Testing Revisions of the RUG-III System for Non-Therapy Ancillary Cost

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Background

- RUG-III derived to explain directly-measured, staff-related, per diem cost of care
  - Nursing staff
  - Therapy staff
- 1998 – HCFA implements nursing home PPS – incorporating RUG-III
- By 2003, approximately half states have adopted RUG-III for Medicaid payment
- Issue raised: For Medicare patients, how well does RUG-III explain costs of:
  - Staff
  - “Non-therapy ancillary”

Background

- Measuring staff costs
  - RUG derivations (RUG, RUG-II [NYS], RUG-T18, RUG-III) all used self-reported time, with controls
  - Other approaches used Medicare bills (charges converted to costs)

Background

- Since derivation: 9 validation studies of RUG-II and RUG-III
  - Both domestic and international
  - 1986 to 2002
- Overall conclusions:
  - RUGs explains directly-measured staff costs reasonably well
  - *Relative* relationship of groups consistent, despite range of funding levels
  - Across range of venues

Background

- Non-staffing costs have become major policy issue
- Drugs - the BIG issue
- “Non-therapy ancillaries”=
  - Durable medical equipment
  - Respiratory therapy
  - Medical supplies
  - Laboratory, diagnostic testing, x-rays

Background

- Three studies
  - “ABT” – 1999-2000
  - Urban Institute (incl. Fries):
    - “2001”
    - “2003”

Goal

- Adjust RUG-III system to be predictive of all costs, if possible
  - Medicare
  - not reevaluating prediction of staffing costs
  - initially examining ABT recommendations
  - decisions to be made on other approaches
- Cost:
  - Derived from Medicare bills, matched to MDS assessments for same time period

ABT Study

- Results released in 2000
- Sample:
  - 6 states, 1995-1997
  - Medicare
  - N=103,856; Analytic=61,929; Validation=41,927
- MDS (V1) + billed costs (from charges)

ABT Study

- Recommendations:
  - Add new “Rehab+Extensive” category and groups, at top of “hierarchy”
  - Regression-based index drives “add-on” (or many new categories)
  - Alternate: count (of indicators in index) drives “add-on” (or many categories)
  - Indicators were carefully examined for potential gaming

Fries “2001” Validation

- New database
  - Nationwide data – 1999
  - Medicare
  - Matched MDS with billed costs (from charges)
  - Each assessment (multiple assessments per resident)
  - Complexity in timing made match difficult
  - N=270,215

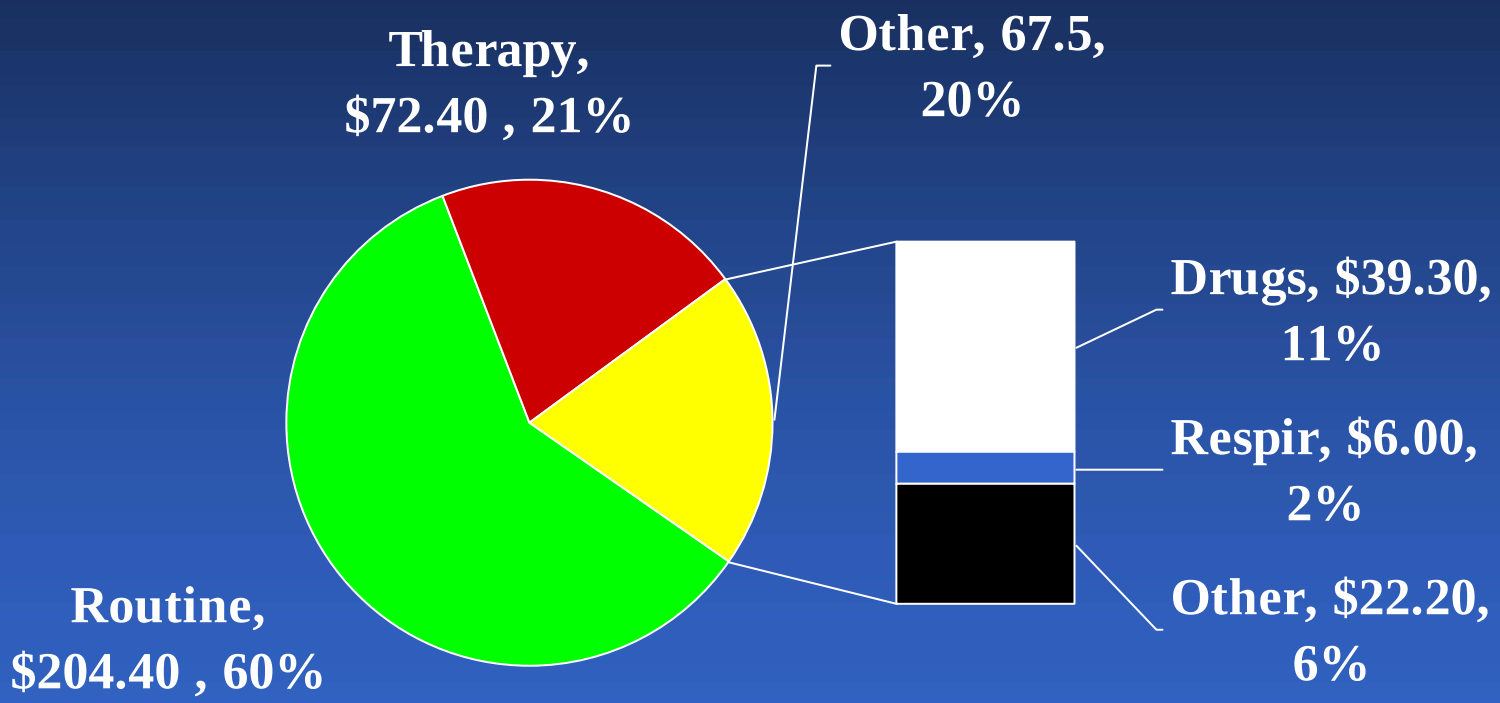
Fries “2001” Validation

- Results:
  - Rehab+Extensive category still appropriate
  - Neither index nor count worked especially well

“2003” Urban Validation Study

- Rederived database
  - Nationwide – 1999 DATAPRO data: cost + MDS
  - Medicare only
  - Admission (5 day) assessment
  - Current work on 10% sample (N=151,569)
- Evaluated:
  - Rehab+Extensive category
  - ABT Index systems
  - Alternative index systems with same variables

Distribution of Costs - Current



NTA Costs – 3 Studies

	ABT	2001	2003
Total NTA	$45.80	$58.14	$67.50
Drugs	23.78	35.81	39.30
Respiratory	14.27	4.50	6.00
Other	8.12	17.83	22.20
Therapy	NA	81.70	72.40

Selected Sample Characteristics

	ABT	2001	2003
Female	65%	61.0%	65.8%
Mean Age		79.6 (9.9)	80.0 (9.7)
Race: White	84%	85.9%	88.1%
Black	9%	8.1%	8.9%

Technical Details

- Cost variables
  - Skewed distribution → used log (cost+1)
  - Some high outliers → truncated at:

    Mean+2*(standard deviation)
  - For total non-therapy ancillary costs, truncation at $444.50 (1.2%)
- RUG-III groups
  - "Standard" RUG-III
  - "Medicare" RUG-III including "ordered therapies"
  - Standard did somewhat better

Technical Details

Caveat emptor:

Results across studies not totally comparable, as differences in:

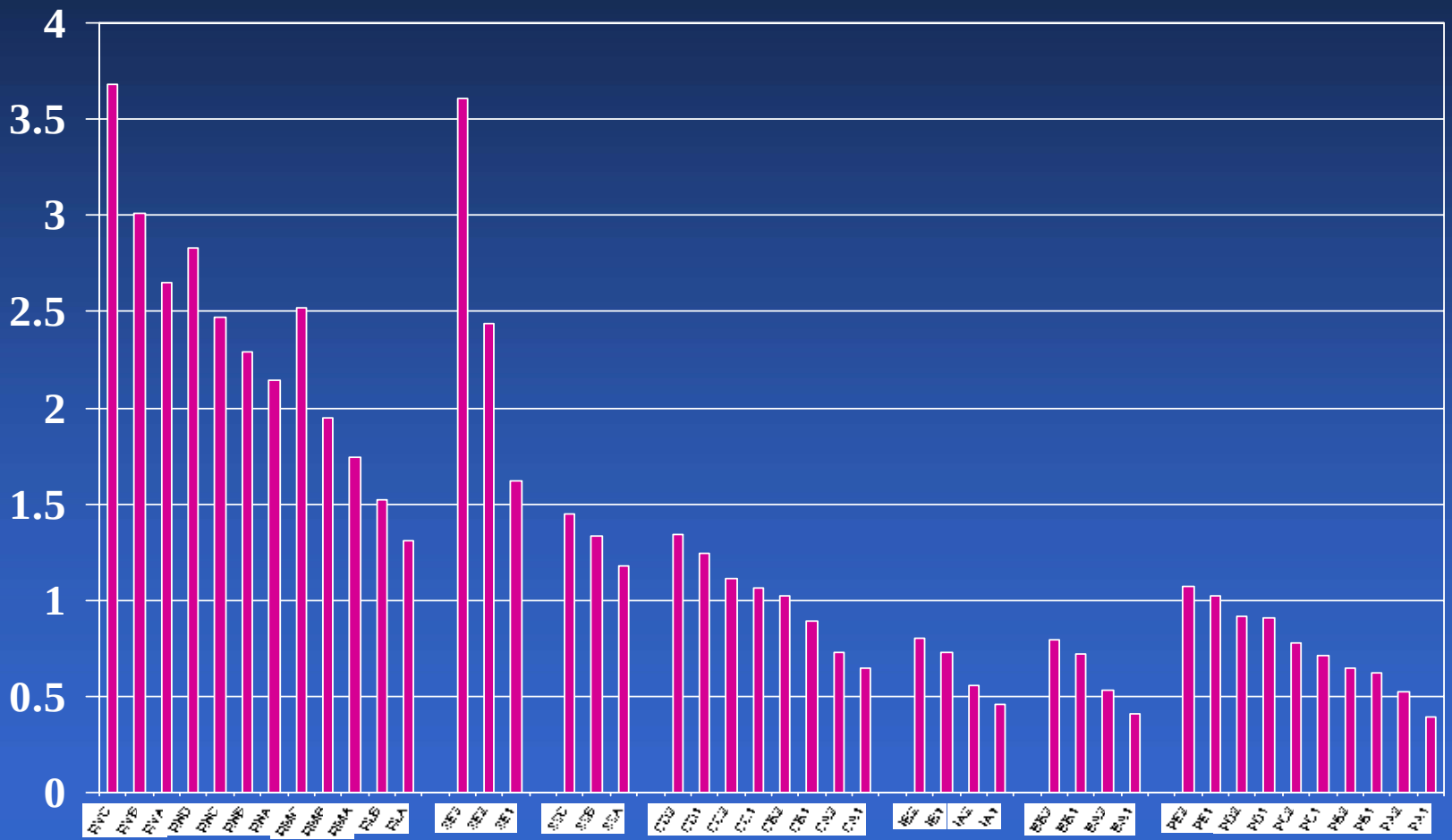
- cost centers
- truncation
- logarithm transforms

However: these differences usually affect variance explanation approximately ±2%

Background – Rehab+Extensive

- RUG-III has 7 clinical categories:
  - Heavy Rehabilitation
  - Extensive care
  - Special care
  - Clinically complex
  - Impaired cognition
  - Behavior problems
  - Reduced physical functions
- Original research results:
  - Worked as hierarchy – qualify for highest group
  - Qualification of multiple categories not predictive
  - Decreasing average resource cost (staff + therapies)

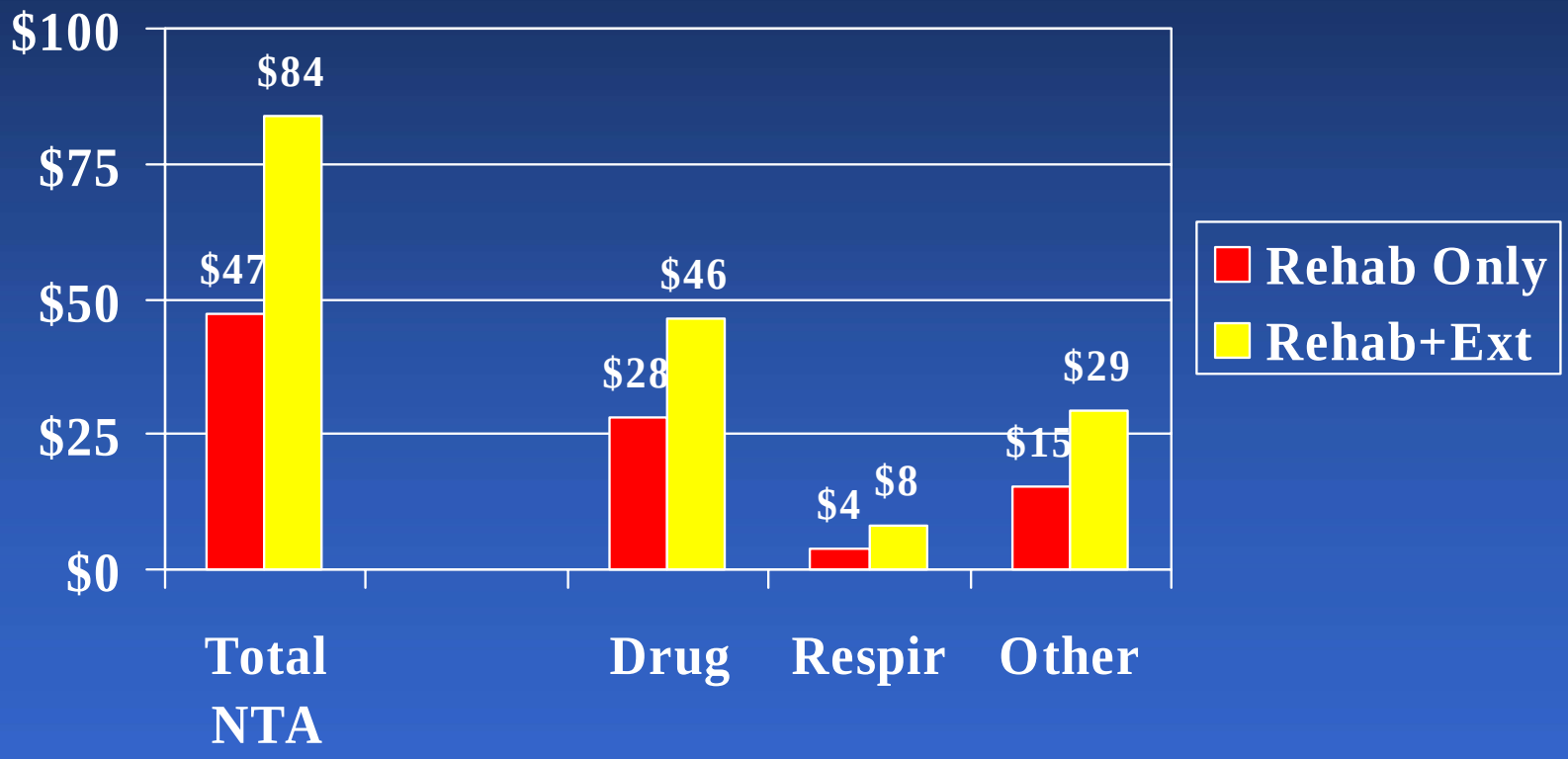
RUG-III Case-Mix Index



Background – Rehab+Extensive

- In general, hierarchy approach worked
- From beginning, issue with (small numbers of) individuals in both Rehab and Extensive categories
- Medicare Grouper has index maximization logic – but issue only with R&E overlap
- ABT group found value in adding 8th (highest) category: combined Rehab+Extensive
- Also some rationale from original staffing study

Average Costs Breaking Rehabilitation Group by Extensive Services



Results – Rehab+Extensive

- Significant difference in mean total cost
- Develop 8th category (at top)
- Split category by ADL (slightly better than Count of Extensive Services)

Results – Rehab+Extensive

	ABT	2001	2003
Variable	Cost	Log(Cost)	Log(Cost)
Variance Explanation			
	ALL	ALL	ALL
RUG-44	4.1%	4.7%	4.1%
RUG-58	8.0%	7.5%	5.9%