



University of Pennsylvania
ScholarlyCommons

School of Nursing Departmental Papers

School of Nursing

11-2013

Nurse Versus Ordering Provider Perceived Barriers to Anthropometry Measurements in Critically Ill Children

Sharon Y. Irving

University of Pennsylvania, ysha@nursing.upenn.edu

Follow this and additional works at: <http://repository.upenn.edu/nrs>

 Part of the [Nursing Commons](#)

Recommended Citation

Irving, S. Y. (2013). Nurse Versus Ordering Provider Perceived Barriers to Anthropometry Measurements in Critically Ill Children. *42nd Biennial Convention of the Honor Society of Nursing*, Retrieved from <http://repository.upenn.edu/nrs/82>

This presentation is based on "Perceived Barriers to Anthropometry Measurements in Critically ill Children": <https://www.ncbi.nlm.nih.gov/pubmed/26523018>

This paper is posted at ScholarlyCommons. <http://repository.upenn.edu/nrs/82>
For more information, please contact repository@pobox.upenn.edu.

Nurse Versus Ordering Provider Perceived Barriers to Anthropometry Measurements in Critically Ill Children

Disciplines

Medicine and Health Sciences | Nursing

Comments

This presentation is based on "Perceived Barriers to Anthropometry Measurements in Critically ill Children":
<https://www.ncbi.nlm.nih.gov/pubmed/26523018>

Nurse versus Ordering Provider Perceived Barriers to Anthropometry Measurements in Critically Ill Children

Sharon Y Irving, PhD, RN, CRNP
University of Pennsylvania, School of Nursing
The Children's Hospital of Philadelphia
Sigma Theta Tau International
42nd Biennial Convention
Indianapolis, IN
November 18, 2013

Background

- ❑ Anthropometric data (weight, stature and head circumference) are vital to patient safety and essential to care delivery in the Pediatric Intensive Care Unit (PICU)
- ❑ Under appreciation of the importance of accurate measurements and their impact on patient care
 - minimize or avoid over / under-dosing medications, fluids, and nutrient intake
 - Prescribe appropriate treatment modalities

Background

- ❑ Multi-professional group of providers interested in nutrition issues for critically ill infants and children
- ❑ Constructed 21-item survey

Background

□ Hypothesis:

- Specific barriers exist to obtaining anthropometric measurements
- Perceptions of these barriers differ between ordering providers (physicians, nurse practitioners and physician assistants) and bedside nurses

Purpose

- ❑ To describe perceived barriers in obtaining anthropometry measurements in critically ill children
 - Weight
 - Stature
 - Head circumference

- ❑ Difference in the perceived barriers among providers, the targeted audience
 - Nurses
 - Ordering Providers
(Physicians, Nurse Practitioners, Physicians Assistants)

Methods

- ❑ “Survey Monkey” software; 21-item online survey
- ❑ Items were constructed to identify actual and perceived barriers to obtaining anthropometric measurements
- ❑ Data collection for 14 weeks, from early June 2012 – Mid September 2012 with 3 reminders

Methods

- ❑ Online survey to Professional list serves
 - Advanced Nursing Practice in Acute and Critical Care
 - American Society for Parenteral and Enteral Nutrition – Pediatrics
 - PICU Advanced Practice Nursing
 - PICU_Nursing_Science
 - Society of Critical Care Medicine – Pediatric Section
 - The Children’s Hospital of Philadelphia - PICU

Methods

Sample of survey items:

- Are growth parameters (weight, stature, head circumference) collected on each patient on admission to the ICU?
- If an actual weight or length/height is not measured on admission, how do you obtain an estimate?
- What do you consider to be barriers to obtaining anthropometrics on critically ill patients?
- Do you routinely place orders for anthropometric measurements on PICU patients?
- How is the anthropometric data shared with the care team?

Results

- ❑ Total responses = 376
- ❑ Responses with complete data for analysis = 318
- ❑ Responses of nurses and ordering providers = 258
- ❑ Most respondents were located in United States
 - 92% of ordering providers*
 - 87% of nurses

Chi-square and Fisher's Exact

STATA Data Analysis and Statistical Software

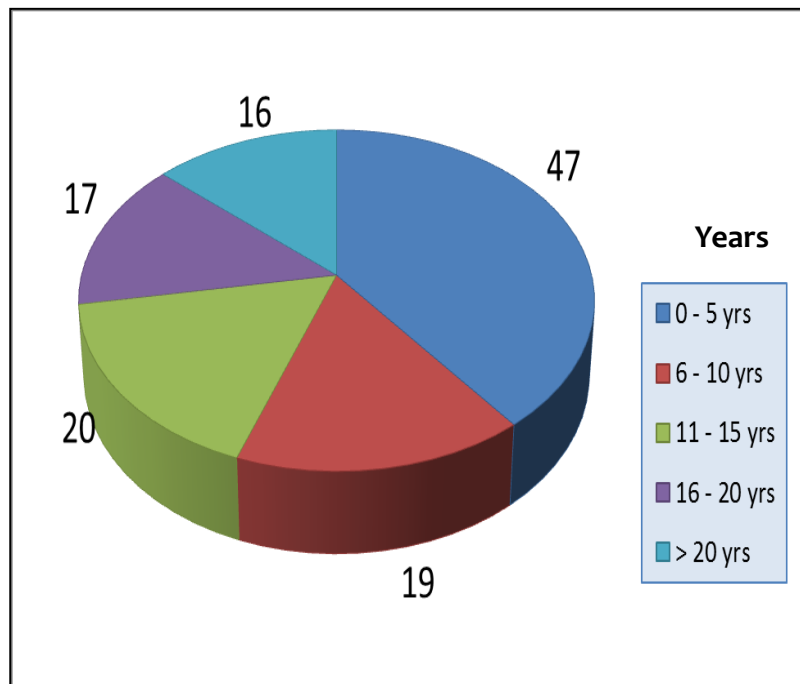
* Did not breakdown the ordering providers

Results

Experience in Years

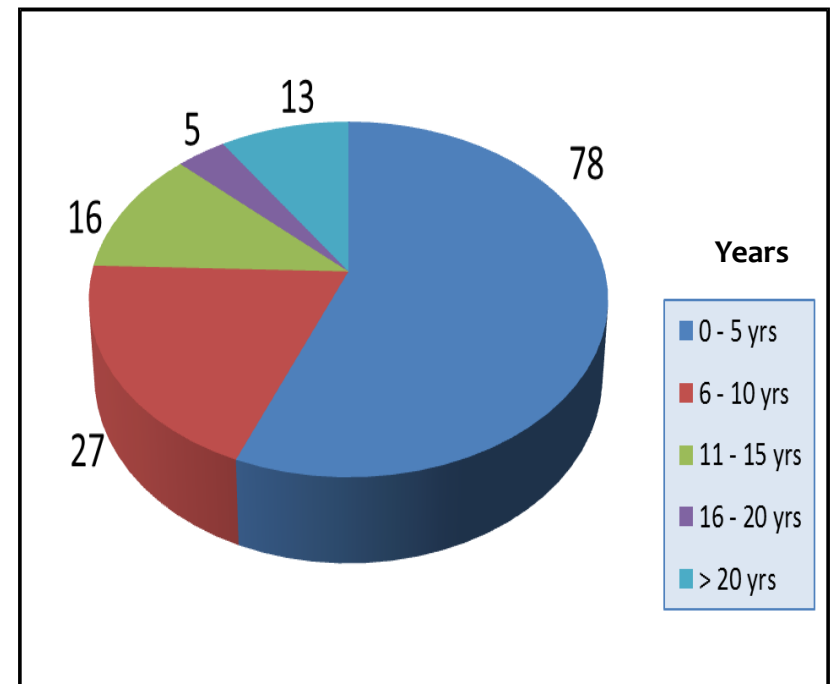
Ordering Providers

N = 119



Nurses

N = 139

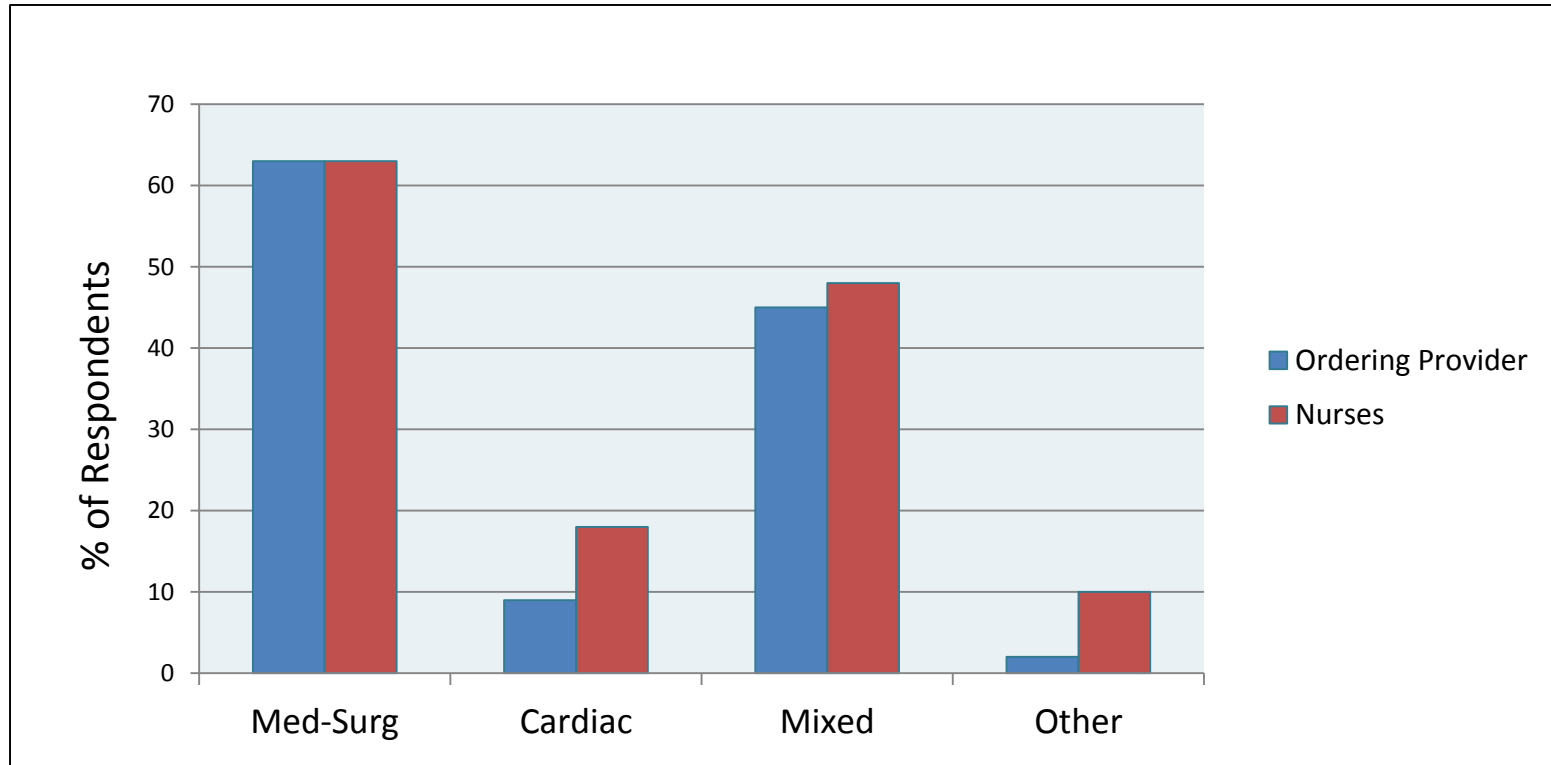


p value 0.005

Note: values presented are % of respondents in each category

Results

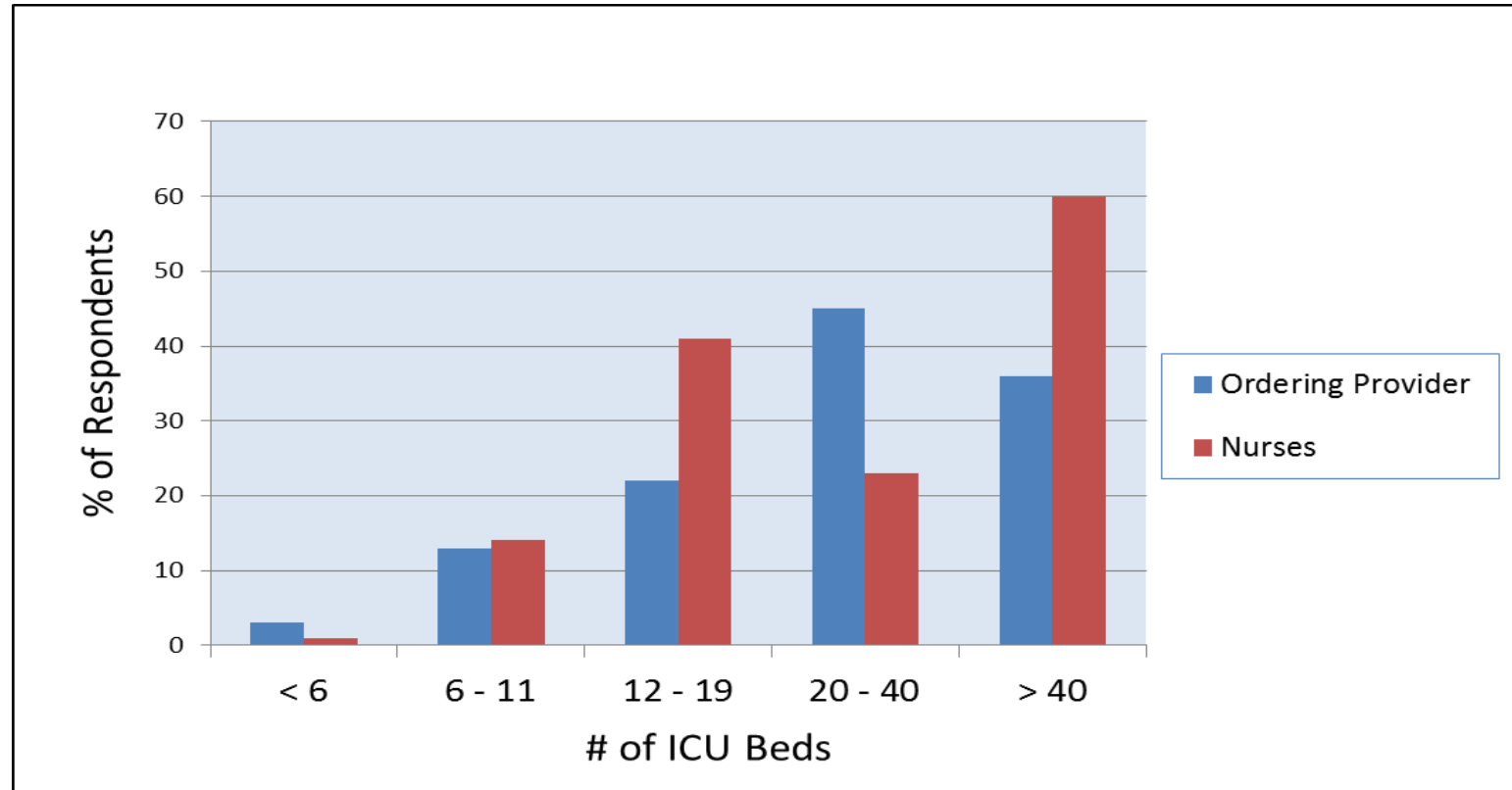
Type of ICU



p value 0.07

Results

Number of ICU Beds



Results

Respondent Perceptions

| | Ordering Provider (N = 119) | Nurses (N = 139) | p-value (significance < 0.05) |
|---|--|-----------------------------|---|
| Importance of anthropometry | 92 | 77 | 0.009 |
| Timing of measurements after admission | | | |
| Day Shift | 18 | 25 | 0.29 |
| Night Shift | 70 | 73 | 0.68 |
| Weekend | 0 | 9 | 0.003 |
| Unknown | 13 | 5 | 0.04 |
| If not measured, source used for anthropometry values | | | |
| Previous EHR | 54 | 41 | 0.01 |

Values are % of total respondents for each category

Results

Respondent Perceptions

| | Ordering Provider (N = 119) | Nurses (N = 139) | p-value (significance < 0.05) |
|----------------|--|-----------------------------|---|
| Weight | | | |
| Admission | 92 | 71 | 0.001 |
| Subsequent | 70 | 36 | 0.001 |
| Stature | | | |
| Admission | 71 | 38 | 0.001 |
| HC | | | |
| Admission | 63 | 37 | 0.001 |

Ordering providers vs nurses perceived orders are placed in EHR at admission

Values are % of total respondents for each category

Results

Respondent Perceptions

| | Ordering Provider (N = 119) | Nurses (N = 139) | p-value (significance < 0.05) |
|------------------------------|--|-----------------------------|---|
| Weight Daily | (< 1 yr) 50 | (> 1 yr) 17 | 0.001 |
| Stature Weekly | 40 | 12 | 0.001 |
| HC (< 2 yrs) Unknown freq | 7 | 21 | 0.001 |

Similar trends for both ordering providers and nurses:

Respondents favored daily weight in infants (< 1 year old)

Respondents favored weekly or monthly stature in infants (< 1 year old)

Values are % of total respondents for each category

Results

Respondent Perceptions

| | Ordering Provider (N = 119) | Nurses (N = 139) | p-value (significance < 0.05) |
|--|--|-----------------------------|---|
| Role of Reviewer Ordering provider | 87 | 68 | 0.001 |
| Review of data Other | 13 | 4 | 0.01 |
| Unknown | 10 | 33 | 0.001 |

More ordering providers vs nurse perceived the ordering provider reviewed the anthropometry data

Nurses were unaware who reviewed the data or how often

Values are % of total respondents for each category

Results

Respondent Perceptions

- ❑ Only fragile bones approached significance as a barrier to obtaining weight
(ordering providers 46% vs nurses 30%, p 0.007)
- ❑ Traumatic brain injury was the significant barrier to obtaining HC
(ordering providers 42% vs nurses 24%, p 0.002)
- ❑ Dialysis was perceived as a barrier to obtain stature
(ordering providers 9% vs nurses 21%, p 0.01)

| Patient specific barriers | Ordering provider (n=119) | Nurses (n=139) | p-value |
|---------------------------------------|---------------------------|----------------|---------------|
| Critical airway, (%)* | | | |
| Weight | 88 (74) | 89 (64) | 0.11 |
| Stature | 45 (38) | 57 (41) | 0.61 |
| Head circumference | 45 (38) | 38 (27) | 0.08 |
| Mechanical ventilation, (%)* | | | |
| Weight | 49 (41) | 60 (43) | 0.80 |
| Stature | 29 (24) | 46 (33) | 0.13 |
| Head circumference | 14 (12) | 15 (11) | 0.85 |
| Hemodynamic instability, (%)* | | | |
| Weight | 95 (80) | 101 (73) | 0.19 |
| Stature | 54 (45) | 74 (53) | 0.21 |
| Head circumference | 35 (29) | 45 (32) | 0.69 |
| ECMO, (%)* | | | |
| Weight | 93 (78) | 113 (81) | 0.54 |
| Stature | 53 (45) | 69 (50) | 0.45 |
| Head circumference | 38 (32) | 49 (35) | 0.60 |
| Dialysis, (%)* | | | |
| Weight | 31 (26) | 42 (30) | 0.49 |
| Stature | 11 (9) | 29 (21) | 0.01 ← |
| Head circumference | 6 (5) | 11 (8) | 0.45 |
| Traumatic brain injury, (%)* | | | |
| Weight | 63 (53) | 64 (46) | 0.32 |
| Stature | 30 (25) | 42 (30) | 0.41 |
| Head circumference | 50 (42) | 33 (24) | 0.002 |
| Medical devices in place, (%)* | | | |
| Weight | 77 (65) | 75 (54) | 0.10 |
| Stature | 60 (50) | 63 (45) | 0.45 |
| Head circumference | 86 (72) | 79 (57) | 0.01 ← |
| Fragile bones, (%)* | | | |
| Weight | 55 (46) | 41 (30) | 0.007 |
| Stature | 27 (23) | 28 (20) | 0.65 |
| Head circumference | 16 (13) | 11 (8) | 0.16 |
| Obesity, (%)* | | | |
| Weight | 56 (47) | 69 (50) | 0.71 |
| Stature | 18 (15) | 36 (26) | 0.04 ← |
| Head circumference | 2 (2) | 5 (4) | 0.46 |

| Provider Specific Barriers | Ordering provider (n=119) | Nurses (n=139) | p-value |
|---|--------------------------------------|---------------------------|----------------|
| Nurses too busy, (%)* | | | |
| Weight | 62 (52) | 47 (34) | 0.004 |
| Stature | 62 (52) | 51 (37) | 0.02 |
| Head circumference | 59 (50) | 40 (29) | 0.001 |
| Patient does not want to be disturbed, (%)* | | | |
| Weight | 52 (44) | 60 (43) | 1.00 |
| Stature | 43 (36) | 52 (37) | 0.90 |
| Head circumference | 41 (34) | 46 (33) | 0.90 |
| Isolation, (%)* | | | |
| Weight | 16 (13) | 10 (7) | 0.10 |
| Stature | 12 (10) | 9 (7) | 0.36 |
| Head circumference | 10 (8) | 2 (1) | 0.01 |
| Not considered important, (%)* | | | |
| Weight | 39 (33) | 17 (12) | 0.001 |
| Stature | 59 (50) | 41 (30) | 0.001 |
| Head circumference | 57 (48) | 24 (17) | 0.001 |
| Lack of correct equipment, (%)* | | | |
| Weight | 35 (29) | 34 (25) | 0.40 |
| Stature | 32 (27) | 44 (32) | 0.41 |
| Head circumference | 14 (12) | 6 (4) | 0.03 |
| Unsure of correct technique, (%)* | | | |
| Weight | 23 (19) | 7 (5) | 0.001 |
| Stature | 40 (34) | 24 (17) | 0.004 |
| Head circumference | 32 (27) | 7 (5) | 0.001 |

Discussion

From these data:

- ❑ Barriers to obtaining anthropometric measurements in critically ill children exist
- ❑ Ordering providers perceived more barriers than nurses
- ❑ More ordering providers vs nurses perceived anthropometry to be important, but don't know when measurements are obtained
- ❑ Although anthropometrics are perceived as important, more nurses were unaware of the frequency of obtaining anthropometric measurements and how often the data was reviewed in the ICU

Conclusions

- ❑ Nurses perceived more *patient specific* barriers
(dialysis, TBI, medical device in place, fragile bones, obesity)
- ❑ Ordering providers perceived more *provider specific* and *work flow* related barriers
(nurses too busy, pt isolation, do not disturb)

Interdisciplinary education is necessary to overcome perceived barriers associated with obtaining anthropometrics in critically ill children

ICU – Pediatric Nutrition Team (ICU – PNuTs)

Stephanie Seiple, RD

Monica Nagle, RD

Sheila Falk, RD

Judy Verger, PhD, CRNP

Madeline Perkel, MSN, RN

Maria Mascarenhas, MD

Vijay Srinivasan, MD

Sharon Irving, PhD, CRNP