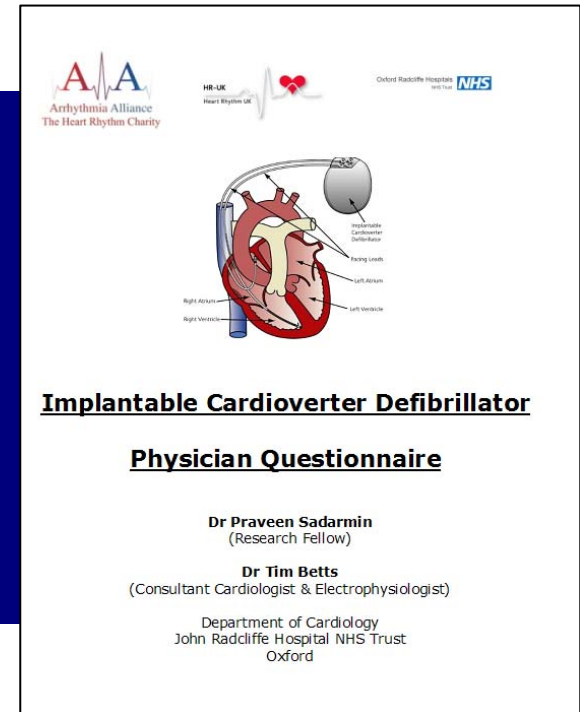


A Survey Of UK Cardiologists' Knowledge And Attitudes Towards Implantable Cardioverter Defibrillators



Praveen Sadarmin, K Wong, N Qureshi, Y Bashir, K
Rajappan and Tim Betts

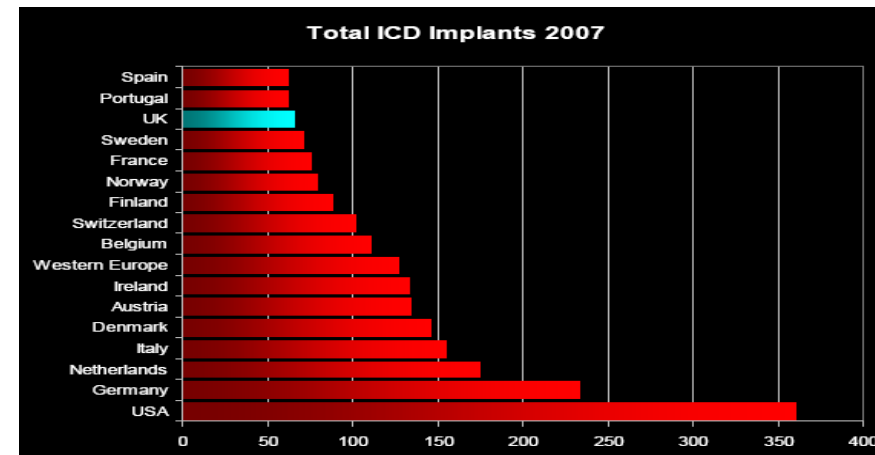
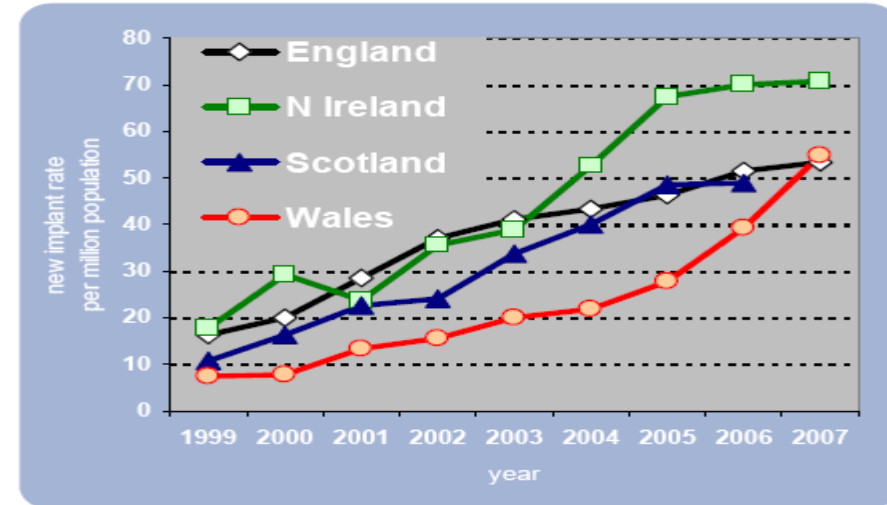
Oxford Heart Centre

John Radcliffe Hospital, Oxford, UK

Heart Rhythm Congress, Birmingham Oct 2009

Background for the Questionnaire

- Although rates are increasing, the UK has one of the lowest implantation rates for both primary & secondary prevention ICDs compared to Europe & America
- Current UK practice should be in accordance with NICE guidance, with a degree of leeway
- Knowledge and attitude of Cardiologists towards ICD implantation is not known



Source: National Service Framework (NSF), 2007



Methods

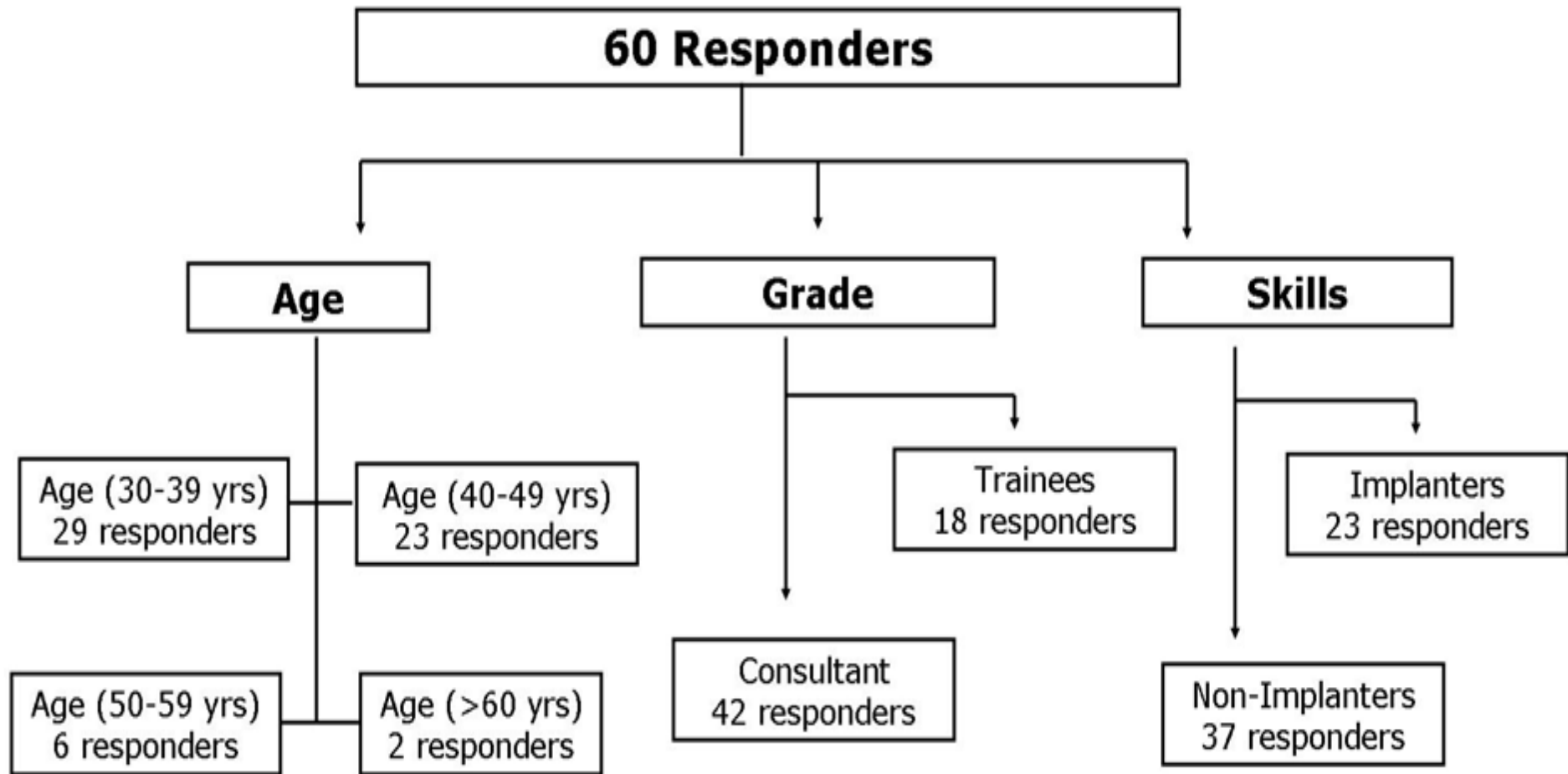
- Questionnaire was sent to all Cardiology consultants and SpRs in the Thames Valley area by email or paper copy (30 replies from 46 contacted)
- National Cardiology consultants and SpRs were targeted through the global email service of Arrhythmia Alliance and British Cardiovascular Society (30 replies from an estimated 300 emails)



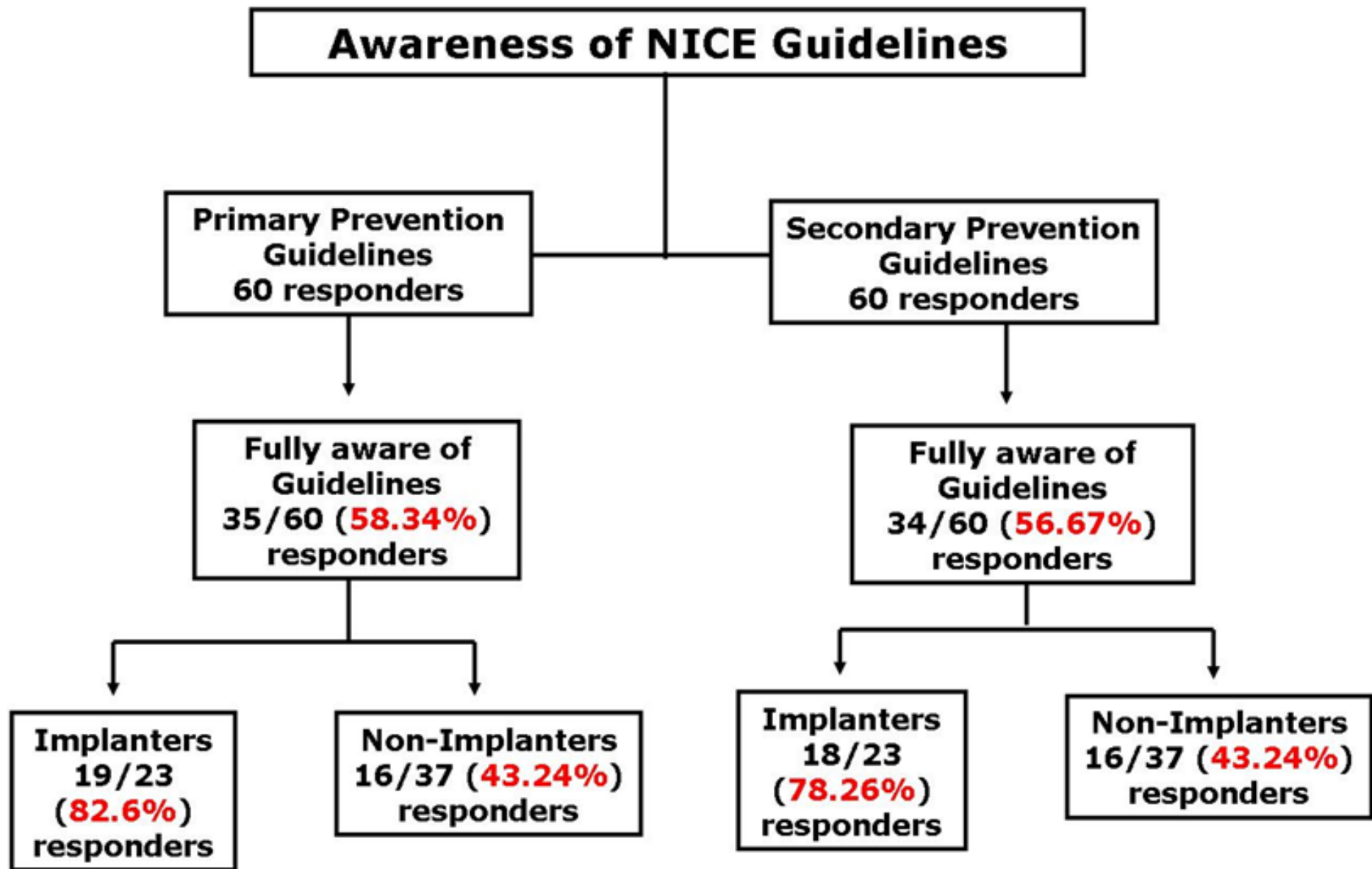
Questionnaire contents

- 38 questions with 3 additional questions to implanters
 - Question categories
 - Responders details (age, grade, implanter, type of institution)
 - Knowledge of NICE guidelines
 - Knowledge and estimates of mortality in typical ICD trial patients, risk and benefit gained from an ICD (PP and SP, IHD and DCM)
 - Current practice (screening etc)
 - Course of action in different case scenarios (PP and SP, IHD and DCM)
 - Factors that influence decision making (patient, financial, personal views)
 - Age limits for ICD implant
 - Estimation of complication rates
 - Overall view of ICD therapy


Results



- 70% consultant cardiologists, 38% implanters, 62% non-implanters and 80% worked in a hospital that implanted ICDs




- Imp were more **fully aware** of the NICE guidelines than Non-imp ($p < 0.0001$)



Primary Prevention (PP) – key findings

- Only **7%** of responders had a screening program to identify PP candidates.
- Both Imp and non-imp estimated that **less than one third** of their implants were for PP
- **75%** of responders do **not** perform routine Holter monitoring of pts with stable IHD and LVEF <35% to look for ventricular arrhythmias (potential MADIT candidates).

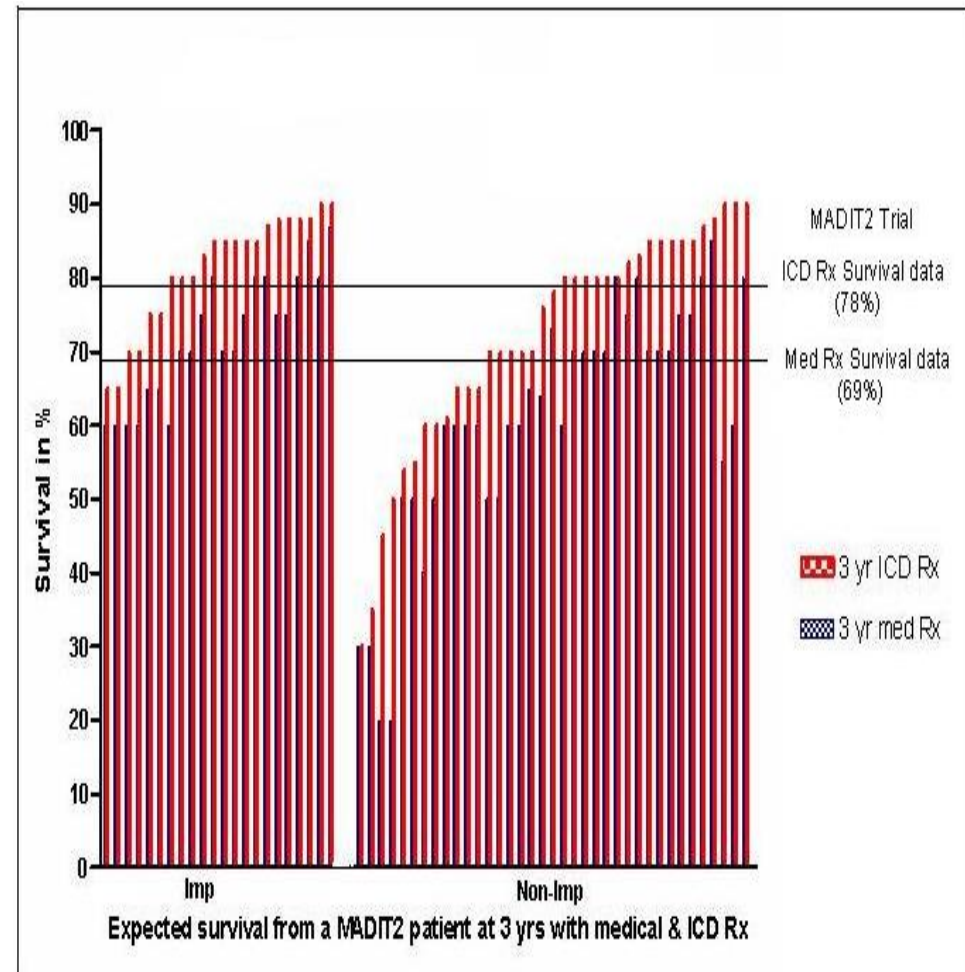


Primary Prevention (PP) – key findings

- In a case scenario of a typical potential **MADIT** patient, 70% Imp and 35% non-Imp recommended a VT stim, whereas 17% of Imp and 27% of non-Imp recommended an ICD
- In a case scenario with a typical **MADIT2** patient with **narrow** QRS, 9% of Imp offered ICD compared to 11% of non-Imp. Majority of Imp chose to do Holter monitoring (70%) and the majority of non-Imp chose standard follow-up of the patient (59%).
- In a case scenario with a typical **MADIT2** patient with **wide** QRS, **78%** of Imp offered ICD compared to **30%** of non-Imp.
- In a case scenario with a typical **SCD-HeFT DCM** pt, 4% of Imp offered ICD compared to 3% of non-Imp. Most responders (57% of Imp and 49% of non-Imp) chose standard follow-versus active management.

Estimation of 3 year total mortality and ARR in a MADIT2 patient

- Imps' estimates were similar to the trial data
- Non-Imp over-estimated mortality by 8% in medically Rx group and by 6% in the ICD group.
- Non-Imp also overestimate ARR by 2%
- The range of ARR expressed by imp (3-15%) and non-imp (1-30%) was very wide





Estimation of 3 year total mortality and ARR in a SCD-HeFT DCM patient.

■ Although Imp over-estimate mortality in medically Rx groups by 7%, their ICD mortality (86%) and ARR (5%) gained were similar to SCD-HeFT DCM trial data.

■ Non-Imps significantly over-estimate mortality in medically Rx group by 23% and ICD group by 11%. They also over-estimate ARR gained in this situation by 12%.



Justification: Case Scenario 1

- **56** yr, male, IHD, NYHA 2, LVEF 29%, QRS 130 ms.
What is the min ARR over 3 yrs to justify an ICD?

3 yr ARR	Mean±SD (%)	Mode (%)	Range (%)	Actual MADIT 2 data (%)	Actual MADIT 2 Age <75 yrs (%)
Overall	9±8	5	2-50	9	9
Imp	8±6	5	2-30		
Non-Imp	10±9	10	2-50		

Justification: Case Scenario 2

- **80** yr female, DM, IHD, LVEF 24%, NYHA 3, QRS 140 ms.
What is the min ARR over 3 yrs to justify ICD?

3 yr ARR	Mean±std dev (%)	Mode (%)	Range (%)	Actual MADIT 2 data (%)	Actual MADIT 2 Age >75 yrs (%)
Overall	22±18	10	5-80	9	13
Imp	20±16	10	5-50		
Non-Imp	24±19	10	5-80		



Secondary Prevention (SP) – key points

- **All** responders would recommend an ICD to a 60 yr SCD survivor.
- However, only **57%** of non-Imp and **91%** Imp would do so to an 80 yr SCD survivor.

SP ICD Estimates:

- Imp under-estimate ICD mortality in ICD groups by 2.5% but over-estimate both mortality in medical Rx groups by 4% and ARR gained by 7%.
- Similarly, non-Imp over-estimate mortality in medically Rx groups by 19%, ICD groups by 7% and ARR gained by 12%.

Justification: Case Scenario 3

- **56** yr, remote MI, LVEF 32%, NYHA 2, presenting with successful resuscitation from VF arrest. What is the min ARR over 3 yrs to justify an ICD?

3 yr ARR	Mean±std dev (%)	Mode (%)	Range (%)	Meta-analysis (%)	AVID data (%)	Meta-analysis LVEF <35%
Overall	9±8	5	1-50	8	11	11
Imp	7±5	5	1-20			
Non-Imp	10±9	5	1-50			

Justification: Case Scenario 4

- **80 yr** female, DM, syncope & haemodynamically compromising VT, remote MI, LVEF <28%, NYHA 3. What is the min ARR over 3 yrs to justify ICD?

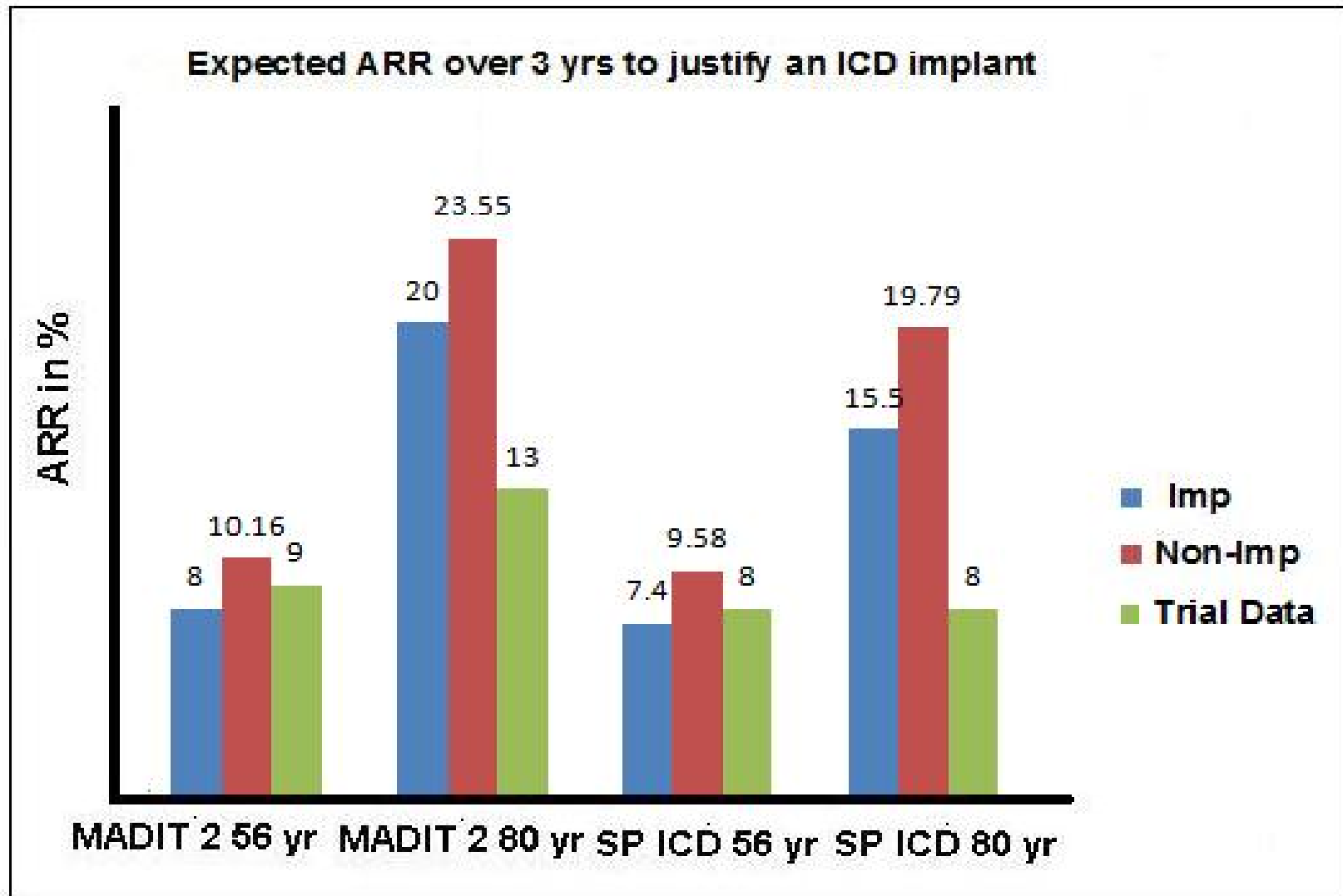
3 yr ARR	Mean±std dev (%)	Mode (%)	Range (%)	Meta-analysis	AVID data (%)	Meta-analysis LVEF <35%
Overall	18±16	10	1-80	8	11	11
Imp	16±15	5	1-50			
Non-Imp	20±17	10	3-80			



Influence of **age** on ICD recommendations

- **62%** of responders said they had **no** age limit for ICD recommendation.(53% PP, 71% SP)
- For those responders that did, the median cut off was 80 years for PP and 85 years for SP.
- The chances of an elderly (>75 yrs) pt being recommended a SP ICD **doubles** if assessed by an Implanter.
- The magnitude of ARR expected to justify an ICD in a 80 yr old female pt for PP and SP is more than **twice** that compared to a 60 year old male patient ($p < 0.0005$).

Effect of age on ARR to justify an ICD





Opinion about ICDs

- 55% of responders would only recommend ICDs if NICE guidelines were satisfied, whereas 45% would recommend an ICD if broader international guidelines were met (DCM and no QRS limit)
- The financial cost of ICDs was graded as the lowest priority by the majority of responders. Highest priority was fulfilment of guidelines and patient wishes
- ‘Potential medico-legal consequences of not implanting an ICD despite NICE recommendations’ was not a concern
- Estimates of complications were similar to published data.
- Cost-effectiveness scores were high and every responder felt that ICDs were under-utilised



Conclusions

- 57% of Non-Imp and 17% of Imp are not fully aware of NICE PP guidelines. 57% of non-Imp and 22% Imp are not fully aware of NICE SP guidelines. This influences the action taken in clinical scenarios, particularly failure to recommend a PP ICD
- Non-Imp significantly overestimate total mortality in both medically treated and ICD groups for both PP and SP.
- The knowledge of ARR gained from an ICD is poor with a very wide range of estimates..The benefits for SP are overestimated
- Although old age is rarely reported as a contraindication, it raises the threshold of benefit to **justify** an ICD beyond that of which responders indicated patients were likely to achieve.
- Responders indicated that Financial costs are low priority



And finally...

- There is a significant lack of knowledge, particularly among non-implanters regarding current guidelines, mortality and absolute risk reduction from an ICD
- There are very few screening programs to identify PP patients
- **These findings may be the principle barriers to ICD uptake in the UK, even though the benefit that cardiologists expect to justify an ICD in the under under 80's has been borne out in clinical trials**



- If anyone likes a copy of the Questionnaire, email drsppraveen@yahoo.com or tim.betts@orh.nhs.uk
- For more information on the ARR and the ICD risk calculator, visit www.icdriskcalculator.com