What INTERMACS Patient Profile is this? 1, 2, or 3: Case Studies

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INTERMACS profiles and modifiers: Heterogeneity of patient classification and the impact of modifiers on predicting patient outcome

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Learning Objectives

- Identify correct Intermacs Patient Profiles;
- Describe how to code clinically staged cases;
- Recognize the various differences in the Intermacs Patient Profiles.
Risk Assessment: The Ideal

Peak VO₂: With / Without Beta Blockers

## INTERMACS Profiles

<table>
<thead>
<tr>
<th>ADULT PROFILES</th>
<th>Current CMS - DT Functional Indication</th>
<th>IV INO*</th>
<th>Official Shorthand</th>
<th>NYHA CLASS Assumed</th>
<th>Modifier option</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERMACS LEVEL 1</td>
<td>Met</td>
<td>X</td>
<td>“Crash and burn”</td>
<td>IV</td>
<td>TCS A</td>
</tr>
<tr>
<td>INTERMACS LEVEL 2</td>
<td>Met</td>
<td>X</td>
<td>“Sliding fast” on inotropes</td>
<td>IV</td>
<td>TCS A</td>
</tr>
<tr>
<td>INTERMACS LEVEL 3</td>
<td>Met</td>
<td>X</td>
<td>“Stable” continuous inotrope dependent</td>
<td>IV</td>
<td>TCA if hosp FF if home A</td>
</tr>
<tr>
<td>INTERMACS LEVEL 4</td>
<td>+ Peak $VO_2 \leq 12$</td>
<td>Resting symptoms on oral therapy at home</td>
<td>AMB</td>
<td>IV</td>
<td>FF A</td>
</tr>
<tr>
<td>INTERMACS LEVEL 5</td>
<td>+ Peak $VO_2 \leq 12$</td>
<td>“Housebound”, Comfortable at rest, symptoms with minimum activity ADL</td>
<td>AMB</td>
<td>IV</td>
<td>FF A</td>
</tr>
<tr>
<td>INTERMACS LEVEL 6</td>
<td></td>
<td>“Walking wounded” - ADL possible but meaningful activity limited</td>
<td>IIIB</td>
<td></td>
<td>FF A</td>
</tr>
<tr>
<td>INTERMACS LEVEL 7</td>
<td></td>
<td>Advanced Class III</td>
<td>III</td>
<td></td>
<td>A only</td>
</tr>
</tbody>
</table>

* Intravenous inotropic therapy only approved for refractory Class IV s

Vasopressors, second inotrope, nitroprusside

Inotropes or TCS

INTERMACS Modifiers

A: Arrhythmia – Profiles 1-7, recurrent VT, ICD shocks, usually more than twice in a week

TCS: Temporary Circulatory Support – Profiles 1-3, IABP, ECMO, Impella, TandemHeart, Centrimag

FF: Frequent Flyer – Profiles 3-6, at least two admissions in the past 3 months or three in the past 6 months
INTERMACS Profiles in HF

Death/VAD/Tx at 1 year

INTERMACS 4: 40%
INTERMACS 5: 36%
INTERMACS 6: 26%
INTERMACS 7: 15%

p < 0.001

Lala, A, Shah, P, et al. American Heart Association 2018
Post-LVAD Survival

Who Assigns INTERMACS Profile at your Institution?

- Cardiologist: 28%
- Surgeon: 27%
- Card or Surgeon: 19%
- Research Coord.: 15%
- VAD Coord: 10%
- Other: 2%
Scenario #1

56 year old male with chronic non-ischemic systolic heart failure admitted from clinic with NYHA class IIIB-IV symptoms and 20lb weight gain on 100 mg of torsemide. **Not on home inotropes. 3rd CHF admit in 6 months.** Baseline Cr 1.0 mg/dL. Admit Cr 1.5, ALT 20, INR 1.0. Currently on non-ICU floor on 0.125 mcg/kg/min milrinone and Lasix 10 mg/hr gtt. On day of operation, **Cr 1.1 mg/dL, ALT 28 IU/L, INR 1.0.** Swan on 0.125 mcg/kg/min milrinone following hemodynamics: RA 9, PA 65/21, PCWP 20, cardiac index 2.3.
Scenario #1 – Polling Question

1. Profile 2
2. Profile 3
3. Profile 4
4. Profile 5
5. Profile 6

Also consider FF modifier
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Poll: Scenario #1
Scenario #2

56 year old male with acute non-ischemic biventricular heart failure in shock on admission who was placed on ECMO then bilateral Centrimags. Currently, patient is in the ICU on ventilator support and stable on vasopressin 0.02 units/min, milrinone 0.5 mcg/kg/min, and amiodarone. His mean arterial pressure is 77 mmHg and his heart rate is 110 bpm. He is making urine with a Cr of 1.2 mg/dL (baseline 1.5), ALT 33, INR 1.1.
Scenario #2 – Polling Question

1. Profile 1 – no TCS
2. Profile 2 - TCS
3. Profile 2 – no TCS
4. Profile 1 - TCS
5. Profile 3 - TCS
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Poll: Scenario #2
Scenario #3

56 year old male with chronic non-ischemic heart failure (EF <10%) admitted with 20lb weight gain, nausea and vomiting with **SBP 83/68 and HR 120** bpm. He is on 100 mg twice daily torsemide at home. **Not on home inotropes.** Currently, patient is in the ICU on an **IABP on vasopressin 0.04 units, milrinone 0.5 mcg/kg/min, dobutamine 5 mcg/kg/min and levophed 12 mcg/min.** His blood pressure is 85/65 mmHg and his heart rate is 125 bpm. Swan numbers: **cardiac index 1.5 mmHg, RA 14, Wedge pressure 27, PA 53/30.** He is making urine with a lot of IV diuretics. Day of operation: **Cr 1.7 mg/dL** (1.0 baseline), **INR is 1.5** (no warfarin), **ALT 100.** He is **NOT vented.**
Scenario #3 – Polling Question

1. Profile 1
2. Profile 2
3. Profile 3
4. Profile 4
5. Profile 5
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Poll: Scenario #3
Scenario #4

56 year old male with chronic ischemic systolic heart failure admitted from home for scheduled VAD implant. Discharged 2 weeks ago after presenting with 20lb weight gain on 40 mg of lasix with acute kidney injury, creatinine peaked at 1.7 mg/dL. **NOT on home inotropes.** 2nd admit in 3 months. Currently on the tele (non-ICU) floor. Labs day of operation: **ALT 20, INR 0.8, Cr 1.5.** Pre-Op RHC numbers: RA 11, PA 65/28, PCWP 27, cardiac index 1.6.
Scenario #4 – Polling Question

1. Profile 2
2. Profile 3
3. Profile 4
4. Profile 5
5. Profile 6

Also consider FF modifier
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Poll: Scenario #4
Scenario #5

56 year old male with chronic non-ischemic systolic heart failure admitted from EP clinic with 2 ICD shocks for VT, refractory to ATP. Baseline Cr 1.0 increased to 1.5 mg/dL. Currently in the ICU on amiodarone 1mg/hr and Lasix 15 mg/hr gtt. No pressors, IABP, inotropes or ventilator. Labs on day of operation: ALT 90, INR 1.3, Cr 2.1. RHC numbers: RA 20, PA 45/36, WP 32, cardiac index 1.6
Scenario #5 – Polling Question

1. Profile 1
2. Profile 2
3. Profile 3
4. Profile 4
5. Profile 5

Also consider A modifier
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Poll: Scenario #5
Key Takeaways

• Attempt to standardize institutional approach to INTERMACS Profile assignment
• Ideally multidisciplinary / selection committee
• TCS (IABP, ECMO, Tandem, Impella, Centrimag) = Profile 1-3
• Inotropes = Profiles 1-3
• FF = 2 or more admissions in 3 months or 3 or more in 6 months
THANK YOU

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