Improvement of beta-blocker prescribing in heart failure: a cluster-randomized trial (RRP 09-136)

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Background

- Frequency of BB use in HF improved
- Guideline-concordance often not achieved in actual practice
- PBM's VAMedSAFE impacts prescribing through medication safety interventions
- VAMedSAFE has not attempted a therapeutic intervention

Design

- Cluster-randomized trial
- Intervention at pharmacy level
  - Level 1: general information
    site performance
  - Level 2: same, plus lists of patients
  - 6 month intervention
- Follow-up through PBM database
  - 6 month follow-up after first Rx in intervention

IRB

- Stations = “subjects”/ target of randomization
- Station + patients = cluster
- Waiver of consents
- Since station = subject, no station IRB approval needed, per Hines IRB

Eligibility of Clusters

- Station pharmacies: agreement to participate
- Station patients:
  - Had a BB Rx that was discordant with guidelines
  - No attempt at adherence in prior 12 months
  - >=1 CHF admission between 3 and 9 mo prior
  - Ineligible if codes for diastolic HF present

Data sources

- Administrative VA databases
- Primary data collection from pharmacists
  - Facility characteristics
  - Reasons target doses could not be achieved
  - Provider type for Rx
  - Local protocol information
  - Evaluation of intervention

Analysis of Rxs

- Patient analytic eligibility
  - BB Rx fill < end of intervention
  - survived for 6 months after the fill
- Analysis accounted for clusters
  - Proportional odds logistic regression
    - Concordant, With Progress, With Regression
    - Final dose relative to target: >50%, 50%, <50%

Results: Baseline

Characteristic	Level 1 (n=6)	Level 2 (n=6)
Patients at goal or prior attempt (mean)	38%	36%
Patients in intervention cohort (mean)	21	25
Patients in analytic cohort (mean)	16	20
Facilities with heart failure clinic	3	3

Rx changes after 6 months follow-up

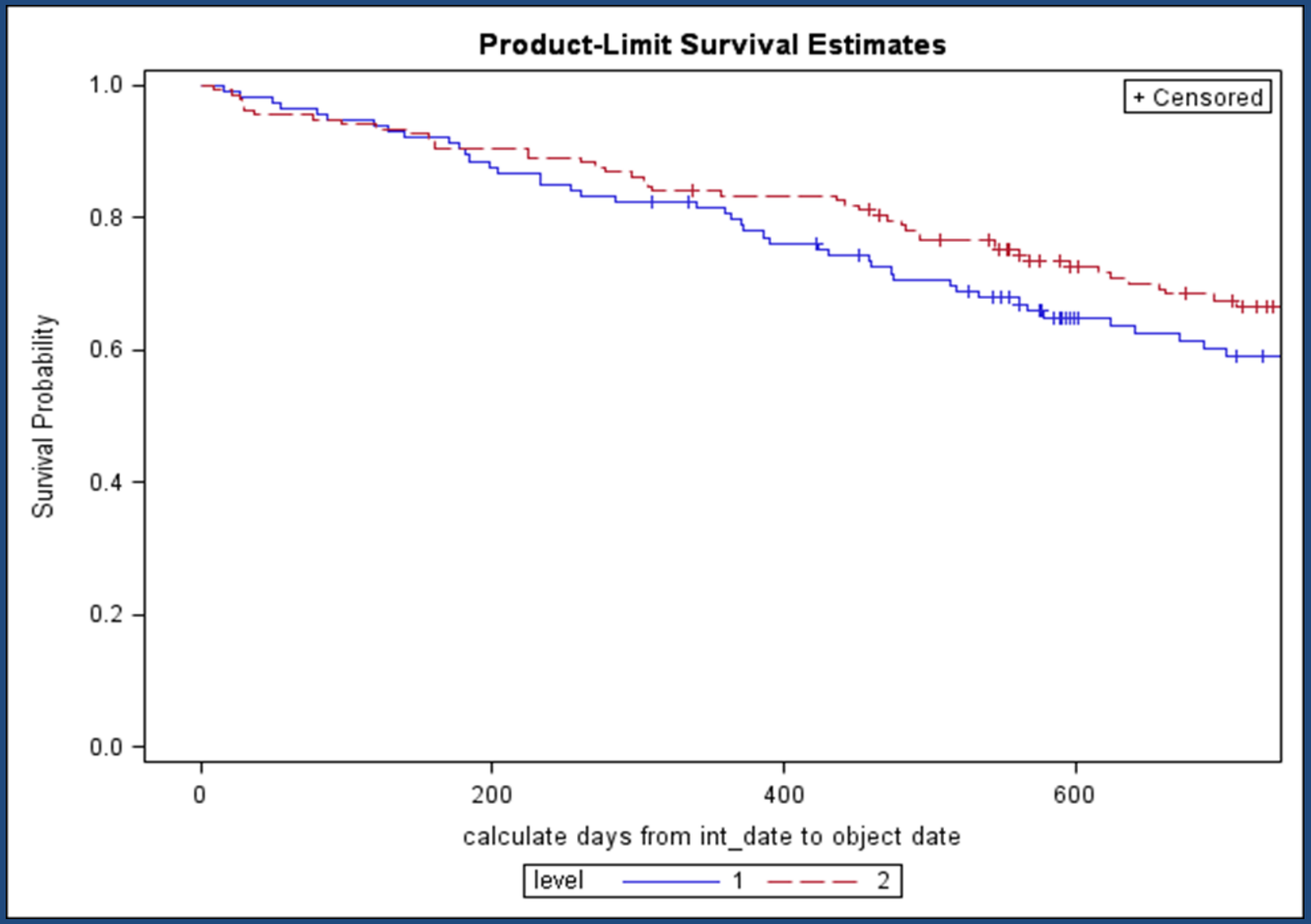
Prescription status	Level 1 (n=98)	Level 2 (n=122)
Concordant with guideline goals, %	4	5
Not at goal but with progression, %	10	18
No change, %	76	72
Not at goal and with regression, %	10	5
Proportional OR (95% CI)	1.9 (1.1 – 3.3)	

Dose distribution of guideline drug at end of follow-up

Main reason goal not achieved (Level 2)

Reason	%
adverse events (bradycardia, hypotension, etc.)	34
non-systolic/preserved ejection fraction HF	32
pharmacist's inability to engage the provider	17
patient logistics	5
insufficient facility resources	5
non-guideline beta-blocker for co-morbidity	4

All-cause mortality



Pharmacist Survey

- Study resources helpful
- Facilitators
  - Staff support
    - titration clinics
    - staff engagement
    - clinical pharmacist‘s role
- Barriers
  - Provider issues
  - Inadequate staffing
  - Protocol (short duration, patient identification)

Discussion

- Meeting guideline goals not common
  - Whellan et al 2001
    - Intensive medication management
    - Patients at target dose: from 6% to 13%
  - Jain et al 2005
    - HF clinic instituted
    - Patients on “medium” or “high” dose: from 18% to 57%

Discussion

- Implications of sub-target dosing
  - Bristow et al 1996
    - Randomized to range of carvedilol doses
    - Suggestive of benefit when 25-50% of target
  - Metra et al 2005
    - Carvedilol superior to metoprolol tartrate @ low doses
  - Wikstrand et al 2002
    - ↓ mortality with metoprolol succinate @ 38% target
  - Heart rate reduction hypothesis

Limitations

- Incomplete identification of non-systolic HF
  - Distracted site resources
  - Use medical records to reduce these in future
- Lack of study-directed local protocol
  - We can not provide details of local protocol
  - Also a strength, as more generalizable

Conclusions

- Target doses unlikely in actual practice
  - Tolerability limits dose
  - PCPs and cardiologists similar
  - Intervention can promote progress
- Need research: Is “progress” beneficial?