The Braden Scale for Predicting Pressure Sore Risk

Nancy Bergstrom, PhD, RN, FAAN
Trumble Professor of Aging Research
Director, Center on Aging
University of Texas-Houston

Braden Scale Funding History

- Nursing Assessment of Pressure Sore Risk Among Elderly Patients
  - N. Bergstrom (PI), B. Braden (Co-investigator)
  - DHHS-Division of Nursing (1984-1988)
- Nursing Assessment of Pressure Sore Risk: An Inter-institutional Study
  - N. Bergstrom (PI) B. Braden, M. Kemp, M. Champagne (Co-investigators)
  - NCNR 1988 to 1991
  - NCNR/NINR 1991 to 1994 no cost extension

Publications

- 1. Demonstrates the validity of the Braden Scale across clinical settings.
- Bergstrom, N., Braden, B., Champagne, M., Kemp, M., & Ruby, E. (Sept./Oct., 1998) Predicting pressure ulcer risk: a multisite study of the predictive validity of the Braden Scale. Nursing Research, 47.(5), 261-269.

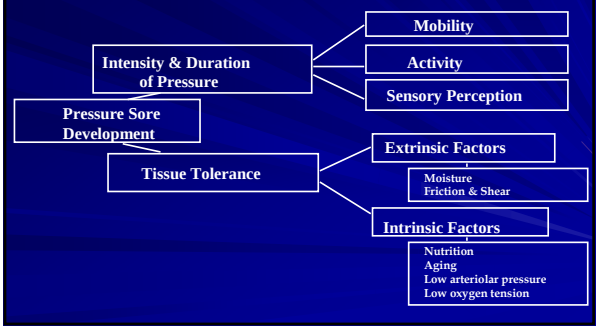
Publications (continued)

- 2. Demonstrates that without assessment, treatments are not done.
- Bergstrom, N., Braden, B., Kemp, M., Champagne, M., & Ruby, E. (1996). Multi-site study of incidence of pressure ulcers and the relationship between risk level, demographic characteristics, diagnoses, and prescription of preventive interventions. Journal of the American Geriatric Society, 44. 22-30.

Publications (continued)

- 3. Demonstrates that the cut off points are the same for Black & White subjects.
- Bergstrom, N., Braden, B.J. (2002). Predictive Validity of the Braden Scale Among Black and White Subjects. Nursing Research, 51 (6), 398-403.

Conceptual Schema for Etiologic Factors in Pressure Sore Development



The Braden Scale

- 6 Subscales
- Pressure exposure
  - mobility, activity, sensory perception,
- Tissue tolerance
  - moisture, friction & shear, nutrition
- 6-23 points

The Purpose of Risk Assessment is to:

- Reduce the incidence of pressure ulcers
- Identify who is and who is not at risk
- Plan care based on risk factors and level of severity of risk factors
- Avoid unnecessary expensive care
- Improve quality of care and decrease costs

Questions to Answer

- Is the tool valid and reliable?
- What is the critical cut-off point?
- Is the cut-off point different across the system? (tertiary care, nsg home)
- When should assessment be done?
- Is reassessment necessary?

Purpose

- Evaluate the predictive validity of the Braden Scale across settings
  - What is the critical cutoff point for classifying risk in specific settings
  - What is the optimal timing for assessing risk across settings?

Settings

- Tertiary Care
  - Omaha - 382 beds (290 acute), level I trauma
  - Chicago - 903 major referral center
- VAMC
  - Omaha - 226 level II (NE, KS, MO, IA, ND, SD, MN)
  - Raleigh - 382 level I (NC & East TN)
- SNF
  - Omaha – 250 bed with 126 extended care
  - Raleigh – 120 SNF affiliated with VAMC

Subjects

- New admissions list
- Randomly selected
- Verbal consent (quality improvement assumption with nursing assessment)
- Subjects over 19 years
- New admissions within 72 hours
- No pressure ulcers

Staff training

- Videos created
  - Braden Scale
  - Pressure Ulcer training
- Staff View videos
- Vingettes
- Patient ratings/inter rater reliability

Procedures

Risk assessment by study RN
- Admission
- Q 48-72 hours (M-W-F)

Skin assessment by another RN
- Admission
- Q 48 -72 hours

Blind to the other assessment

Must have 2 assessments

Critical Cut-Off (Tertiary)

Score 18	SE	SP	PVP	PVN	%
Time 1	38	79	14	93	75
Time 2	88	68	21	99	70

Critical Cut-Off (SNF)

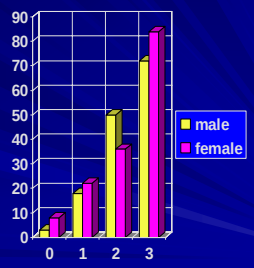
Score 18	SE	SP	PVP	PVN	%
Time 2	72	68	42	89	69
Ongoing	81	73	50	92	75

Prevention Without Risk Assessment

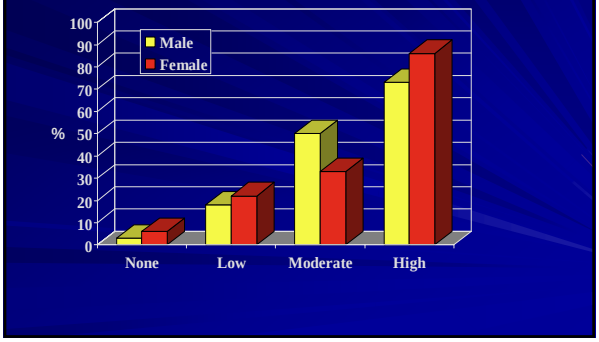
- Prospective study (n=843)
- Risk assessed by research team
- No formal assessment by caregivers
- Preventive practices observed
- Prescriptions for turning and support surfaces recorded

Prevention Without Risk Assessment

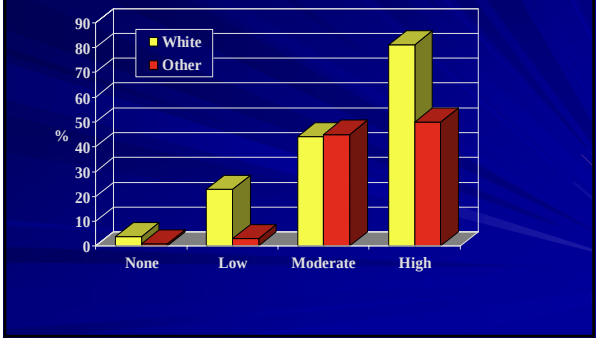
- Patient sorted into risk categories
- % receiving treatment documented according to risk
  - 0=no risk (≥18)
  - 1=mild risk (16-18)
  - 2=mod risk (13-15)
  - 3= high risk (≤12)



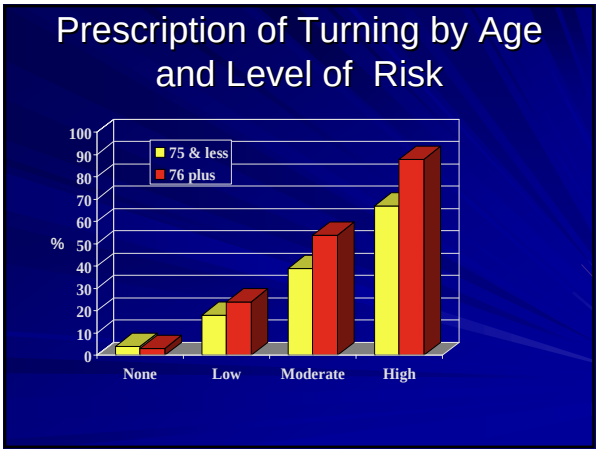
Prescription of Turning by Gender and Level of Risk



Prescription of Turning by Race and Level of Risk



Prescription of Turning by Age and Level of Risk



Prevention Without Risk Assessment

- As assessed risk level increased, interventions increased
- Support surfaces were prescribed more frequently than turning
- Women, white people and elderly more likely to have turning or support surfaces ordered
- Formal assessment levels the playing field of risk assessment

Predictive Validity among Black and White Subjects

- Is the predictive validity similar for both Black and White Subjects
- Secondary analysis

Predictive validity: Black versus white subjects

Variable	White	Black	Total
Number	666 (79%)	159 (12%)	843
Stage 1	32	1	33
Stage 2	66	7	73

Sensitivity (SE), Specificity (SP), PVP, PVN, % Correct

Race	SE	SP	PVP	PVN	%
Black	75	76	17	98	76
White	70	77	41	92	75

Differences by Race

- Receiver operator characteristics curve
- Area under curve
  - White 0.75, SE 0.03
  - Black 0.82, SE 0.07
  - Z = 0 .005 (not significantly different)

Comparison with Mammography

(SENS - 75%; SPEC – 92%; PVP 5%)

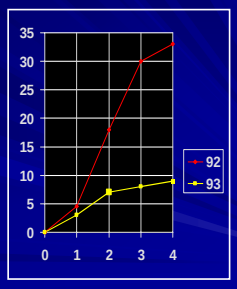
	SCORE	SENS	SPEC	PVP	PVN
Med-Surg	**16**	**100**	**90**	**50**	**100**
Step-down	**16**	**100**	**64**	**61**	**85**
ICU	**16**	**83**	**64**	**61**	**85**
SNF	**18**	**81**	**73**	**50**	**92**
VAMC	**18**	**70**	**79**	**30**	**96**
Tertiary	**18**	**88**	**68**	**21**	**99**
Home Care	**18**	**100**	**34**	**33**	**100**

LEVELS OF PRESSURE SORE RISK USING BRADEN SCALE

- MILD RISK 15-18
- MODERATE RISK 13-14
- HIGH RISK 10-12
- VERY HIGH RISK ≥ 9

Incidence of Ulcers With Risk Assessment Based Prevention

- Horn, Ashton, Tracy, l994.
- Decrease ulcers to near zero in '94 & '95
- Saved $1.2 million



Braden Scale Translations

- Chinese
- Japanese
- Thai
- Korean
- Croatian
- Icelandic
- Dutch
- French
- Italian
- German
- Spanish
- Portuguese
  - Portugal
  - Brazil

Summary

- Risk assessment is done to determine required preventive measures
- A score of 18 is the cut-off for risk for most settings and subjects
- Clinical judgment must always supplement assessment
- Nancy.Bergstrom@uth.tmc.edu
- www.bradenscale.com

THANK YOU

- BHP, DHHS; NCNR; NINR
- Colleagues: Braden, Champagne, Kemp
- Research staff….
- Clinical specialists who tested in their setting
- Everyone who helps to translate this into clinical use.
- Lois Graham, Lucile Lewis & Barbara Hansen