

## SUPPLEMENTARY DATA

Table 1 of the supplementary data

Univariate and multivariate predictors of any ICD therapy

	IRR	95%CI	P	aIRR	95%CI
<i>ADVANCE programming</i>	1.26	1.15-1.38	< .001	0.77	0.69-0.86
<i>Age, y</i>	1.02	1.02-1.03	< .001	1.004	100-1.01
<i>Male sex</i>	1.91	1.72-2.12	< .001	1.72	1.53-1.92
<i>LVEF</i>					
≥ 50%	Ref				
30%-50%	2.03	1.81-2.63	< .001	1.71	1.51-1.95
≤ 30%	1.63	1.47-1.81	< .001	1.74	1.52-1.98
<i>Ischemic cardiomyopathy</i>	1.68	1.56-1.82	< .001	1.34	1.22-1.47
<i>Diabetes</i>	0.92	0.91-1.09	.915	--	--
<i>Hypertension</i>	1.09	1.01-1.18	.022	1.01	0.93-1.09
<i>Atrial fibrillation</i>	1.85	1.71-2.01	< .001	1.66	1.52-1.82
<i>Indication (secondary prevention)</i>	3.31	3.05-3.57	< .001	4.12	3.76-4.53
<i>First ICD implantation</i>	0.54	0.46-0.64	< .001	0.82	0.68-0.99
<i>NYHA functional class</i>					
I	Ref				
II	1.01	0.92-1.1	.879	0.91	0.82-1.01
III	1.49	1.34-1.65	.005	1.43	1.25-1.64
IV	3.74	2.55-5.48	< .001	3.61	2.44-5.34
<i>QRS width, ms</i>	1.00	1.00-1.01	.003	0.999	0.99-1.00
<i>Left bundle branch block</i>	1.02	0.93-1.12	.713	--	--
<i>Date of implantation</i>					
2005-2010	Ref				
2010-2016	0.99	0.92-1.08	.930	--	--
<i>Device type</i>					
Single-chamber ICD	Ref				
Dual-chamber ICD	0.84	0.77-0.93	.001	0.91	0.82-1.01
CRT-ICD	1.03	0.94-1.13	.552	1.09	0.96-1.25

95%CI, 95% confidence interval; aIRR, adjusted incidence rate ratio; CRT-ICD, cardiac resynchronization therapy-implantable cardioverter-defibrillator; IRR, incidence rate ratio; LVEF, left ventricular ejection fraction; NID, number of intervals to detect; NYHA, New York Heart Association.

**Table 2 of the supplementary data**

Univariate and multivariate predictors of appropriate ICD shocks

	IRR	95%CI	P	aIRR	95%CI
<i>ADVANCE programming</i>	1.29	1.14-1.48	< .001	1.02	0.88-1.17
<i>Age, y</i>	1	1.00-1.01	.001	0.989	0.99-0.99
<i>Male sex</i>	1.55	1.36-1.79	< .001	1.39	1.19-1.64
<b>LVEF</b>					
≥ 50%	Ref				
30%-49%	1.44	1.23-1.68	< 001	1.32	1.09-1.59
< 30%	1.5	1.30-1.74	< 001	1.59	1.32-1.94
<i>Ischemic cardiomyopathy</i>	1.42	1.27-1.58	< 001	1.27	1.12-1.44
<i>Diabetes</i>	1.09	0.97-1.23	.158	--	--
<i>Hypertension</i>	1.21	1.09-1.35	< 001	1.06	0.94-1.20
<i>Atrial fibrillation</i>	1.7	1.52-1.91	< 001	1.65	1.45-1.88
<i>Indication (secondary prevention)</i>	2.29	2.06-2.56	< 001	3.08	2.71-3.51
<i>First ICD implantation</i>	0.57	0.45-0.72	< 001	0.71	0.55-0.92
<b>NYHA functional class</b>					
I	Ref				
II	1.28	1.13-1.45	< 001	1.34	1.16-1.55
III	1.58	1.37-1.83	< 001	1.92	1.58-2.32
IV	3.11	1.96-4.95	< 001	3.85	2.31-6.41
<i>QRS width, ms</i>	1.00	1.00-1.01	.008	1.002	1.00-1.01
<i>Left bundle branch block</i>	1.06	0.94-1.19	.347	--	--
<b>Date of implantation</b>					
2005-2010	Ref				
2010-2016	1.08	0.97-1.21	.148	--	--
<b>Device type</b>					
Single-chamber ICD	Ref				
Dual-chamber ICD	0.79	0.69-0.90	< 001	0.84	0.72-0.97
CRT-ICD	0.97	0.85-1.10	.608	0.81	0.67-0.98

95%CI, 95% confidence interval; CRT-ICD, cardiac resynchronization therapy-implantable cardioverter-defibrillator; IRR, incidence rate ratio; aIRR, adjusted incidence rate ratio; LVEF, left ventricular ejection fraction; NID, number of intervals to detect; NYHA, New York Heart Association.

**Table 3 of the supplementary data**

Univariate and multivariate predictors of recurrent inappropriate ICD shocks

	IRR	95%CI	P	aIRR	95%CI
<i>ADVANCE programming</i>	0.74	0.59-0.94	.014	0.66	0.52-0.85
<i>Age, y</i>	0.992	0.99-1.00	.005	0.991	0.98-1.00
<i>Male sex</i>	1.26	1.06-1.48	.007	0.74	0.60-0.89
<b>LVEF</b>					
≥ 50%	Ref				
30%-49%	1.57	1.26-1.97	< .001	2.12	1.64-2.74
< 30%	0.89	0.71-1.11	.295	1.34	1.04-1.78
<i>Ischemic cardiomyopathy</i>	1.04	0.88-1.23	.625	--	--
<i>Diabetes</i>	1.35	1.13-1.62	.001	1.62	1.31-1.99
<i>Hypertension</i>	0.82	0.69-0.96	.015	0.74	0.60-0.89
<i>Atrial fibrillation</i>	1.49	1.25-1.78	.001	1.78	1.47-2.15
<i>Indication (secondary prevention)</i>	1.26	1.06-1.48	.007	1.09	0.90-1.32
<i>First ICD implantation</i>	3.85	1.80-8.24	.001	2.97	1.37-6.48
<b>NYHA functional class</b>					
I	Ref				
II	0.74	0.61-0.88	.001	0.81	0.66-1.01
III	0.48	0.37-0.63	.001	0.7	0.50-0.97
IV	6.24	3.71-10.49	< .001	8.94	5.06-15.80
<i>QRS width, ms</i>	0.989	0.99-0.99	< .001	0.992	0.99-1.00
<b>Date of implantation</b>					
2005-2010	Ref				
2010-2016	1.09	0.93-1.29	.293	--	--
<b>Device type</b>					
Single-chamber ICD	Ref				
Dual-chamber ICD	0.91	0.75-1.10	.34	0.91	0.74-1.12
CRT-ICD	0.48	0.38-0.59	< .001	0.76	0.55-1.05

95%CI, 95% confidence interval; CRT-ICD, cardiac resynchronization therapy-implantable cardioverter-defibrillator; IRR, incidence rate ratio; aIRR, adjusted incidence rate ratio; LVEF, left ventricular ejection fraction; NID, number of intervals to detect; NYHA, New York Heart Association.

**Figure 1 of the supplementary data.** Tip card provided to Medtronic technical consultants providing support to physicians performing ICD implants and generator changes. Recommended settings for single-chamber ICDs.

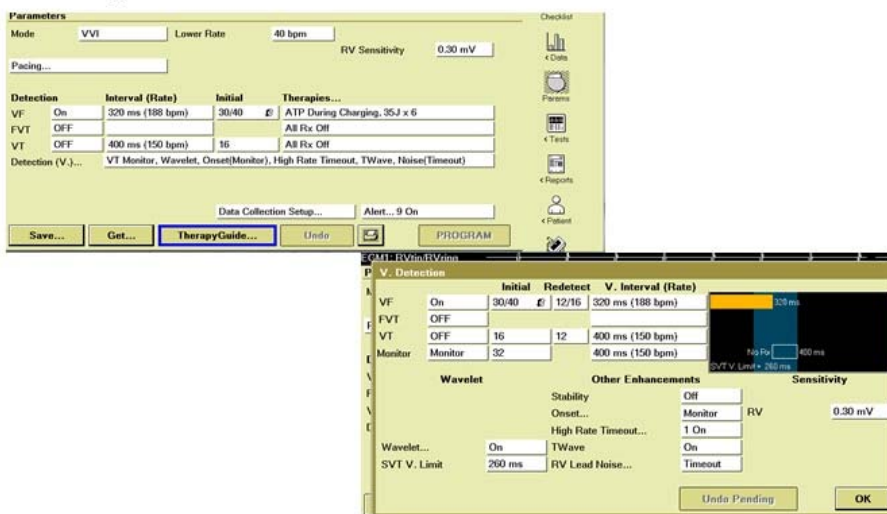
### ICD programming recommendations to avoid unnecessary therapy

*The use of long detection intervals, combined with ATP during capacitor charging, reduces unnecessary therapy by 37% and inappropriate shocks by 45% without increases in mortality or syncope rates.*

**VF cut-off < 320ms. NID :30/40 . ATP during charging.**

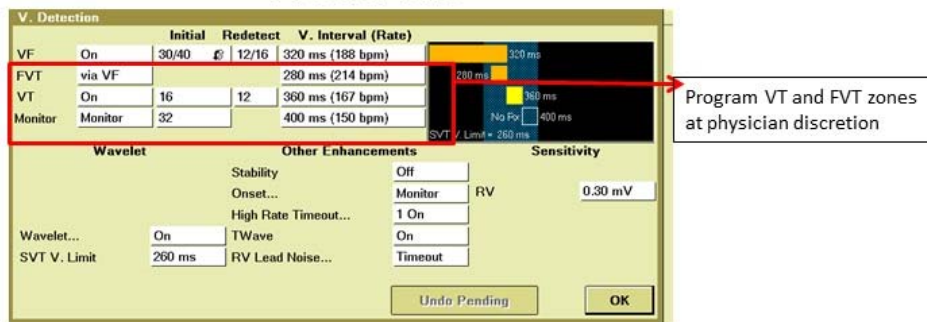
**Single chamber ICD**

**Primary prevention**



**Secondary prevention**

**FVT & VT zone**



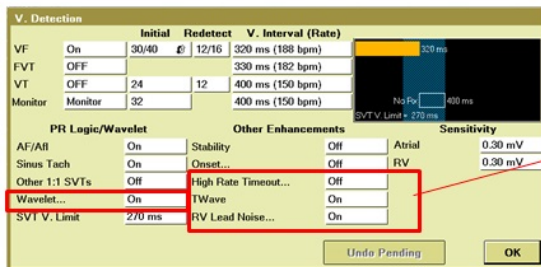
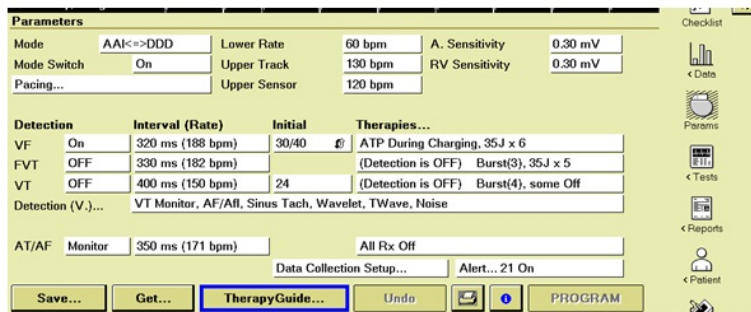
ATP, antitachycardia pacing, FVT, fast ventricular tachycardia, ICD, implantable cardioverter-defibrillator, NID, number of intervals to detect, SVT, supraventricular tachycardia, VF, ventricular fibrillation, VT, ventricular tachycardia.

**Figure 2 of the supplementary data.** Tip card provided to Medtronic technical consultants providing support to physicians performing ICD implants and generator changes. Recommended settings for dual-chamber ICDs.

**Dual chamber ICD**

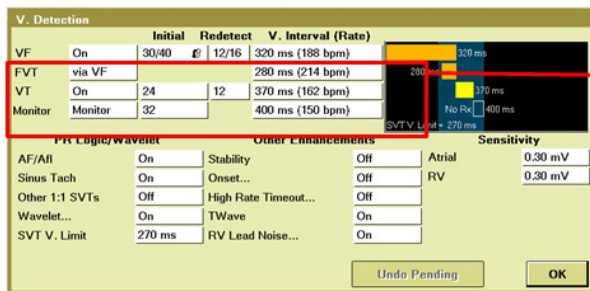
**VF cut-off < 320ms. NID :30/40 . ATP during charging.**

**Primary prevention**



SVT discriminators available from Protecta series and onwards

**Secondary prevention**



Program VT and FVT zones at physician discretion

ATP, antitachycardia pacing, FVT, fast ventricular tachycardia, ICD, implantable cardioverter-defibrillator, NID, number of intervals to detect, SVT, supraventricular tachycardia, VF, ventricular fibrillation, VT, ventricular tachycardia.