The Personal Support Algorithm and Allocation of Personal Support Framework

Chi-Ling Joanna Sinn, BSc, PhD(c), University of Waterloo
Aaron Jones, MSc, OACCAC
Janet McMullan, RN, BScN, MN, OACCAC
John Hirdes, PhD, FCAHS, University of Waterloo

Acknowledgments

- Provincial Assessment Solution Working Group
- University of Waterloo/interRAI Canada

Funding

- Hamilton Niagara Haldimand Brant CCAC
- Ontario Home Care Research and Knowledge Exchange Chair
- Canadian Institutes of Health Research Doctoral Research Award (CJ Sinn)

Outline

- Development and validation
- Use as a decision support tool
  - Supporting care coordinators' decisions
  - Supporting managers and organizations
- Pilot test
- A closer look at patient populations

Development of the

PERSONAL SUPPORT ALGORITHM

Overview

- The Personal Support algorithm provides a framework for allocating personal support
- Ranges from 1 to 6, where a higher group indicates greater need for personal support
- Developed using RAI-HC/interRAI HC and interRAI CHA assessments in Ontario, Canada
  - To support standard assessment and consistent service levels across home and community care

Approach to algorithm development

- Grounded in:
  - Clinical knowledge → incorporate working group feedback from conception to implementation
  - Existing practice → use completed RAI-HC assessments
  - Evidence → apply rigorous statistical procedures and pursue face, convergent, and predictive validity
- Achieve balance between structure and flexibility in decision-making

Data sources

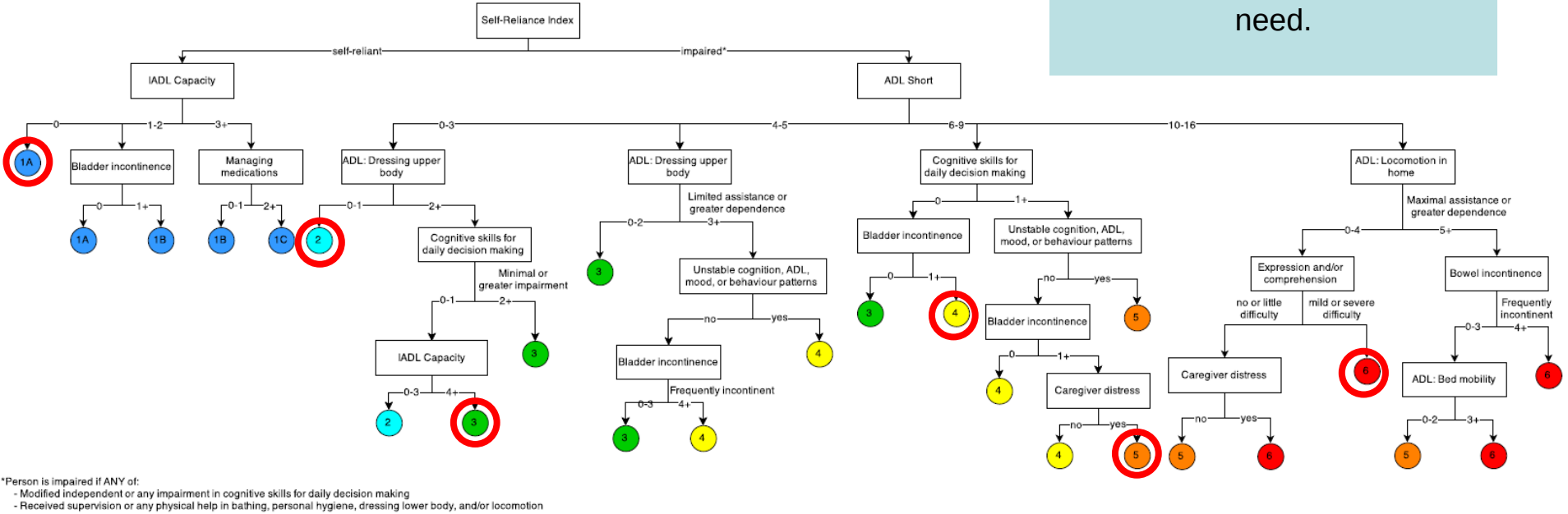
- RAI-Home Care
  - Unique assessments from 14 CCACs (Jan–Dec 2013)
  - Linked to billed service records → personal support services received within 12 weeks of assessment
  - N=128,169
- interRAI Community Health Assessment
  - Unique assessments from three community support agencies (Jan–Dec 2013)
  - N=1,985

Methods

- Identify candidate attributes based on:
  - Working group feedback
  - Bivariate analyses
  - Multivariable linear regression
- Explore candidate decision trees
- Refine selected decision tree
  - Pruning and cross-validation

The Personal Support Algorithm

There are six groups, where 1=lowest need and 6=highest need.

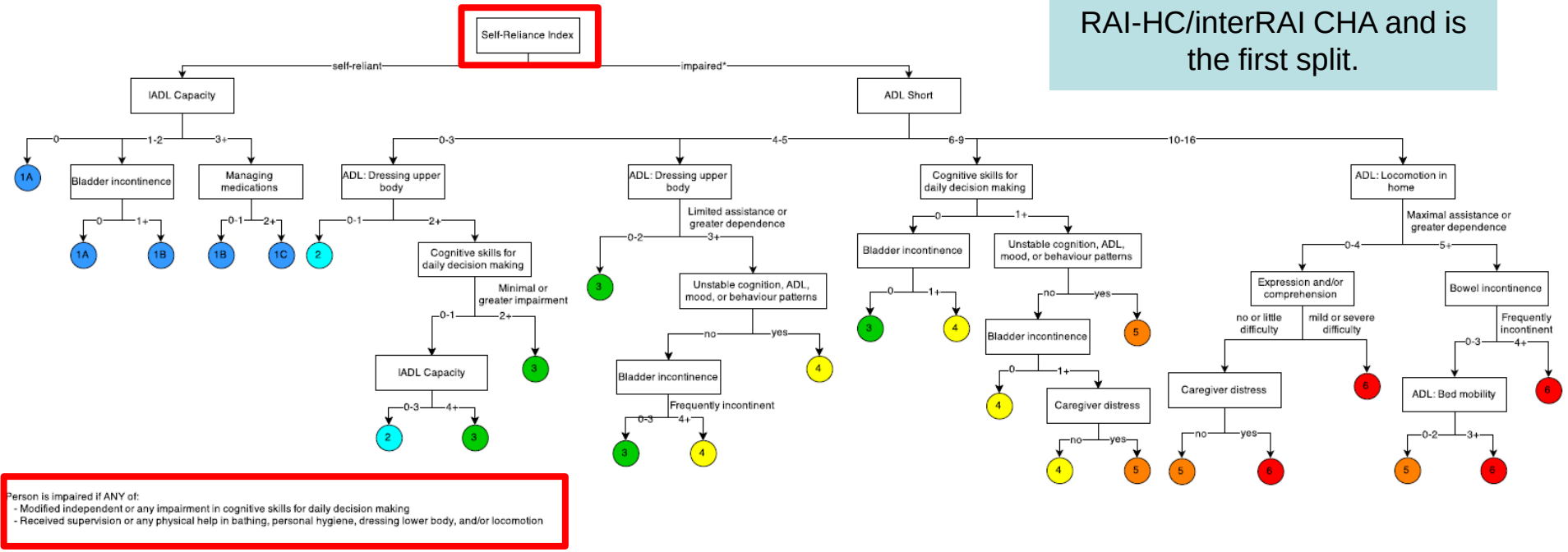


*Person is impaired if ANY of:
- Modified independent or any impairment in cognitive skills for daily decision making
- Received supervision or any physical help in bathing, personal hygiene, dressing lower body, and/or locomotion

*Note: The group will be calculated by software.

The Personal Support Algorithm

Self-Reliance Index is cross walked from interRAI CA to RAI-HC/interRAI CHA and is the first split.



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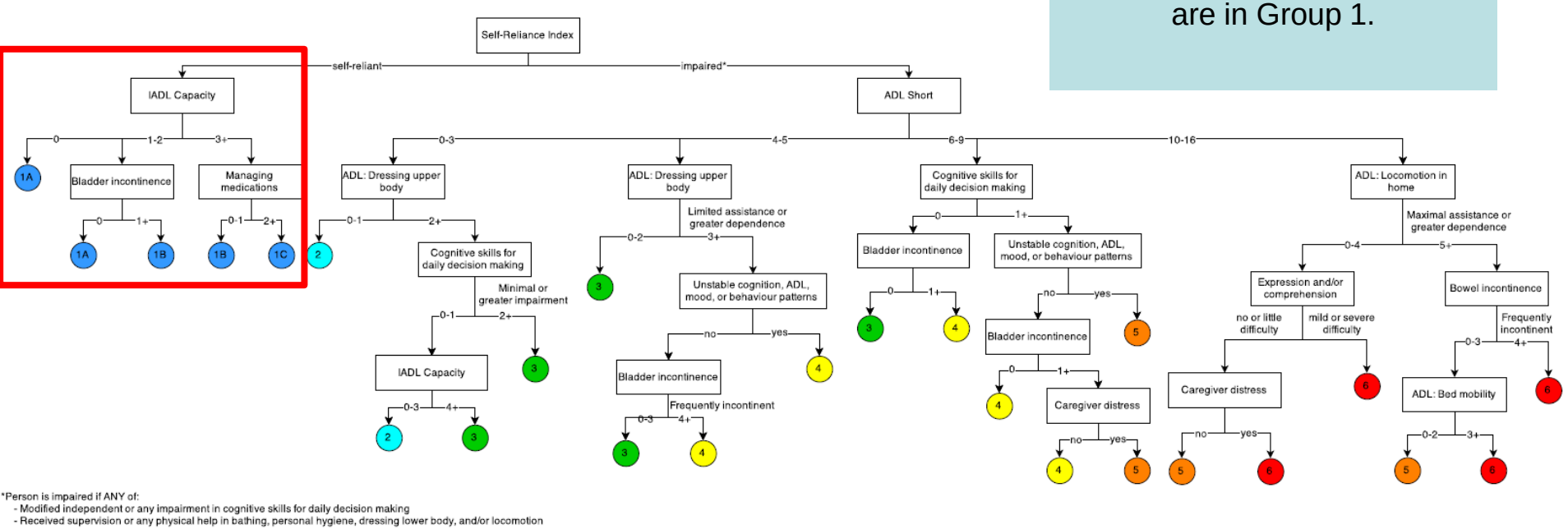
The Personal Support Algorithm

Those who are “self-reliant” are in Group 1.



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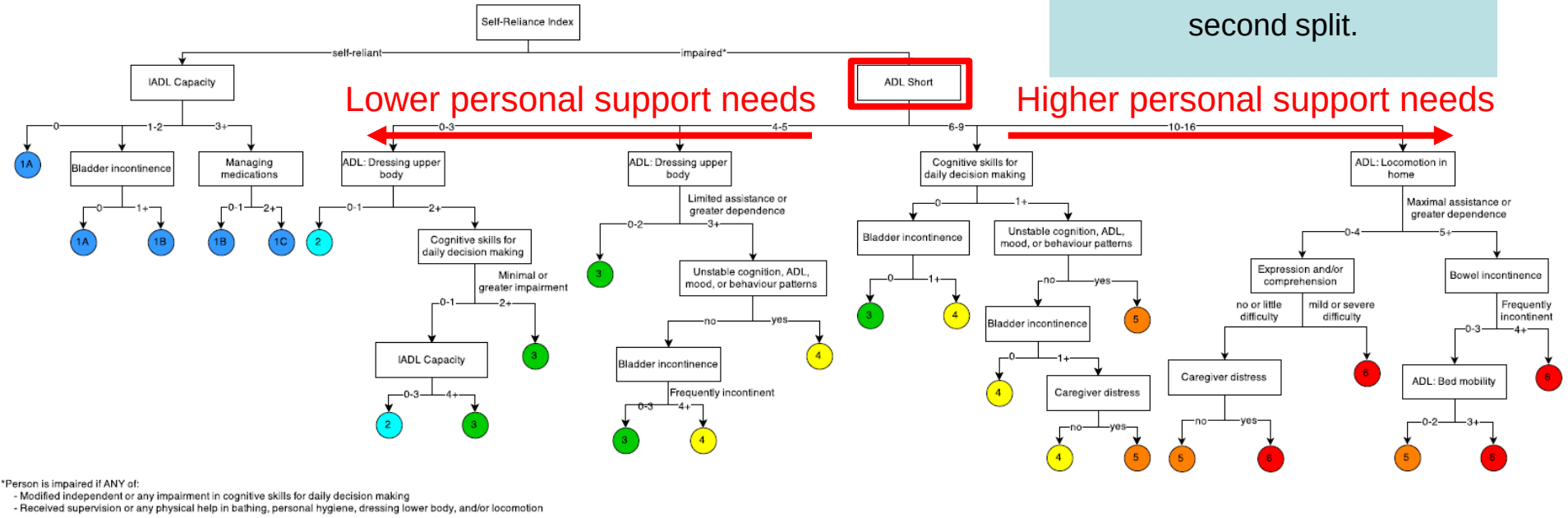
The Personal Support Algorithm

For those who are “impaired”, the ADL Short scale is the second split.



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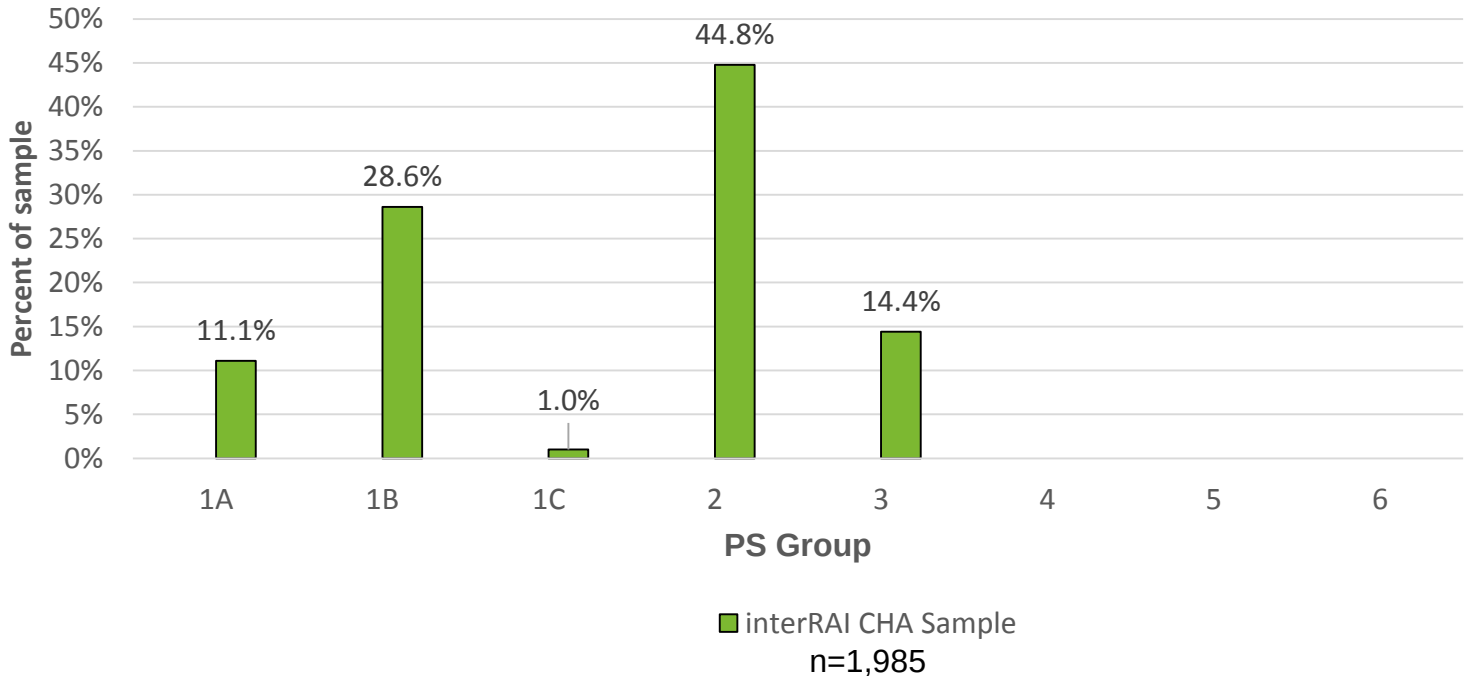
Discussion questions?

Do these patient attributes make sense to you?

Do you have any questions about the decision tree?

Distribution of home and community care patients across groups



Note: CSS patients who have been assessed with the RAI-HC and receive CCAC services are often not assessed with the interRAI CHA.

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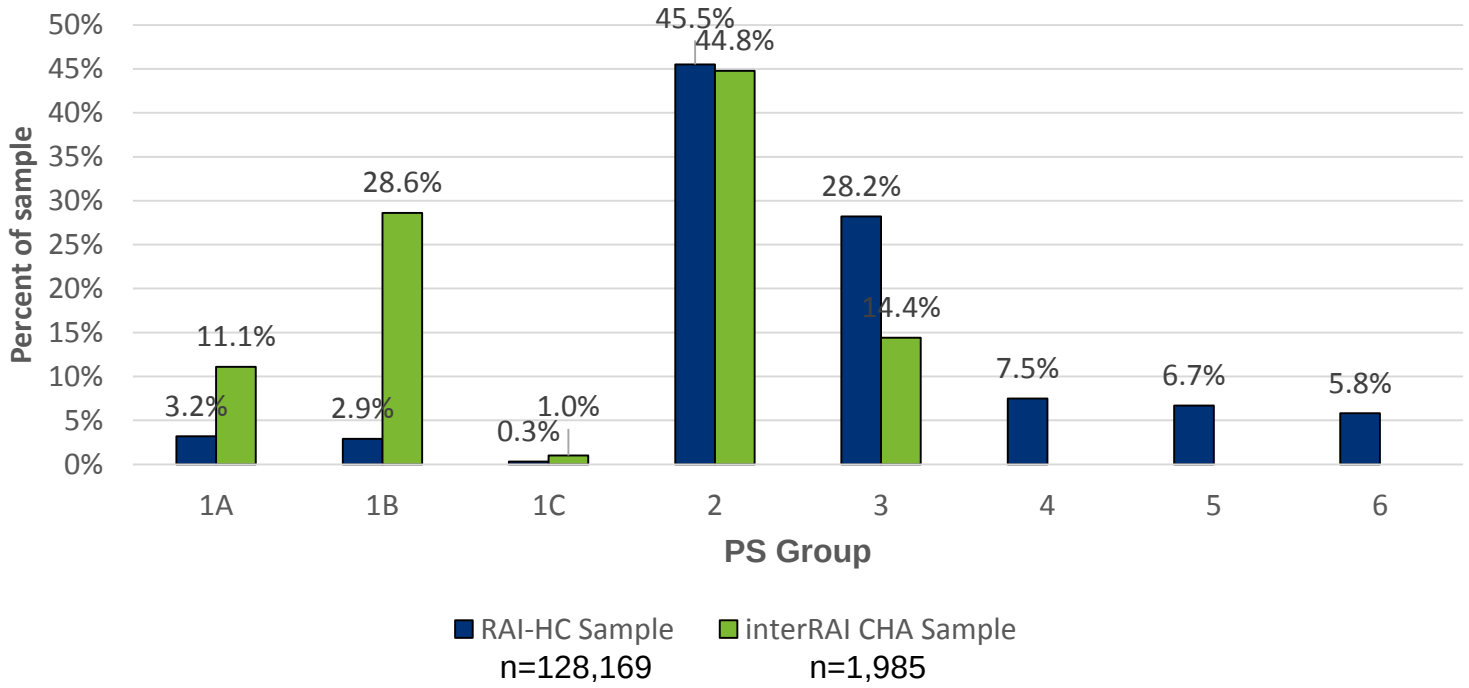


Note: CSS patients who have been assessed with the RAI-HC and receive CCAC services are often not assessed with the interRAI CHA.

Validation of the

PERSONAL SUPPORT ALGORITHM

Distribution of personal support hours across groups (CCACs only)

Group	Hours per week+ (Historical numbers only)					
	Mean*	10%	25%	50% Median	75%	90%
1	0.4	0.0	0.0	0.0	0.0	1.0
2	2.3	0.0	0.9	1.7	2.8	5.2
3	4.8	0.7	1.9	3.4	6.7	11.0
4	6.9	0.9	2.7	5.7	10.2	14.0
5	8.4	1.1	3.5	7.0	13.1	16.3
6	11.3	1.9	6.3	12.0	14.8	20.6

- Personal support hours increase within and between groups

*All group means are significantly different from each other

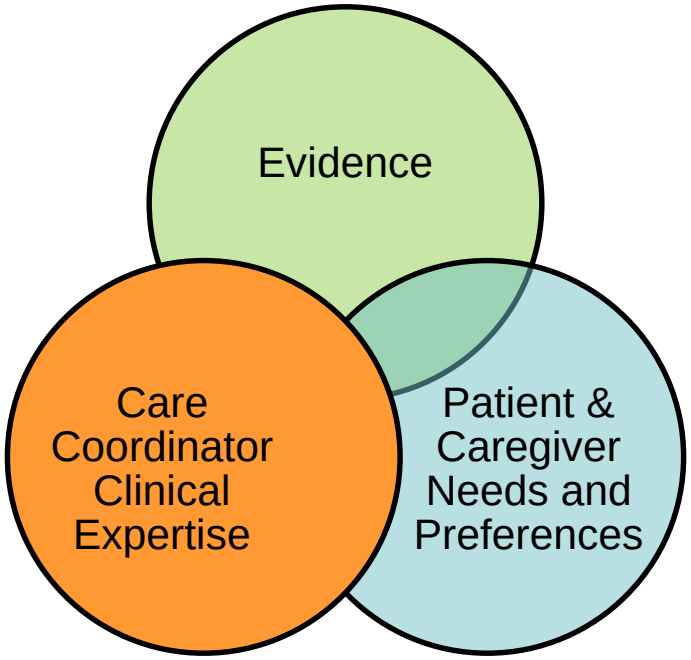
Why this model?

- Patient descriptions make clinical sense
- Group means and distributions are distinct
- Algorithm does well in explaining the differences in hours between patients
  - Explained variance (R^2): 30.8%
  - Range: 32x difference between Group 1 and 6

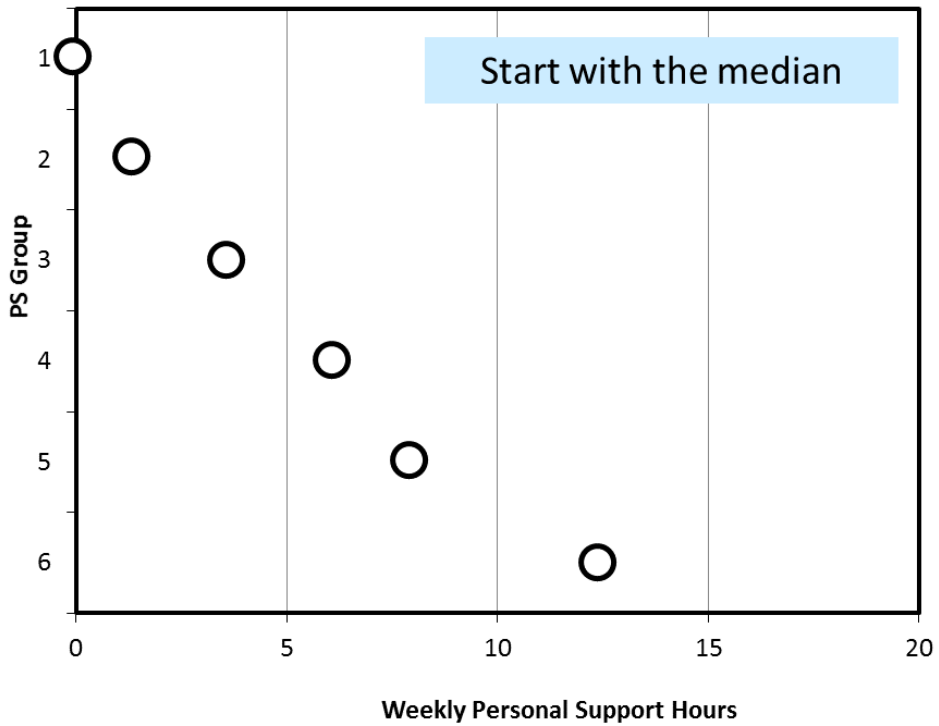
USE AS A DECISION SUPPORT TOOL

Use as a decision support tool

- After completing the RAI-HC/interRAI HC assessment, the software will electronically generate a **group** and **expected hours per week**
- These numbers may be used as anchors to assist in assigning actual hours of personal support

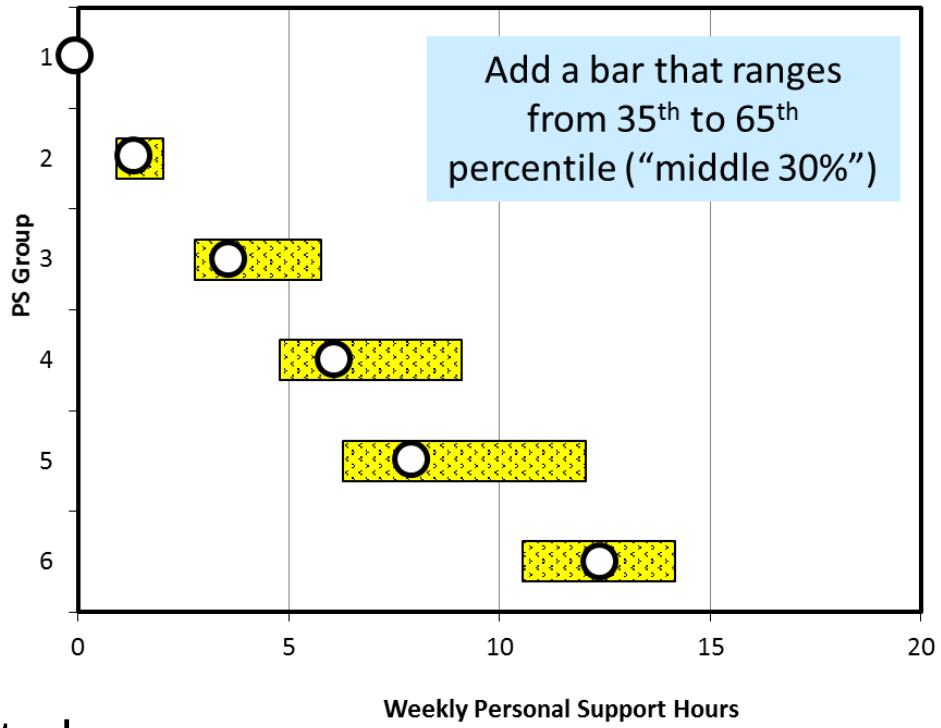


Proposed framework (concept)



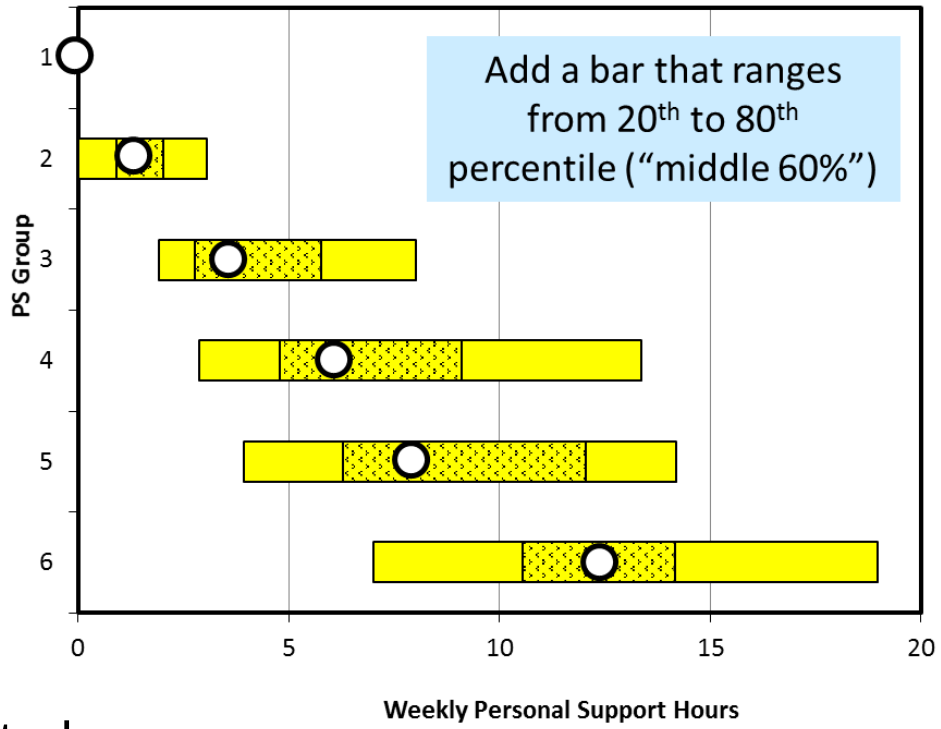
Provide median rather than maximum

Proposed framework (concept)



Provide expected distribution of hours

Proposed framework (concept)



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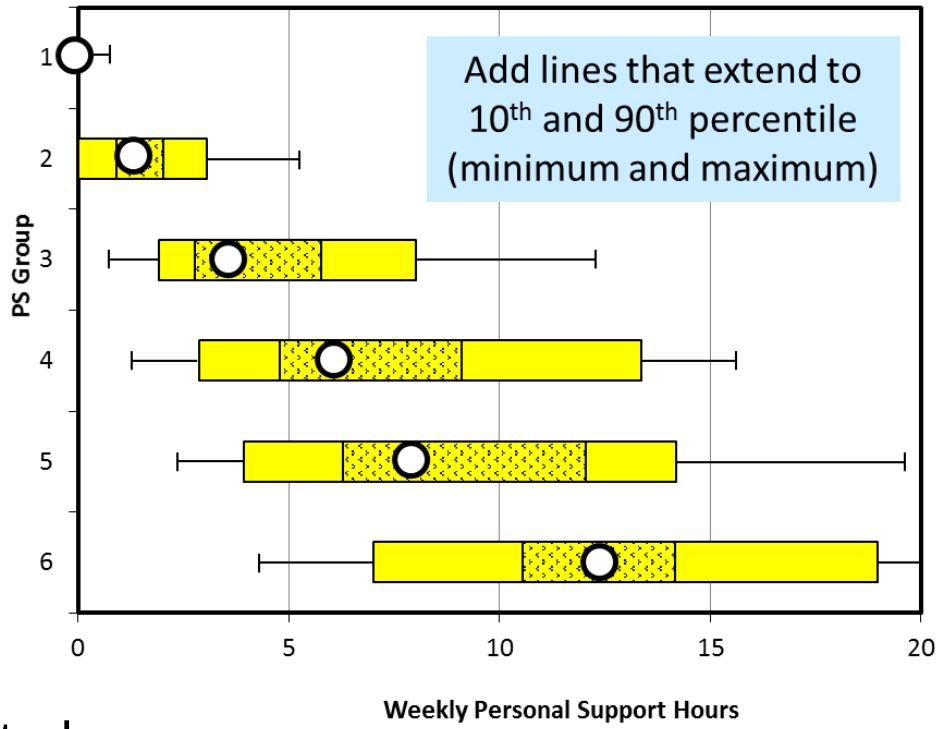
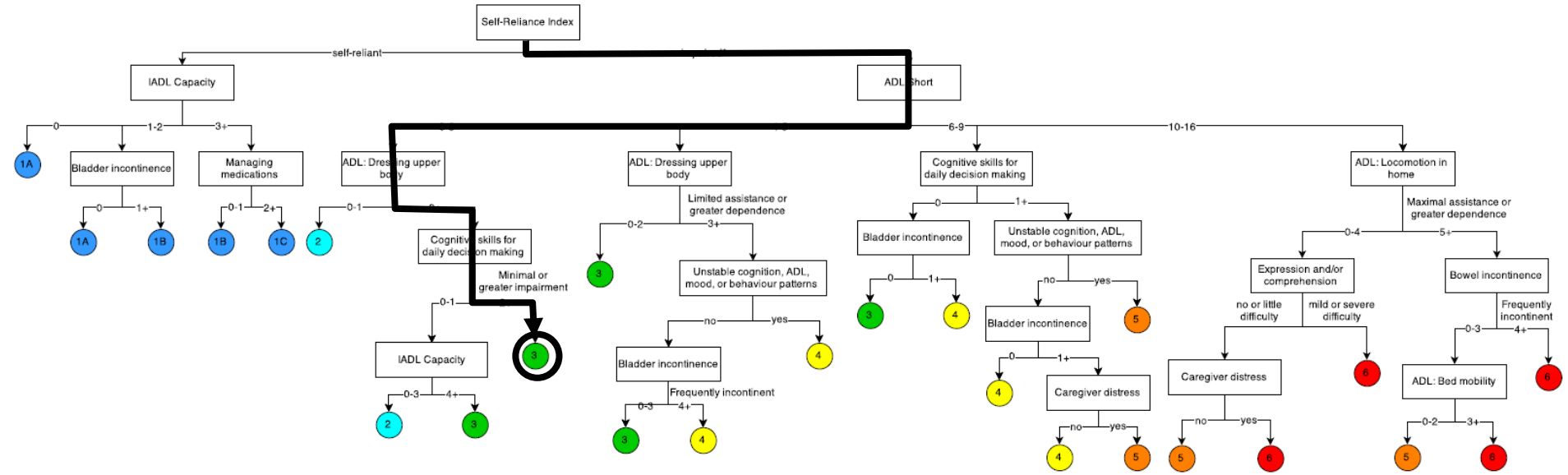


Provide expected distribution of hours

Care coordinator – case description

Mrs. Smith is 82 years old. After her husband died, she moved in with her eldest daughter and son-in-law. Today, you meet with both Mrs. Smith and her daughter in their home. Her daughter describes how she helps her mom get ready every morning by setting up and/or guiding her through the steps in her morning routine and helping her to get on and off the toilet. She prepares her Mom's lunch ahead of time, usually preparing a meal that does not require the use of the stove. Mrs. Smith occasionally makes unsafe decisions. Her daughter is able to help in the mornings and evenings/nights, but she worries about her mom while she is at work.

Care coordinator – PS Group



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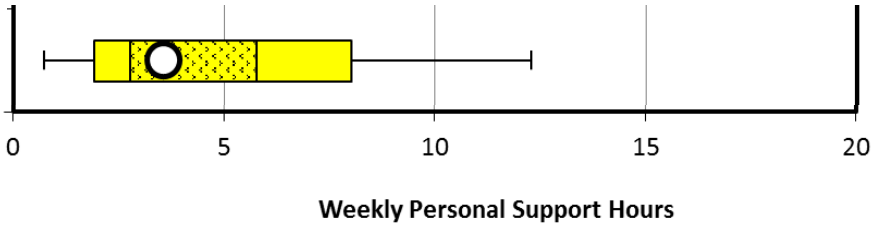
Care coordinator – expected hours



- The ‘typical’ patient in Group 3 receives 4 hours of personal support per week. Does this amount meet Mrs. Smith’s needs?
- If not, the bars suggest alternate hours. At the caseload level, the care coordinator expects to allocate much more often in the patterned yellow bar (middle 30%) than at the extremes.

Discussion questions?

How would this framework be helpful or unhelpful in allocating hours?

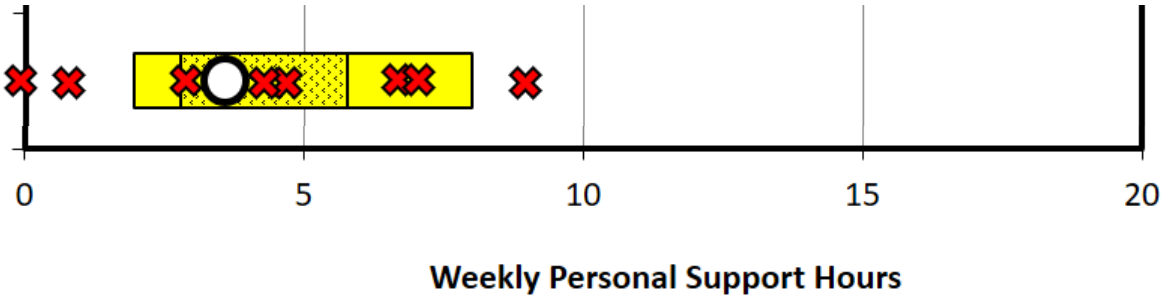
How does it compare to your current processes?

Manager – case description

You are reviewing a personal support allocation report that displays trends in your care coordinators' (CC) service allocation. For most CCs, they are frequently allocating within the range of what would be expected for 30% of patients with similar needs based on historical peer allocation patterns, and occasionally allocating within the range of what would be expected for 60% of patients. The average caseload (100 patients) has approximately 9 patients who receive more PSW resources than 60% of patients with similar needs, but their reasons are documented and appropriate (determined following discussions between the CC and manager).

Manager – case description

There is one CC who frequently allocates more personal support hours than would be expected given the average PSW allocation for persons of similar need. While the CC's allocation does generally fall within the range of personal support hours allocated for 60% of patients, this CC consistently allocated hours in the upper end of this range. You have a meeting with this CC to discuss why this is happening.



Management applications

- Promotes better understanding of regional, caseload, and care coordinator variations in practice
- Promotes greater transparency by enabling more direct comparisons of resource allocation patterns for patient groups stratified based on key drivers for need of personal support
- Can identify key areas for strategic planning

PILOT TEST

Pilot test overview

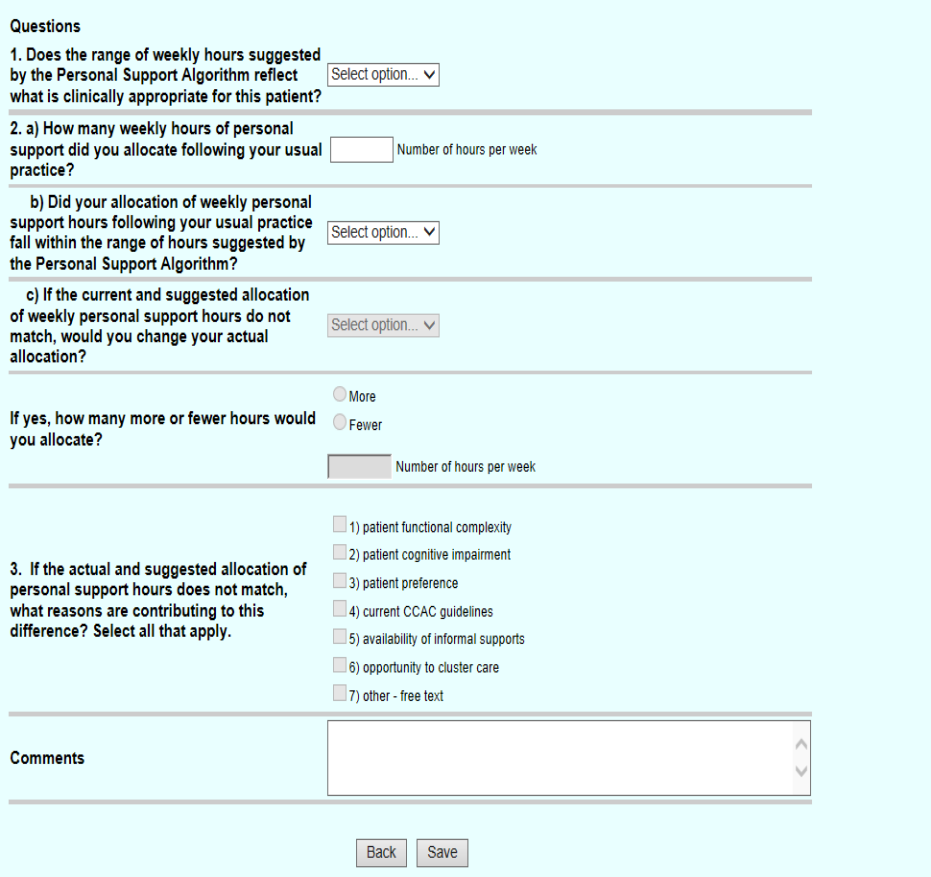
- The pilot ran from June 19th to July 15th, with 28 care coordinators from 6 CCACs participating
- Participating care coordinators followed their normal assessment and allocation procedure, but were asked to fill out an online survey that was available 24 hours after an assessment

CCAC	HNHB	MH	CENT	CE	CHAMP	NW	Total
# of Assessments	45	45	48	46	47	45	**276**

PS Group	1	2	3	4	5	6	Total
# of Assessments	27	105	68	28	25	23	**276**

Survey questions

- After completing a RAI-HC assessment, care coordinators were directed to a online web form
- Patient identifiers and the algorithm outputs were provided:
  - PS Group
  - Lower range (10th), median (50th), and upper range (90th) of hours



Questions

1. Does the range of weekly hours suggested by the Personal Support Algorithm reflect what is clinically appropriate for this patient? — Select option...

2. a) How many weekly hours of personal support did you allocate following your usual practice? — Number of hours per week

b) Did your allocation of weekly personal support hours following your usual practice fall within the range of hours suggested by the Personal Support Algorithm? — Select option...

c) If the current and suggested allocation of weekly personal support hours do not match, would you change your actual allocation? — Select option...

If yes, how many more or fewer hours would you allocate? — More / Fewer — Number of hours per week

3. If the actual and suggested allocation of personal support hours does not match, what reasons are contributing to this difference? Select all that apply.
- 1) patient functional complexity
- 2) patient cognitive impairment
- 3) patient preference
- 4) current CCAC guidelines
- 5) availability of informal supports
- 6) opportunity to cluster care
- 7) other - free text

Comments

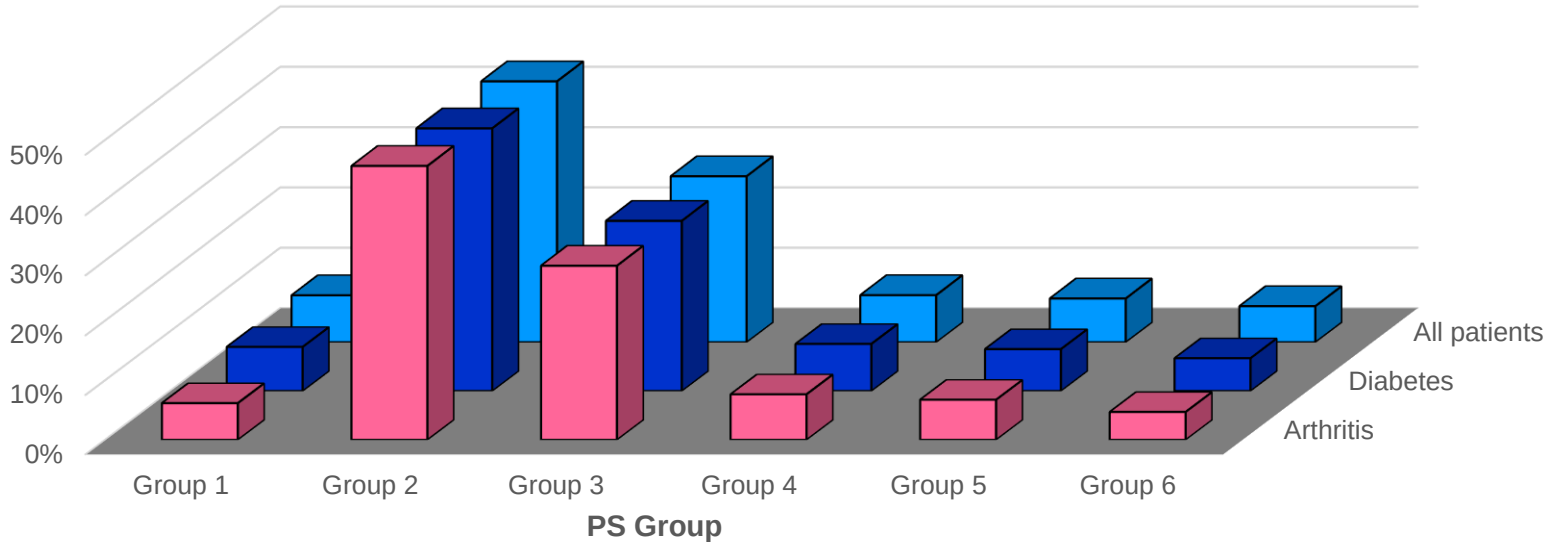
Back Save

Key findings

- **93%** said the range was clinically appropriate
- **89%** said their allocation fell within the range
- Fewer hours were allocated because of…
  - Personal preference/private pay (67%)
  - Community supports (17%)
- More hours were allocated because of…
  - Functional complexity (27%)
  - Grandfathered service levels (18%)

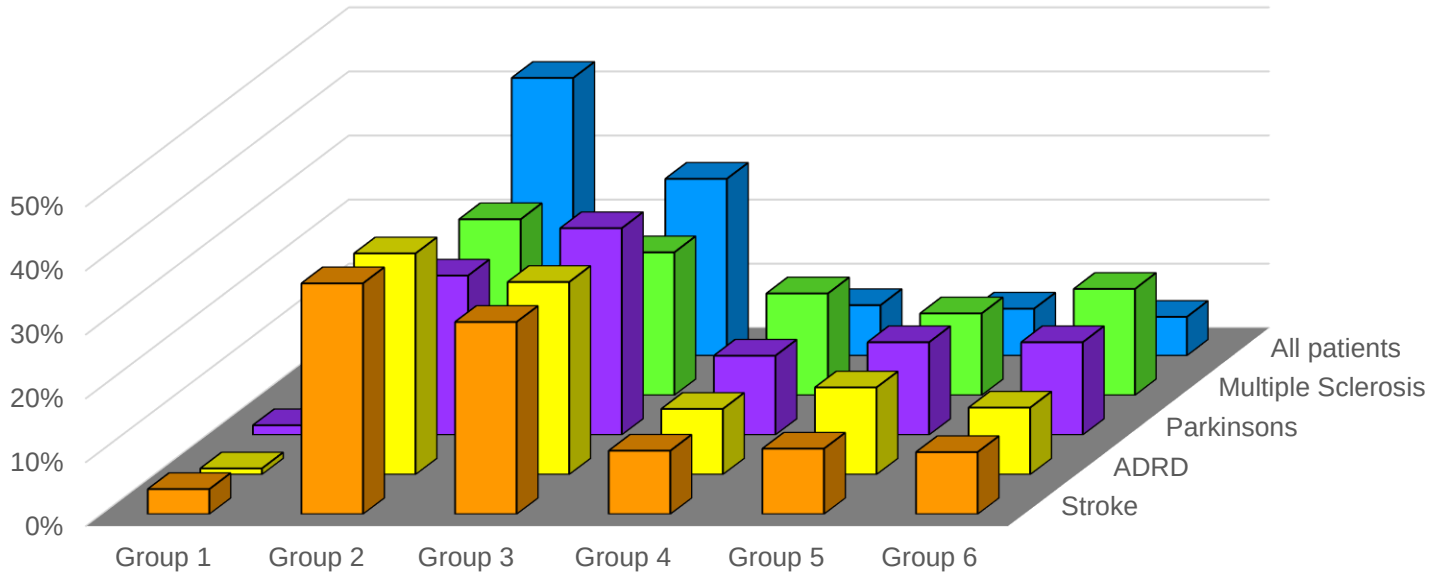
A CLOSER LOOK AT PATIENT POPULATIONS

Distribution of PS Groups by condition



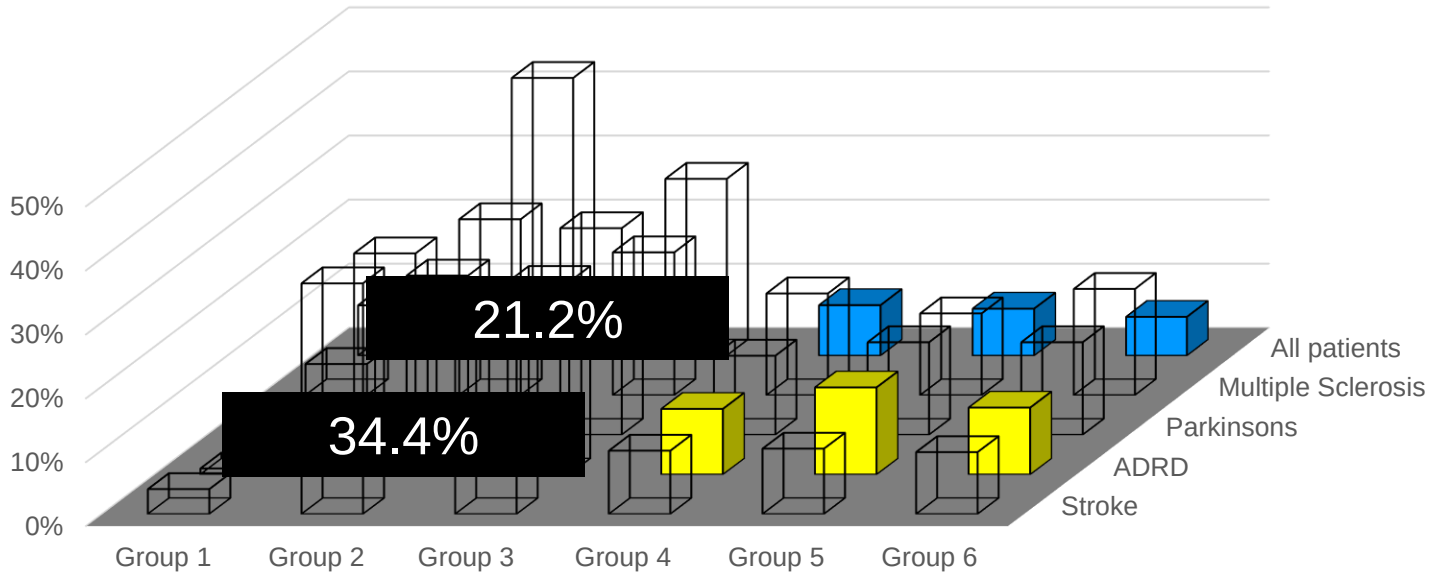
- Distributions of patients with diabetes and arthritis mimic the distribution of all patients

Distribution of PS Groups by condition



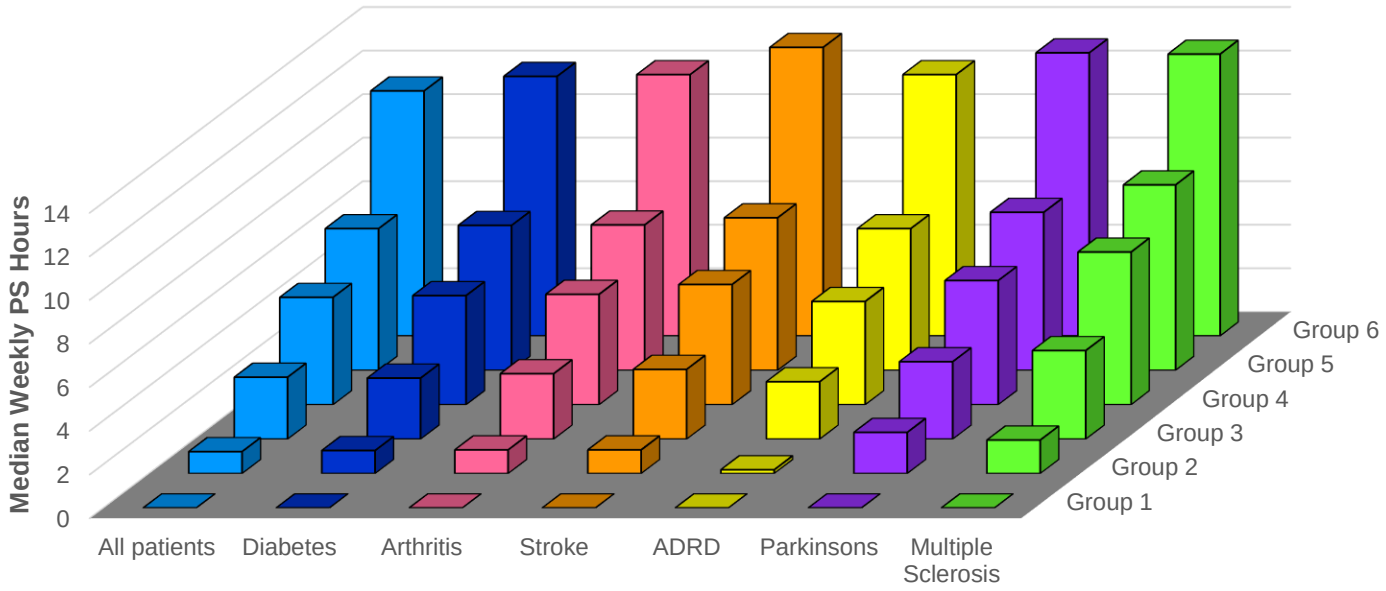
	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
All patients	7.9%	43.3%	27.6%	7.9%	7.3%	6.0%
Patients w/ ADRD	1.0%	34.6%	30.1%	10.3%	13.6%	10.5%

Distribution of PS Groups by condition



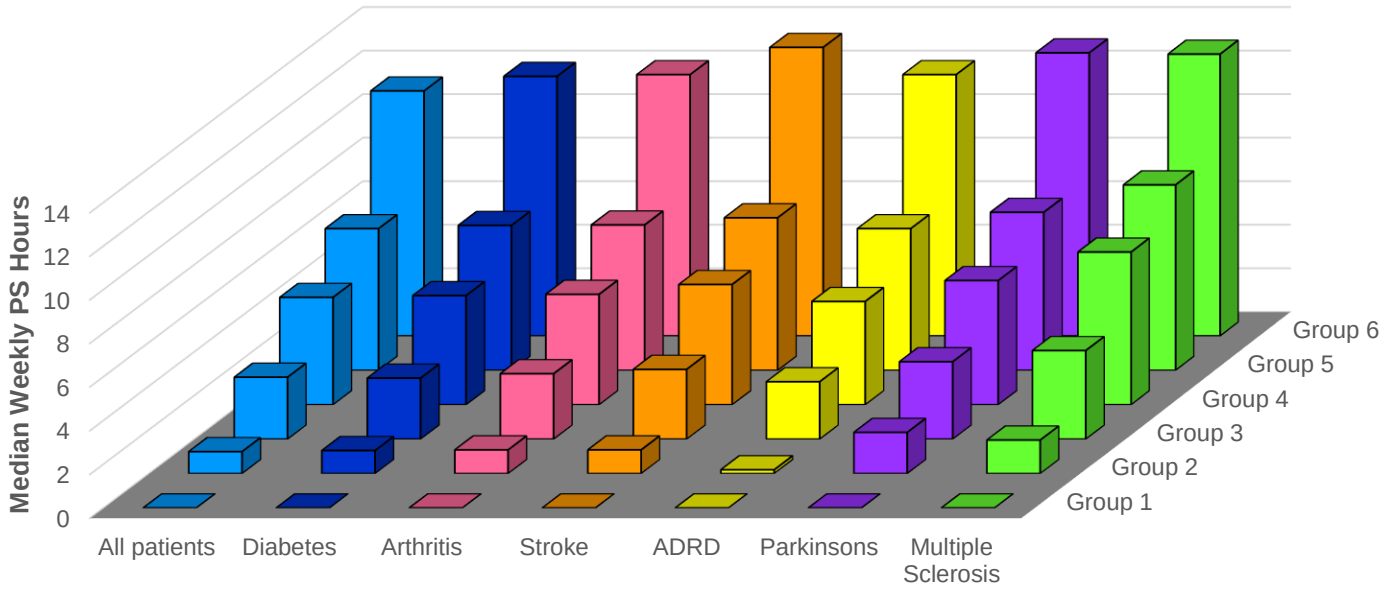
- As expected, more patients with stroke, ADRD, Parkinson's, and multiple sclerosis are in the higher need PS Groups

Median weekly PS hours by condition



	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
All patients	0.00	1.00	2.83	4.92	6.50	11.25
Patients w/ ADRD	0.00	0.17	2.62	4.73	6.50	12.00

Median weekly PS hours by condition



- Group medians are stable across conditions
  - The attributes within the Personal Support Algorithm account for underlying need for personal support and is not condition-specific

Discussion questions?

Are these additional analyses helpful?

What other patient populations would you suggest?

Summary

- The **Personal Support algorithm** differentiates a patient's need for personal support based on relevant assessment information
- The **Allocation of Personal Support Framework** suggests a range of hours to address the patient's need for personal support
- The algorithm and framework may be used by both CCACs and CSS agencies
  - Provides an opportunity to build provincially consistent practice across sectors

Thank you!

Chi-Ling Joanna Sinn, cjsinn@uwaterloo.ca
@JoannaSinn

Janet McMullan, janet.mcmullan@ccac-ont.ca

Questions? Comments?