with carealerts: evidence based care for cardiac device patients

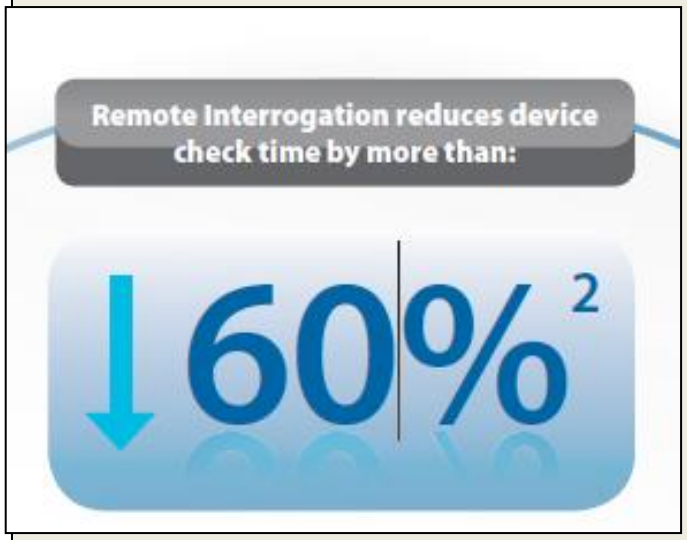


1. Crossley et al; CONNECT trial. J Am Coll Cardiol. 2011; 57:
2. Landolina et al. Circulation. 2012. 125; 2985-2992
3. Selvakumar et al. New Cross Hospital. Poster HRC 2012

Value of remote monitoring

In Europe, with nearly **2 million existing** cardiac device patients, **2.6 million** in-office follow-up visits will be potentially needed.[1]





Compared to standard follow-up through in-office visits and audible ICD alerts, remote monitoring results in increased efficiency for healthcare providers and improved quality of care for patients (Evolvo Clinical Trial).[3]

1. Medtronic Data on file
2. Raatikainen MJ et al. Europace, 2008: (10):1145-51
3. Landolina M et al. Circulation. 2012: 125: 2985-2992

Clinical value of remote monitoring

According to the recent **ESC Guidelines, Device-based remote monitoring is** a **IIa, Level of Evidence A**, recommendation.[6]

Recommendations	Class [a]	Level [b]
Device-based remote monitoring should be considered **in order to provide earlier detection of clinical problems (e.g. ventricular tachyarrhythmias, atrial fibrillation) and technical issues (e.g. lead fracture, insulation defect).**	IIa	A

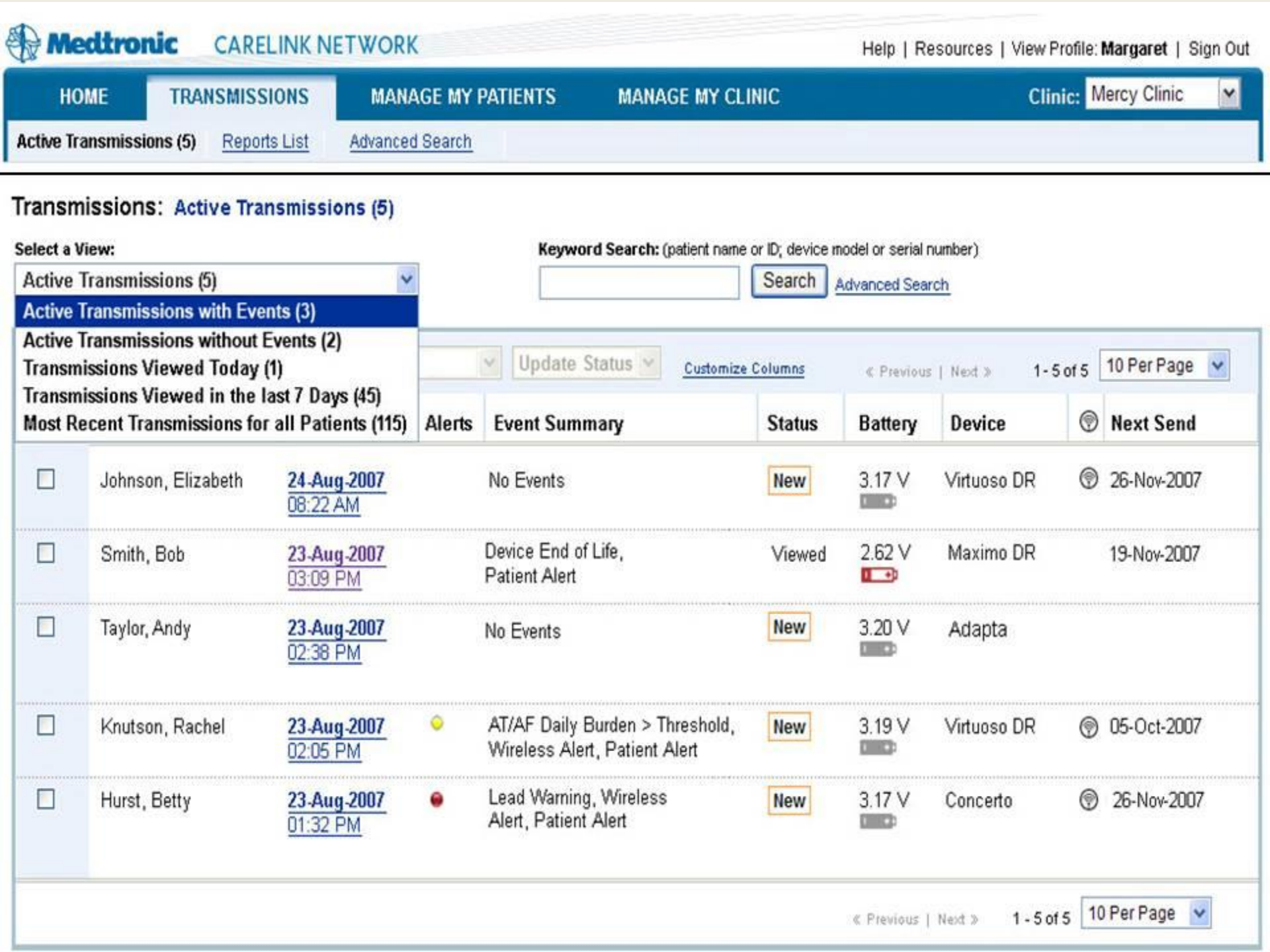
[a] *Class of recommendation.*

[b] *Level of evidence.*

In CRT Patients, Remote monitoring and follow-up in addition to in-clinic follow-up is **recommended**. Patients should be encouraged to initiate a remote transmission if new symptoms or concerns arise.[7]

6. *2013 ESC Guidelines on Cardiac Pacing and Cardiac Resynchronization Therapy*

7. *2012 EHRA/HRS Expert Consensus on CRT in HF*


Medtronic CARELINK NETWORK
Help | Resources | View Profile: Margaret | Sign Out
HOME
TRANSMISSIONS
MANAGE MY PATIENTS
MANAGE MY CLINIC
Clinic: Mercy Clinic
Active Transmissions (5)
Reports List
Advanced Search
Transmissions: Active Transmissions (5)
Select a View:
Active Transmissions (5)
Active Transmissions with Events (3)
Active Transmissions without Events (2)
Transmissions Viewed Today (1)
Transmissions Viewed in the last 7 Days (45)
Most Recent Transmissions for all Patients (115)
Keyword Search: (patient name or ID; device model or serial number)
Search
Advanced Search
Update Status
Customize Columns
« Previous | Next »
1 - 5 of 5
10 Per Page
Alerts
Event Summary
Status
Battery
Device
Next Send
Johnson, Elizabeth
24-Aug-2007 08:22 AM
No Events
New
3.17 V
Virtuoso DR
26-Nov-2007
Smith, Bob
23-Aug-2007 03:09 PM
Device End of Life, Patient Alert
Viewed
2.62 V
Maximo DR
19-Nov-2007
Taylor, Andy
23-Aug-2007 02:38 PM
No Events
New
3.20 V
Adapta
Knutson, Rachel
23-Aug-2007 02:05 PM
AT/AF Daily Burden > Threshold, Wireless Alert, Patient Alert
New
3.19 V
Virtuoso DR
05-Oct-2007
Hurst, Betty
23-Aug-2007 01:32 PM
Lead Warning, Wireless Alert, Patient Alert
New
3.17 V
Concerto
26-Nov-2007
« Previous | Next »
1 - 5 of 5
10 Per Page

Spot the difference!

Device Status (Implanted: 11-Jan-2012)

Battery Voltage (RRT=2.77V)	2.93 V	(07-Jul-2016)	
Remaining Longevity (based on initial interrogation)	2 years (1.5 - 2.5 years)		
	Atrial(5568-53)	**RV(5076)**	**LV**
Lead Impedance	399 ohms	418 ohms	722 ohms
Capture Threshold		1.000 V @ 0.40 ms	1.375 V @ 1.50 ms
Measured On		07-Jul-2016	07-Jul-2016
Programmed Amplitude/Pulse Width		2.00 V / 0.40 ms	2.00 V / 1.50 ms
Measured P/ R Wave	0.3 mV	3.3 mV	
Programmed Sensitivity	0.15 mV	0.60 mV	

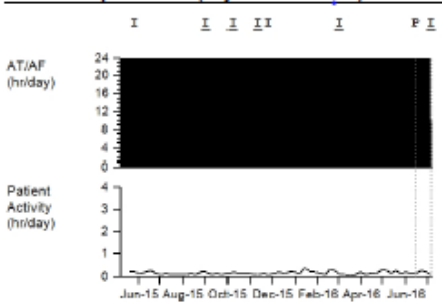
Parameter Summary

Mode	VVIR	Lower Rate	60 bpm
V. Pacing	LV->RV	Upper Sensor	130 bpm

Detection		**Rates**	**Therapies**
AT/AF	Monitor	>171 bpm	All Rx Off
VT	Monitor	>150 bpm	

Clinical Status	**Since 15-Jun-2016**	**Longest**
Treated		
AT/AF(Monitor)		
Monitored		
VT (>4 beats)	0	
Fast A&V	0	
AT/AF	1	14 month
Time in AT/AF	24.0 hr/day (100.0%)	
Functional	**Last Week**	
Patient Activity	0.1 hr/day	

Cardiac Compass Trends (May-2015 to Jul-2016)



Therapy Summary	**AT/AF**	**Pacing**	**(% of Time Since 15-Jun-2016)**
Pace-Terminated Episodes	0	AS-VS	< 0.1%
		AS-VP	99.9%
		AP-VS	0.0%
		AP-VP	0.0%

OBSERVATIONS (4)

- 23 days with more than 6 hr AT/AF.
- Possible fluid accumulation: exceeded OptiVol Threshold, 17-May-2016 – ongoing.
- LV Capture Management determined that threshold increased by 0.625 V from 28-Jun-2016 to 29-Jun-2016. This increase was greater than Amplitude Safety Margin (+0.5 V) and may have compromised capture.
- Patient Activity less than 1 hr/day for 3 weeks.

Device Status (Implanted: 11-Jan-2012)

Battery Voltage (RRT=2.77V)	2.93 V	(07-Jul-2016)	
Remaining Longevity (based on initial interrogation)	2 years (1.5 - 2.5 years)		
	Atrial(5568-53)	**RV(5076)**	**LV**
Lead Impedance	399 ohms	418 ohms	722 ohms
Capture Threshold		1.000 V @ 0.40 ms	1.375 V @ 1.50 ms
Measured On		07-Jul-2016	07-Jul-2016
Programmed Amplitude/Pulse Width		2.00 V / 0.40 ms	2.00 V / 1.50 ms
Measured P/ R Wave	0.3 mV	3.3 mV	
Programmed Sensitivity	0.15 mV	0.60 mV	

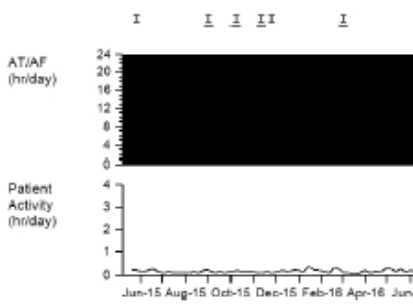
Parameter Summary

Mode	VVIR	Lower Rate	60 bpm
V. Pacing	LV->RV	Upper Sensor	130 bpm

Detection		**Rates**	**Therapies**
AT/AF	Monitor	>171 bpm	All Rx Off
VT	Monitor	>150 bpm	

Clinical Status	**Since 15-Jun-2016**	**Longest**
Treated		
AT/AF(Monitor)		
Monitored		
VT (>4 beats)	0	
Fast A&V	0	
AT/AF	1	14 month
Time in AT/AF	24.0 hr/day (100.0%)	
Functional	**Last Week**	
Patient Activity	0.1 hr/day	

Cardiac Compass Trends (May-2015 to Jul-2016)



Therapy Summary	**AT/AF**	**Pacing**	**(% of Time Since 15-Jun-20**
Pace-Terminated Episodes	0	AS-VS	< 0.1%
		AS-VP	99.9%
		AP-VS	0.0%
		AP-VP	0.0%

OBSERVATIONS (4)

- 23 days with more than 6 hr AT/AF.
- Possible fluid accumulation: exceeded OptiVol Threshold, 17-May-2016 – ongoing.
- LV Capture Management determined that threshold increased by 0.625 V from 28-Jun-2016 to 29-Jun-2016. This increase wa greater than Amplitude Safety Margin (+0.5 V) and may have compromised capture.
- Patient Activity less than 1 hr/day for 3 weeks.

HF Management

Date of Birth	19-Aug-1934	EF, on	---
Implant	11-Jan-2012	Hospital	

Clinical Status (15-Jun-2016 to 07-Jul-2016)

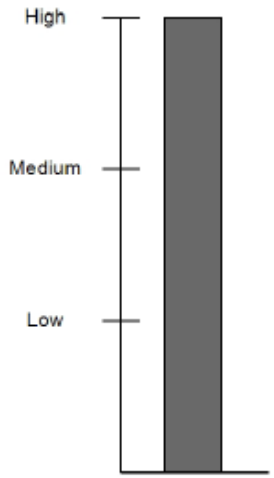
		V. Pacing	100.0%	Lower Rate	60 bpm
AT/AF	1 episode	Atrial Pacing	0.0%	Upper Rate	130 bpm
Time in AT/AF	24.0 hr/day (100.0%)			Battery	OK

Observations (3) (15-Jun-2016 to 07-Jul-2016)

- 23 days with more than 6 hr AT/AF.
- Possible fluid accumulation: exceeded OptiVol Threshold, 17-May-2016 -- ongoing.
- Patient Activity less than 1 hr/day for 3 weeks.

Heart Failure Risk Status on 07-Jul-2016 is High*

Risk of Heart Failure Event in Next 30 Days
(based on maximum daily risk status in prior 30 days)



Risk Factors

OptiVol	☒
Patient activity	☒
AT/AF	☒
Ventricular rate during AT/AF	☐
% Ventricular pacing	☐
Night ventricular rate	☐
Heart rate variability	☐

What could the future device FU clinic look like?

- All patients on RFU
- Device clinics replaced with arrhythmia management clinics and urgent device/ site evaluation
- ?need for CRT clinics if device downloads are available for HF doctor/ nurse
- Evaluation/ interpration of downloads by physiologist with HF team in clinic could provide better management and FU strategies

Conclusions

- I do like seeing patients – but only the ones that need to be seen
- The traditional role of the device physiologist routinely seeing patients in clinic will change
- Workflow has to evolve with technology
- Significant patient benefit and value of RFU rather than F2F

Thank you