OPPORTUNISTIC SCREENING AT PRE-ASSESSMENT CLINICS FOR UPGRADE/DOWNGRADE OF CARDIAC DEVICES

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AIMS AND OBJECTIVES

- Aims:
  To explore the issues of current practices surrounding routine elective replacement interval (ERI) and box change procedures

- Objectives:
  To ascertain the benefits of Opportunistic Screening to maximise the potential for therapeutic device therapy.
• Conventional right ventricular pacing can induce left ventricular deterioration\textsuperscript{1}

• Bi-ventricular pacing has been proven beneficial for improving pacing-induced left ventricular dyssynchrony\textsuperscript{2,3}

• Current 2013 ESC guidelines recommend upgrading existing cardiac devices to bi-ventricular devices where appropriate\textsuperscript{4}

• NICE 2014 changed criteria in the UK for ICD implants to include non-ischaemic cardiomyopathies

• Growing consensus of opinion that assessment for downgrade of CRT-D to CRT-P or appropriateness of continued ICD therapy should be performed prior to box change\textsuperscript{5}
WHAT WE WANTED TO CHANGE

- Two PPM patients attended for routine box change
- Known to heart failure team with moderate – severe LVSD
- Within 1 year of box change had hospital admissions with heart failure, high right ventricular pacing
- Additional procedure risks infection and complications
- Upgraded to CRT-P

- One elderly patient, poor historian attended to ICD box change
- Had admission under respiratory with DNAR status and not for ventilation
- No family present – sent home
- OP clinic discussion with family, GP and community matron input on appropriateness of ICD
- Continued with box change
- Discussion should have happened before initial admission for box change
Cardiac Physiologists placed on waiting list for box change when identified elective replacement interval

- No structured clinical assessment prior to box change.

- Box changed by registrar

- Direct from listing to labs.

Now

- Consideration of appropriateness of device using a structured care pathway.

- Cardiac Physiologist places on waiting list

- Attendance at Pre-Admission clinic prior to box change procedure.

- Discussion at Multi-disciplinary team meeting if needed

- If required listed for change in device therapy (downgrade or upgrade)

- Or box changed as previously
**BOX CHANGE PATHWAY**

**PPM**

1. Clinically assess for HF symptoms
   - Recent admissions
   - NYHA/fluid retention
   - If no recent ECHO – consider BNP/ECHO

2. Consider Upgrade to CRT therapy
   - Vent. Pacing>50%
   - Recent ECHO ? Mod/Sev + >2yrs?
   - If YES, Re-ECHO
   - If EF<35%
   - Assess NYHA/QRS/BBB according to NICE 2014 guidelines.
   - If <30% - consider CRT-D

3. Assess appropriateness of therapy
   - Consider frailty/severe cog. impairment
   - Consider pacing indications/ underlying rhythm
   - Consultant review for GA considerations/ NO BOX CHANGE

**CRT-P**

1. Consider Upgrade to CRT-D if:
   - Meets NICE 2014 guidelines
   - Life expectancy >1yr
   - Good cognitive ability
   - Consider frailty/quality of life
   - Patient preference
   - Re-ECHO if required

2. Assess appropriateness of therapy
   - Consider frailty/severe cog. impairment
   - Consider pacing indications/ underlying rhythm
   - Consultant review for GA considerations/ NO BOX CHANGE

**CRT-D**

1. Consider downgrade if:
   - Life limiting illness/ life expectancy <1yr
   - Severely impaired cognitive function
   - Patient preference
   - Re-ECHO if required

2. Assess appropriateness of therapy
   - Consider frailty/severe cog. impairment
   - Consider pacing indications/ underlying rhythm
   - Consultant review for GA considerations/ NO BOX CHANGE

**ICD**

1. Consider appropriateness of ICD
   - Life expectancy <1yr
   - Recent admission with DNAR
   - Severely impaired cognitive function
   - Consultant review to consider withdrawal of therapy

2. Clinically assess for HF symptoms
   - ECHO>1yr + NYHA ≥II?
   - Fluid retention?
   - If YES- Refer ECHO

3. Consider Upgrade to CRT-D if:
   - EF<35%
   - ECG (assess QRS/BBB)
   - Any pacing indications?

**NO - TCI**

Any changes to therapy?

**YES – refer MDT for discussion**

Box change required – refer to PAC
METHODS: AUDIT OF RESULTS

- 74 patients prospectively identified between Oct 2015-Jan 2017
- Data retrieved from Trust electronic records
- Manual input onto Microsoft Excel Database
74 patients identified for inclusion

- 58 (78%) were referred for box change & seen at PAC with no prior clinical assessment for appropriateness of device therapy:
  - 93% listed routinely for box change
  - 5% identified as eligible for upgrades at PAC
  - 5% considered for therapy downgrades at PAC

- 16 (22%) were referred following Cardiology Assessment of which:
  - 18% listed routinely
  - 86% were identified for device therapy upgrades
  - None required therapy downgrades

<table>
<thead>
<tr>
<th>74 Identified</th>
<th>Listed routinely for ERI</th>
<th>Eligible for Device Upgrade</th>
<th>Considered for therapy downgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>58 Referred to PAC box change assessment with no clinical review</td>
<td>54 (93%)</td>
<td>3 (5%) – Identified at PAC</td>
<td>3 (5%) – Identified at PAC</td>
</tr>
<tr>
<td>16 Referred for box change with Cardiology clinical assessment prior to PAC</td>
<td>2 (18%)</td>
<td>14 (86%)</td>
<td>0 (0%)</td>
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56 patients listed routinely for device ERI recommendations

- Interventions at PAC
  - 21% required additional interventions of these
    - 13% required ECHO’s to assess LV function
    - 9% required Consultant/MDT review for appropriateness of ICD therapy (inc. downgrades)
    - 5% required Consultant/MDT review for appropriateness of device therapy
    - 7% had their procedures delayed for additional assessments
WHAT CHANGED THIS YEAR

- 87 year old attended box change PAC for CRT-D box change
- Original indication severe LVSD and primary prevention ICD
- Biventricular pacing 100%
- No ICD therapies delivered since implant
- Attended PAC with a preferred care and DNAR community documentation
- Patient preference to not have defibrillator
- Frail otherwise well. No heart failure admissions
- MDT discussion Options:
  - Do nothing – let battery deplete and leave
  - Box change to CRT-D
  - Box change to CRT-P

Outcome: Discussion with GP, patient and family: at box change agreed to down grade device to CRT-P
CONCLUSION

- Majority of patients listed for box change procedures are referred routinely without any structured clinical assessments.

- Opportunistic screening following routine referrals can help to maximise beneficial therapy upgrades.

- Early assessment can prevent unnecessary delays to care by avoiding issues on day of procedure, reduces inappropriate procedures (ie: box change when change in device needed) and improved patient experience.

- Larger comparison studies required to further support the benefits of this intervention.

- Pre-admission clinics offer the opportunity to review the patient’s management.
References:


