

# Mood symptoms and future healthcare use in seniors:

Results of a multicenter prospective cohort study

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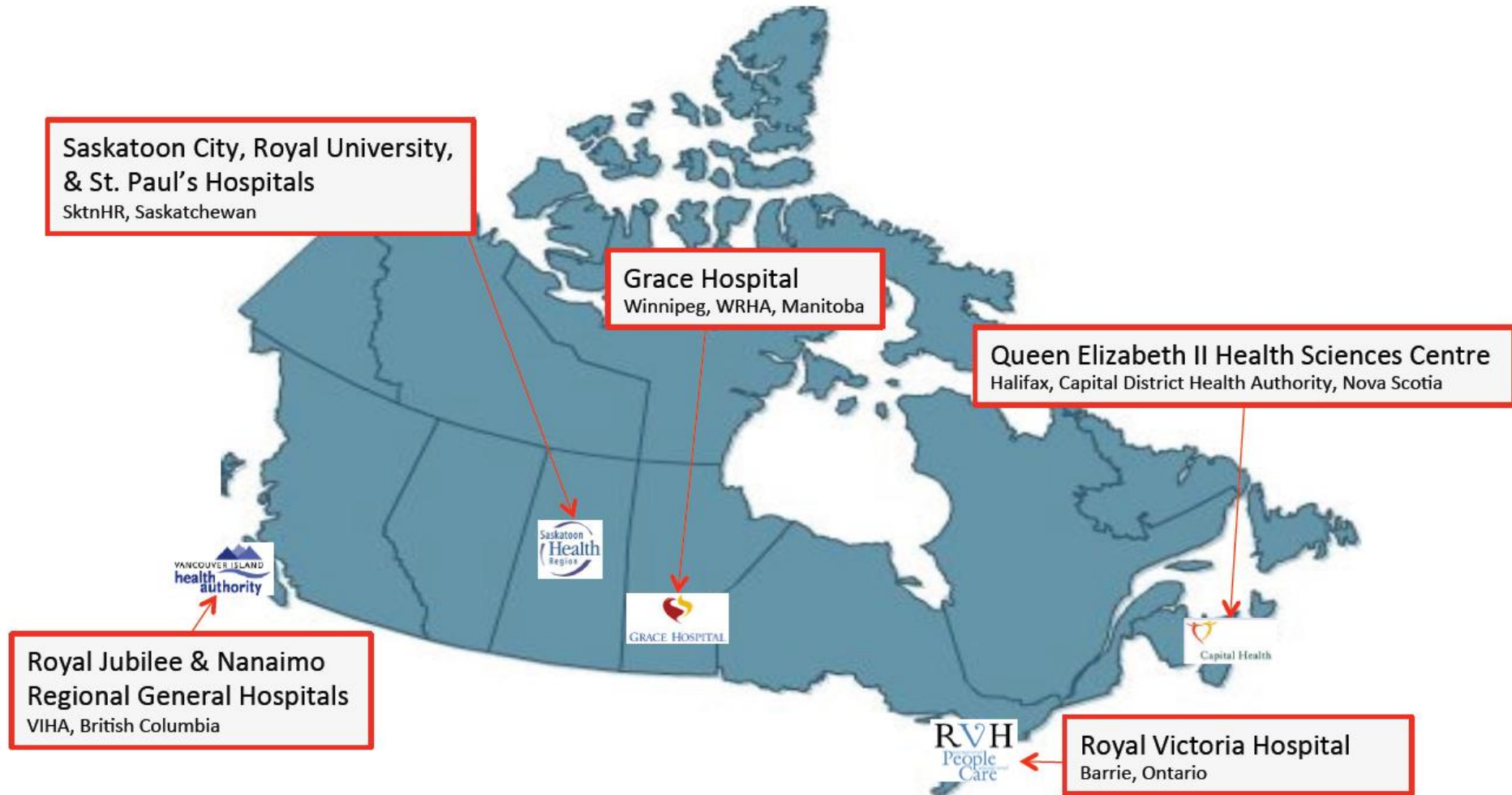
# Background

- 11-14% of seniors are affected by depression<sup>1,2</sup>
- Depression in later life is associated with disability, increased mortality and poor healthcare-related outcomes<sup>3-5</sup>
  - ▣ Increased utilization of healthcare resources<sup>4-7</sup>
- Mood symptoms not routinely assessed in the emergency department (ED)
- Aside from McCusker et al (2000) study, role of depression in ED outcomes unexplored<sup>8</sup>

# Objectives

- To identify associations between self-reported mood (depression, anhedonia, anxiety) and comorbid conditions, symptoms, and geriatric syndromes
- To determine whether self-reported mood symptoms are predictive of future healthcare resource utilization
  - ▣ Hospital admissions, ED use, alternate level care or long-term care (ALC/LTC)

# Settings



# Methodology

- ED patients  $\geq 75$  years
- interRAI ED contact assessment (ED-CA)
  - ▣ Age-specific risk factors
  - ▣ Depression, anxiety, anhedonia
  - ▣ Administered by trained nurses/allied health
- Mood composite score
- 90-day follow-up
  - ▣ ED visits, hospital admission, discharge destination

# ED-CA

## EMERGENCY DEPARTMENT

### SECTION F. PRELIMINARY SCREENER

1	SCREENING REFERENCE DATE AND TIME	a. Screening reference date <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Year                      Month                      Day
		b. Screening reference time Time person was first seen to initiate the screen (use 24-hour time system; for example, 10 minutes to 2 in the afternoon would be recorded as 1350) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
		<b>Items F2 to F5: For the premorbid assessment, consider the 3-day period prior to the onset of the current acute illness. For the admission assessment, consider the last 24 hours.</b>
2	COGNITIVE SKILLS FOR DAILY DECISION-MAKING	Making decisions regarding tasks of daily living—e.g. when to get up or have meals, which clothes to wear or activities to do Premorbid <input type="checkbox"/> Admission <input type="checkbox"/> 0. Independent 1. Modified independent or any impairment
3	ADL SELF-PERFORMANCE	Code for most dependent episode. If ADL did not occur in last 24 hours, code the most recent occurrence. 0. Independent or set-up help only 1. Supervision or any physical assistance
		a. Bathing—How takes full-body bath/shower. Includes how transfers in and out of tub or shower AND how each part of body is bathed: arms, upper and lower legs, chest, abdomen, perineal area—EXCLUDE WASHING OF BACK AND HAIR. Premorbid <input type="checkbox"/> Admission <input type="checkbox"/>
		b. Personal hygiene—How manages personal hygiene, including combing hair, brushing teeth, shaving, applying make-up, washing and drying face and hands—EXCLUDE BATHS AND SHOWERS. Premorbid <input type="checkbox"/> Admission <input type="checkbox"/>
		c. Dressing lower body—How dresses Premorbid <input type="checkbox"/> Admission <input type="checkbox"/>

### SECTION G. CLINICAL EVALUATION

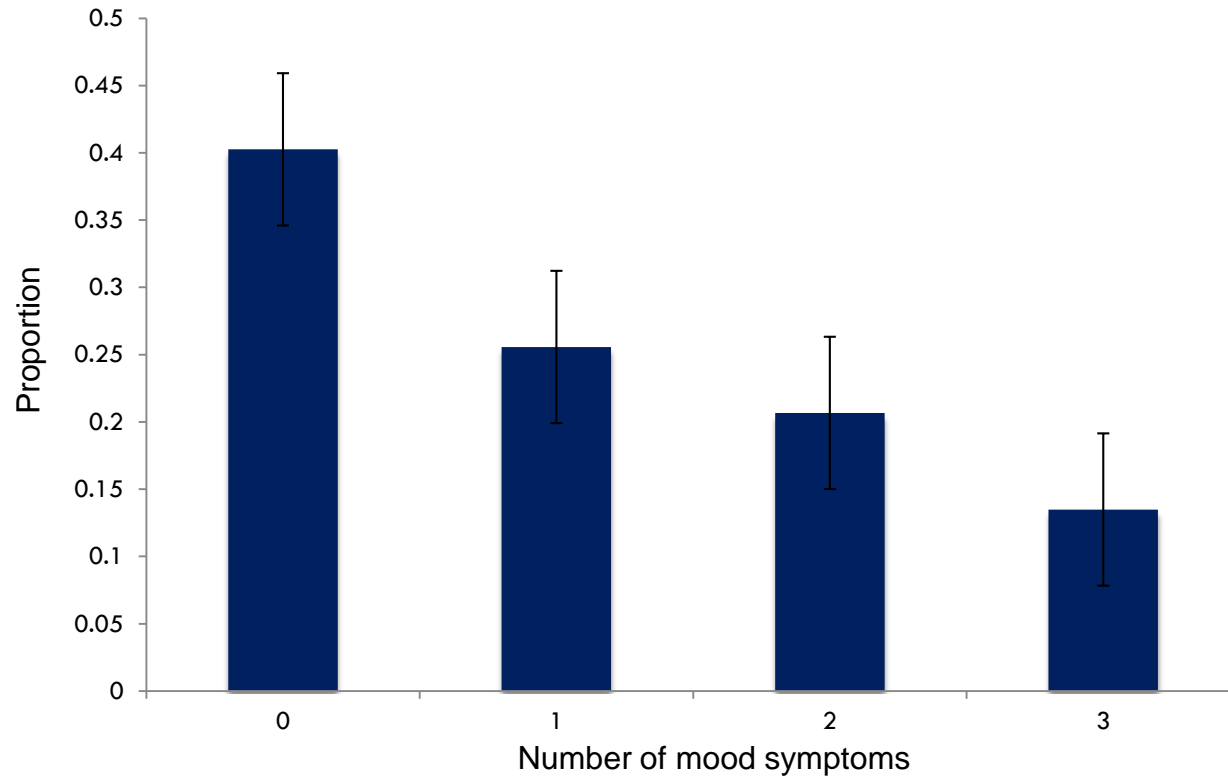
1	EMERGENCY DEPARTMENT USE	Code for number of visits during the LAST 90 DAYS (not counting overnight hospital stay) <input type="text"/> <input type="text"/>
2	TIME SINCE LAST HOSPITAL STAY	Code for most recent instance in LAST 90 DAYS 0. No hospitalization within 90 days 1. 31 to 90 days ago 2. 15 to 30 days ago 3. 8 to 14 days ago 4. In the last 7 days 5. Now in hospital
3	ACUTE CHANGE IN MENTAL STATUS FROM PERSON'S USUAL FUNCTIONING	E.g. restlessness, lethargy, difficult to arouse, altered environmental perception 0. No    1. Yes
4	SELF-REPORTED MOOD	0. Not in last 3 days 1. Not in last 3 days, but often feels that way 2. In 1–2 of last 3 days 3. Daily in the last 3 days 8. Could not (would not) respond Ask: "In the last 3 days, how often have you felt . . . ?"
		a. Little interest or pleasure in things you normally enjoy?
		b. Anxious, restless or uneasy?
		c. Sad, depressed or hopeless?
5	MENTAL STATUS INDICATORS	Code for indicators observed, irrespective of assumed cause. (Note: Whenever possible, ask person.) 0. Not present 1. Present but not exhibited in last 24 hours

# Results

- N = 2,101
- Mean age: 82 years (SD = 7.35)
- 60.52% female
- 42.6% discharged home
  - ▣ 39.5% (346) returned to ED
  - ▣ 52.5% (1,079) admitted to hospital
  - ▣ 10.9% (224) discharged to ALC/LTC

# Results

**Figure 1.** Distribution of mood symptoms (n = 1,838)





# Results

**Table 1.** Breakdown of individuals with anhedonia, depression and/or anxiety, stratified by number of mood symptoms.

Mood symptom breakdown, proportion (95% CI)			
Number of mood symptoms	Anhedonia	Depression	Anxiety
0 (n = 740)	0.0 (0.0-0.0)	0 (0.0-0.0)	0 (0.0-0.0)
1 (n = 470)	37.7 (33.3-42.1)	8.7 (6.2-11.2)	<b>53.6 (49.1-58.1)</b>
2 (n = 380)	<b>90.0 (87.0-93.0)</b>	31.0 (26.3-35.7)	<b>79.0 (74.9-83.1)</b>
3 (n = 248)	100.0 (100.0-100.0)	100.0 (100.0-100.0)	100.0 (100.0-100.0)

**Table 2.** Patient characteristics and ED-CA items stratified by frequency of mood symptoms

	Number of mood symptoms					P-value
	N=2,101	0 (n=740)	1 (n=470)	2 (n=380)	3 (n=248)	
Age, mean (SD)	82.0 (7.3)	82.7 (7.4)	81.2 (7.5)	81.1 (7.1)	81.7 (6.9)	<b>0.0006</b>
Gender: Male, % (No.)	39.5 (801)	38.4 (279)	39.0 (183)	42.2 (159)	40.2 (97)	0.657
Lives alone, % (No.)	36.6 (744)	41.4 (304)	38.2 (179)	30.7 (114)	34.7 (86)	<b>0.005</b>
Past ED visits, mean (SD) <sup>a</sup>	0.7 (1.3)	0.6 (1.1)	0.8 (1.3)	0.7 (1.2)	0.9 (1.7)	<b>0.0005</b>
Cognition (daily decision-making), % (No.) <sup>b</sup>	20.6 (420)	13.8 (100)	13.7 (65)	14.1 (53)	21.8 (54)	<b>0.013</b>
ADL performance, % (No.) <sup>c</sup>	61.7 (1268)	46.5 (344)	66.8 (314)	67.1 (255)	68.1 (169)	<b>0.000</b>
Self-reported health, % (No.) <sup>d</sup>	23.8 (417)	11.1 (78)	19.4 (85)	34.3 (117)	52.3 (113)	<b>0.000</b>
Unstable cognitive, ADL, mood or behaviour, % (No.) <sup>e</sup>	47.9 (979)	44.2 (324)	30.6 (143)	51.6 (196)	52.8 (131)	<b>0.000</b>
Acute change in mental status, % (No.)	14.1 (287)	5.1 (37)	8.5 (40)	13.6 (51)	27.5 (68)	<b>0.000</b>
Behaviour symptoms, % (No.) <sup>e</sup>	2.8 (57)	0.3 (2)	2.3 (11)	1.1 (4)	3.2 (8)	<b>0.001</b>
IADL capacity, % (No.) <sup>f</sup>	61.5 (1260)	54.0 (399)	60.0 (281)	59.7 (227)	67.3 (167)	<b>0.002</b>
Falls history, % (No.) <sup>g</sup>	31.7 (643)	33.1 (242)	27.0 (125)	25.7 (97)	36.6 (90)	<b>0.004</b>
Decrease in food/fluid consumption, % (No.)	29.9 (610)	15.9 (117)	32.3 (151)	46.7 (177)	41.3 (102)	<b>0.000</b>
Weight loss, % (No.) <sup>h</sup>	8.6 (174)	5.6 (41)	7.3 (34)	8.9 (34)	8.2 (45)	<b>0.000</b>
Traumatic injury, % (No.)	7.2 (142)	6.9 (49)	8.6 (39)	4.6 (17)	8.6 (20)	0.147
Hospitalization within 90 days, % (No.)	22.3 (452)	18.0 (131)	19.1 (89)	23.9 (89)	34.5 (88)	<b>0.000</b>
Mental status, % (No.) <sup>i</sup>	4.3 (87)	1.0 (7)	3.0 (14)	4.2 (16)	5.7 (14)	<b>0.000</b>
Comprehension, % (No.) <sup>j</sup>	3.2 (66)	0.8 (56)	1.5 (7)	1.3 (5)	0.8 (2)	0.666
Pain, % (No.) <sup>k</sup>	18.7 (383)	11.7 (86)	22.8 (107)	26.7 (101)	27.2 (67)	<b>0.000</b>
Dyspnea, % (No.)	41.0 (837)	31.2 (230)	38.3 (179)	56.9 (215)	60.7 (150)	<b>0.000</b>
Comorbidity index, mean (SD)	3.3 (2.0)	2.7 (1.8)	3.1 (1.8)	3.7 (1.9)	4.7 (1.9)	<b>0.000</b>
Acuity (CTAS), mean (SD)	3.0 (0.7)	3.1 (0.8)	3.0 (0.6)	2.9 (0.7)	2.9 (0.7)	<b>0.000</b>

# Results

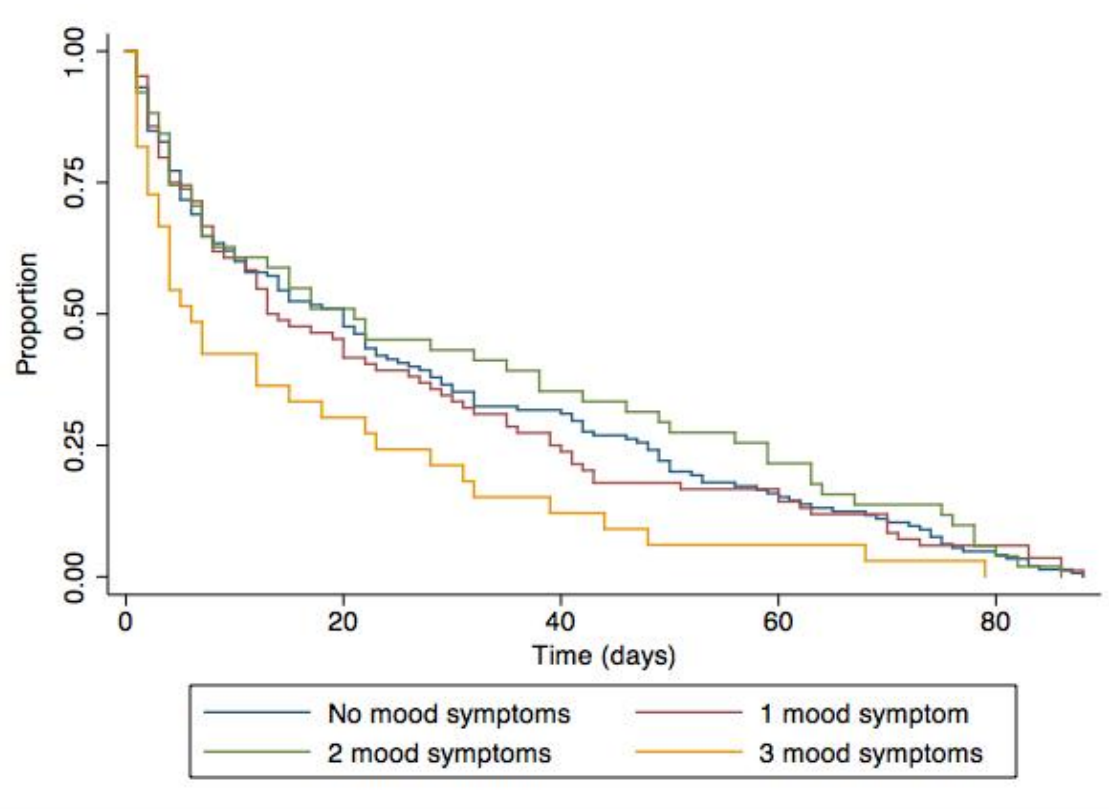
**Table 3.** Associations between accumulated mood symptoms and subsequent healthcare use outcomes assessed through univariate and multivariate logistic regression

	Univariate	Multivariate
Outcome	OR (95% CI)	OR (95% CI)
ED visit	0.88 (0.78-0.99)	0.94 (0.79-1.12)
Hospital admission	<b>1.40 (1.28-1.53)</b>	<b>1.15 (1.02-1.31)</b>
Discharge to ALC/LTC	<b>1.31 (1.14-1.50)</b>	0.85 (0.67-1.06)

Note: For all multivariate analyses, frequency of mood symptoms and comorbidities noted at the time of the initial ED visit were adjusted for.

# Results

**Figure 2.** Kaplan-Meier survival curve depicting rate of return to the ED amongst subsequent ED visitors, stratified by number of mood symptoms



# Conclusions

- Mood symptoms are associated with many geriatric conditions and symptoms
  - ▣ Potentially a good clinical marker for geriatric complexity
- Mood symptoms may be predictive of hospital admission
  - ▣ Perceived severity of physical symptoms
  - ▣ Quality of care
- Increased rate of ED return for accumulated mood symptoms

# Limitations

- Only 3 questions used to assess mood symptoms
  - ▣ Repeat measures (i.e. GDS) may have yielded different results
- Inter-rater variability
  - ▣ Multi-level analyses performed to test site-level variation
- Stigma associated with mental health issues (misclassification bias)

# Thank you

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**interRAI**



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