Risk Adjustment for Clinicians

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Risk Adjustment Resource

“Home Health Agency Quality Measures: Logistic Regression Models for Risk Adjustment”
Released August 15, 2011
Located at:

Logistic Regression Models

• 22 Functional improvement outcomes
• 11 Functional stabilization outcomes
• 3 Utilization outcomes
• 12 Potentially avoidable events
Improvement Outcomes

- Ambulation / Locomotion*
- Anxiety Level
- Bathing*
- Bed transferring*
- Behavior problem frequency
- Bowel incontinence
- Confusion frequency
- Dyspnea*

*HHCompare Measure

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Improvement Outcomes

- Eating
- Grooming
- Light meal preparation
- Lower body dressing
- Management of oral medications*
- Pain interfering with activity*
- Phone use
- Speech / Language

*HHCompare Measure

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Improvement Outcomes

- Status of Surgical Wounds*
- Toilet transferring
- Toileting hygiene
- Upper body dressing
- Urinary incontinence
- Urinary tract infection

*HHCompare Measure
Stabilization Outcomes

• Anxiety Level
• Bathing
• Bed transferring
• Cognition
• Grooming
• Light meal preparation

Stabilization Outcomes

• Management of oral medications
• Phone use
• Speech / Language
• Toilet transferring
• Toileting hygiene

Utilization Outcomes

• Acute Care Hospitalization*
• Discharged to Community
• Emergency Room use w/out Hospitalization*

*HHCompare Measure
Potentially Avoidable Events

- Discharged to community needing toileting assistance
- Discharged to community needing wound care or medication assistance
- Discharged to community with unhealed Stage II pressure ulcer
- Discharged to community with behavioral problems

Potentially Avoidable Events

- Emergent care for hypo/hyperglycemia
- Emergent care for improper medication administration or medication side effects
- Emergent care for injury caused by fall
- Emergent care for wound infection, deteriorating wound status

Potentially Avoidable Events

- Increase in pressure ulcers
- Substantial decline in 3 or more ADL's
- Substantial decline in management of oral medications
Purpose of Risk Adjustment

- Adjust actual reported values to account for patient case-mix differences among home health agencies
- By adjusting the observed improvement rates for agencies with different types of patients, the resulting displayed value more closely reflects differences in agency quality of care

Definition of Risk Adjustment

- A statistical process that identifies and adjusts for variations in patient outcomes that result from differences in the characteristics of the patient population an agency serves
- Statistically "factors out" (or accounts for) differences in one agency’s patients vs. the reference sample

Risk Adjustment

- For each patient episode of care, a predicted outcome probability is calculated based on patient’s condition at SOC
- Predicted rates are used to adjust the agency’s actual rates
- Predicted and observed outcomes are aggregated across all eligible patients served by HH agencies to obtain national observed and predicted rates
Results of Risk Adjustment

• Levels the playing field for providers with higher acuity, more frail patients
• Allows valid comparison of quality of care between individual agencies and states
• Minimizes possibility outcome differences are due to factors other than care provided
• Accuracy of OASIS assessment and responses is critical in making risk adjustment work

Example

• Patient #1: 89 y.o. w/poor recovery prognosis, circulatory system disease; predicted hospitalization percentage = 65%
• Patient #2: 65 y.o. w/good recovery prognosis, no chronic conditions; predicted hospitalization rate = 5%
• Predicted agency-level hospitalization rate: (65% + 5%)/2 = 35%

Risk Factors

• Definition: a patient condition or circumstance that influences the likelihood of a patient achieving the outcome
• May be a positive or negative influence
• Each risk factor plays a role in the statistical equation for risk adjustment of outcome
• Some risk factors are more significant than others
Risk Factor Basics

- All risk factors are measured at SOC or ROC
- For risk factors with a value of 0 and 1:
  - Value 1 = risk factor present
  - Value 0 = risk factor absent
- For risk factors defined using a scale that has more than two values:
  - Higher values indicate greater impairment or severity of illness

<table>
<thead>
<tr>
<th>Risk Factor @SOC/ROC</th>
<th>Coefficient</th>
<th>Odds Ratio</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cog function-Requires assist in special circumstances</td>
<td>-0.107</td>
<td>0.899</td>
<td>(0.854-0.946)</td>
</tr>
<tr>
<td>Cog function-Requires considerable assist/totally dependent</td>
<td>-0.178</td>
<td>0.837</td>
<td>(0.767-0.913)</td>
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<tr>
<td>Dyspnea: Walking more than 20 feet, climbing stairs</td>
<td>-0.143</td>
<td>1.154</td>
<td>(1.115-1.194)</td>
</tr>
<tr>
<td>Dyspnea: Moderate exertion</td>
<td>0.296</td>
<td>1.344</td>
<td>(1.300-1.389)</td>
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<tr>
<td>Dyspnea: Minimal to no exertion</td>
<td>0.460</td>
<td>1.584</td>
<td>(1.522-1.649)</td>
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<tr>
<td>Eating: Requires set up, intermittent assist or modified consistency</td>
<td>0.021</td>
<td>1.021</td>
<td>(0.993-1.049)</td>
</tr>
<tr>
<td>Eating: Unable to feed self and must be assisted throughout meal</td>
<td>-0.089</td>
<td>0.915</td>
<td>(0.850-0.985)</td>
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<tr>
<td>Eating: Requires tube feedings, or no nutrients orally or via tube</td>
<td>0.284</td>
<td>1.329</td>
<td>(1.388-1.486)</td>
</tr>
</tbody>
</table>
ACH Risk Factors

- 99 risk factors
- 34 separate OASIS items
- 3 Homecare Diagnosis categories
- Key:
  - “+” items show higher acuity level, indicate greater likelihood of patient hospitalization
  - “-” items indicate reduced likelihood of patient hospitalization
  - “L” items are less statistically significant

M0066

- Date of Birth
  - Age 18-64: -
  - Age 75-84: L
  - Age 85 and over: L
  - Age 65-74: not a factor in risk adjustment for ACH

M0100

- Reason for Assessment
  - Response 1 – Start of Care, further visits planned:
  - Responses 3-9: not a factor in risk adjustment for ACH
M0110

• **Episode Timing**
  - Response 2 - Later: + (increases odds of ACH: for patients with response 2, odds of ACH are 1.945 times greater than the odds of ACH for a patient without this response)
  - Response 1 – Early: not a factor in risk adjustment for ACH

M1000

• **Discharged from inpatient setting within past 14 days:**
  - Responses 1-8: +
  - Response NA: no effect on risk adjustment

Diagnosis Categories

• **Neoplasms (140-239):** +
  - Includes personal history (V10.x)
• **Skin/subcutaneous diseases (680-709):** +
• **Acute Orthopedic conditions:** -
M1032

• Risk for Hospitalization
  – Response 2 – Multiple hospitalizations (2 or more) in the past 12 months: +
  – Responses 1 and 3-7: no effect on risk adjustment

M1034

• Patient Overall Status:
  – Response 3 – serious progressive conditions: +++
  – Response 2 – fragile health: ++
  – Response 1 – temporary high health risk: +
  – Response 0 or UK – no effect on risk adjustment

M1100

• Patient Living Situation:
  – Response 1 – Lives alone with round the clock assistance: +
  – Responses 2-15: no effect on risk adjustment
M1200

• Vision:
  — Response 2 – severely impaired: ++
  — Response 1 – partially impaired: +
  — Response 0 – normal vision: no effect on risk adjustment for ACH

M1230

• Speech and Oral (Verbal) Expression of Language:
  — Responses 3-5 - severe difficulty/nonresponsive: -
  — Response 2 – moderate difficulty: -
  — Response 1 – minimal difficulty: +
  — Response 0: no effect on risk adjustment

M1242

• Frequency of Pain Interfering with Activity:
  — Response 4 – all the time: +
  — Response 3 – daily but not constantly: +,L
  — Response 2 – less often than daily: +
  — Response 1 - has pain that doesn’t interfere with activity: +,L
  — Response 0 – has no pain: not a factor on risk adjustment for ACH
M1308

• Total Number of Stage II or higher Pressure Ulcers that are present on assessment:
  – Any pressure ulcers at stage II, III, or IV: +
  – The more pressure ulcers there are, the greater the effect on risk adjustment for ACH

M1334

• Status of Most Problematic (Observable) Stasis Ulcer:
  – Response 3 – not healing: ++
  – Response 2 – early/partial granulation: +
  – Response 1 – fully granulating: L
  – Response 0 – newly epithelialized: never answer

M1340

• Surgical Wound Present:
  – Response 1 or 2 – patient has at least one current surgical wound that is either observable or not observable due to a non-removable dressing: -
  – Response 0 – no current surgical wound: not a factor on risk adjustment for ACH
M1342

• Status of Most Problematic (Observable) Surgical Wound:
  – Response 3 – not healing: +, L
  – Response 2 – early/partial granulation: -
  – Response 1 – fully granulating: -, L
  – Response 0 – newly epithelialized: not a factor on risk adjustment for ACH

M1400

• Dyspnea or Shortness of Breath:
  – Response 3-4 – minimal exertion or at rest: +++
  – Response 2 – moderate exertion: ++
  – Response 1 – walking more than 20 ft and climbing stairs: +
  – Response 0 – no dyspnea: not a factor on risk adjustment

M1410

• Respiratory Treatments:
  – Response 1 – oxygen (intermittent or continuous): +
  – Responses 2-3 – ventilator or CPAP: not factors on risk adjustment for ACH
  – Response 4 - none: not a factor on risk adjustment for ACH
M1620

• Bowel Incontinence Frequency:
  – Responses 3-5 – four to six times a week or more: ++
  – Response 2 – one to three times a week: +
  – Response 1 – less than once a week: +
  – Responses 0, NA, UK – no incontinence, bowel ostomy, unknown: no effect on risk adjustment

M1700

• Cognitive Functioning:
  – Responses 3-4 – requires considerable assist or totally dependent: -
  – Response 2 – requires assist in special circumstances: -
  – Response 1 – requires prompting under stress: L
  – Response 0: not a factor on risk adjustment

M1720

• When Anxious (Reported or Observed within the last 14 days):
  – Response 3 – all the time: L
  – Response 2 – daily but not constantly: +
  – Response 1 – less often than daily: +
  – Response 0, NA: no effect on risk adjustment
M1730

• Depression Screening:
  – Response a)3 – PHQ-2, loss of interest nearly every day in past 2 weeks: +
  – Responses a)2 and a)1 – PHQ-2, loss of interest more than half of days or several days in past 2 weeks: +
  – Response b)1 – PHQ-2, depression several days in past 2 weeks: +
  – Responses 0, 2, 3: no effect on risk adjustment

M1745

• Frequency of Disruptive Behavior Symptoms (Reported or Observed):
  – Responses 1-4: L
  – Response 5: +
  – Response 0 – never: no effect on risk adjustment for ACH

M1800

• Grooming:
  – Response 3 – entirely dependent: +
  – Response 2 – assistance needed: +
  – Response 1 – utensils must be placed in reach: +
  – Response 0 – able to groom self w/ or w/out devices: no effect on risk adjustment
M1810

• Ability to Dress Upper Body:
  – Response 3 – entirely dependent: +
  – Response 2 – needs assist: +
  – Response 1 – needs clothes laid out: L
  – Response 0 – able to dress upper body: no effect on risk adjustment for ACH

M1820

• Ability to Dress Lower Body:
  – Response 3 – entirely dependent: -
  – Response 2 – needs assist: -
  – Response 1 – needs clothes laid out: -
  – Response 0 – able to dress lower body: no effect on risk adjustment for ACH

M1830

• Bathing:
  – Response 5 – with assist at sink: +
  – Response 6 – bathed totally by another: L
  – Response 2 – w/intrmt assist in shower/tub: L
  – Response 4 – independent at sink: L
  – Response 3 – w/supervision in shower/tub: L
  – Response 1 – w/devices in shower/tub: -, L
  – Response 0 – independent in shower/tub: no effect on risk adjustment for ACH
### M1840

**Toilet Transferring:**
- Response 3 – unable to transfer to/from toilet or commode: +
- Response 2 – able to self-transfer to commode: +
- Response 1 – to/from/on/off toilet with human assist: -,L
- Responses 0 or 4 - independent or totally dependent: no effect on risk adjustment

### M1860

**Ambulation / Locomotion:**
- Responses 4-6 – chairfast or bedfast: ++
- Response 2 – two-handed device/human assist on steps: +
- Response 3 – walks only w/assist: +,L
- Response 1 – one-handed device: +,L
- Response 0 – no effect on risk adjustment for ACH

### M1870

**Feeding or Eating:**
- Responses 3-5 – any tube feedings or no nutrients orally or via tube: +
- Response 1 – requires set up, intrmt assist or modified consistency: +,L
- Response 2 – requires assist throughout meal: -
- Response 0 – independent: no effect on risk adjustment
M1880

• Ability to Plan and Prepare Light Meals:
  – Response 2 – unable to prep or reheat delivered meals: +
  – Response 1 – unable to plan/prep light meals regularly: +
  – Response 0 – able to prep all meals/reheat meals: no effect on risk adjustment

M1890

• Ability to Use Telephone:
  – Response 2 – able to answer, difficulty calling: +
  – Response 3 – limited ability to answer/converse: L
  – Response 5 – totally unable to use phone: L
  – Response 1 – uses specially adapted phone: L
  – Response 4 – listens with assist: -
  – Responses 0, NA – independent or no phone: no effect on risk adjustment for ACH

M1900

• Prior Functioning ADL/IADL:
  – Row a, response 2 – dependent in self-care (specifically includes bathing, dressing, grooming and toileting hygiene): +
M2020

• **Management of Oral Medications:**
  - Response 2 – reminders needed: ++
  - Response 3 – unable, must be administered by another person: ++
  - Response 1 – advance dose prep or set up: +
  - Response 0 or NA – independent or no oral meds: no effect on risk adjustment for ACH

M2200

• **Number of Therapy Visits:**
  - 17-20 visits: +
  - 13-16 visits: L
  - 3-12 visits: -
  - 1-2 visits: L
  - 0 visits: no effect on risk adjustment for ACH

**Top Factors that Risk Adjust ACH**

• M0110 Episode Timing: 2-Later episode
• M1034 Overall status: 3-Serious progressive conditions
• M1400 Dyspnea: 3-4-Minimal to no exertion
• M1034 Overall status: 2-Fragile health
• M1032 Risk for hospitalization: 2-Multiple hospitalizations (2+) in past year
Top Factors that Risk Adjust ACH

- M1334 Status of Stasis Ulcer: 3-Not healing
- Homecare diagnosis of Neoplasm
- M1334 Status of Stasis Ulcer: 2-Early/partial granulation
- M1400 Dyspnea: 2-Moderate exertion
- M1870 Feeding/eating: 3-5-requires tube feedings, or no nutrients orally or via tube
- M1410 Respiratory Treatments: 1-Oxygen

Reminder!

- The OASIS responses and diagnoses included in the regression model for risk adjustment of acute care hospitalization are only some of the factors in the risk adjustment models for other outcome measures
- See the “Risk Factors to OASIS Item Crosswalk” in the Appendix of the Logistic Regression Models for Risk Adjustment document

Risk Adjustment Models

- Each outcome measure has its own statistical risk adjustment model
- Risk adjustment methodology is continuously reviewed and updated
- As OASIS data set is revised and re-tested for validity, risk adjustment models are also revised and refined
Patient characteristics

- Clinical Examples
  - Vision
  - Pain
  - Wounds
  - Diagnoses
  - Dyspnea
  - Incontinence
  - ADL/IADL ability

- Non-clinical Examples
  - Age
  - Start of care
  - Discharged from inpatient facility
  - Lives alone
  - Episode timing

OBQI Risk Adjusted Outcome Reports

- “Current” rates are NOT risk adjusted
- “Adjusted Prior” rates are risk adjusted
  - Outcome rate from 12 months prior + adjustment for changes in agency’s case mix over time
- “National Reference” rates are risk adjusted
  - Predicted agency outcome rate for current period + national adjustment factor

Home Health Compare

- All agency and statewide rates are risk adjusted
  - Risk adjusted agency rate: how your agency would have performed if your agency’s patient population was similar to the national patient population
- National rates are actual observed rates
FAQ’s about Risk Adjustment

• Why don’t OBQI outcome numbers match HH Compare rates?
• Why isn’t the “national reference rate” the same on all reports?

How do I know if the risk adjustment for my agency is accurate?

• Check your HHQI benchmarking report for ACH. If actual rate is much lower than risk-adjusted rate, that indicates your patients have a lower acuity level (are less sick) than the average home care patient. If you don’t think this is true, need to investigate further.

How do I know if the risk adjustment for my agency is accurate?

• Review SOC assessments and compare to referral info, visit notes, case conference info, etc. Look for inconsistencies, contradictions, and errors. Include clinicians that have visited the patient if possible. Identify if the responses on the OASIS items that are risk factors for the outcome are correct.
Strategies for Success

• Look at the OASIS items included in the model
• Ensure your agency’s data on these items is as accurate and consistent as possible
• Provide training that focuses on these OASIS items, repeat periodically, update with Q&A’s
• Audit these OASIS items for accuracy, identify clinicians that may need more education