



c|h|a

Colorado Hospital Association

Get UP

WHY EARLY MOBILITY IS CRITICAL
TO PATIENT OUTCOMES

Cross Cutting Approach to Harm Reduction

Script Up

Soap Up

Get Up

Wake Up

Can we streamline & simplify
making it easier for front-line
staff and still improve safety?

1 Opioid & Sedation Management



Adverse Drug
Events



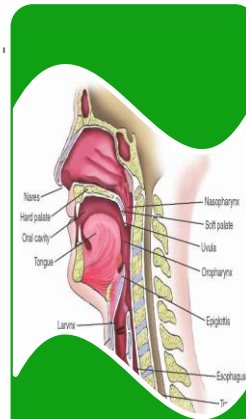
Failure to
Rescue



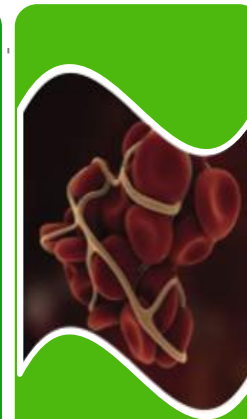
Delirium



Falls



Airway Safety



Venous
Thrombo
Embolism



Ventilator
Associated
Events

W A K E - U P

2 Early Progressive Mobility



Falls



Pressure Injuries



Delirium



CAUTI



Ventilator Associated Events



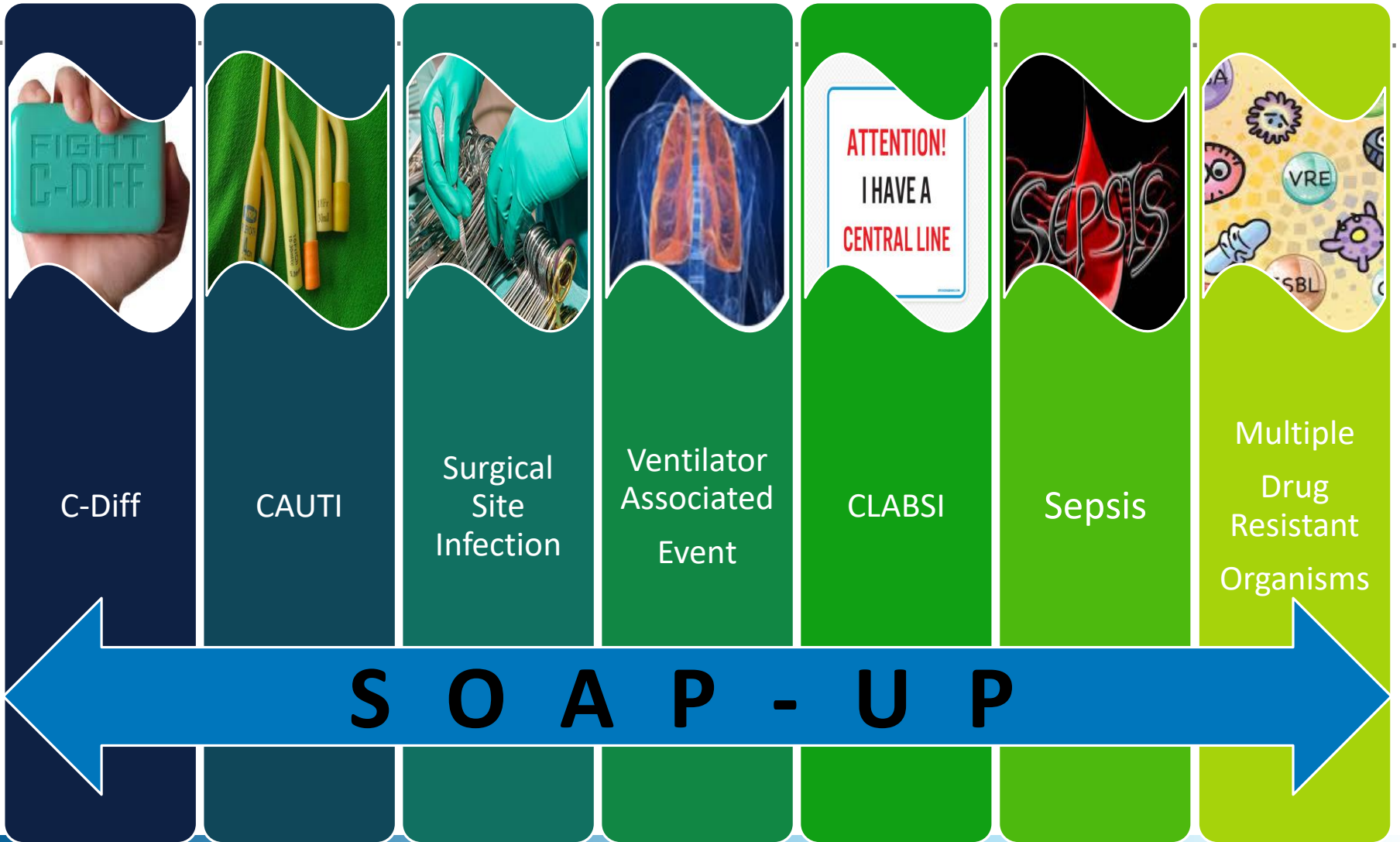
Venous Thrombo Embolism



Readmissions

G E T - U P

3 Hand Hygiene



Why the “UP” Campaign?

Increases impact on harm reduction

Generates momentum in your organization

Focuses support from leadership

Engages front line staff

- connects the dots
- creates a vision

Applies throughout organization

Simplifies patient safety implementation

Help patients recover **faster** and with **fewer** complications

FOUNDATIONAL QUESTIONS:

1. Is my patient awake enough to get up?
2. Have I protected my patient from infections?

GET UP

Cumulative impact on quality of life

“New Walking Dependence” occurs in 16-59% in older hospitalized patients (Hirsh 1990, Lazarus 1991, Mahoney 1998)

65% of patients had a significant functional mobility decline by day 2 (Hirsh 1990)

27% still dependent in walking 3 months post discharge (Mahoney 1998)



It's Simple

If they
came in
walking,
keep them
walking



Polling Question

Do you have a mobility program?

- 1. Yes, we have structured program with a mobility protocol*
- 2. Yes, we have a mobility plan for each patient but it is not structured*
- 3. We are in the early stages of developing a mobility program*
- 4. No, we do not have a mobility program*



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Why Early Mobility is Critical to Patient Outcomes

KATHLEEN VOLLMAN MSN, RN, CCNS, FCCM, FAAN
CLINICAL NURSE SPECIALIST/EDUCATOR/CONSULTANT

ADVANCING NURSING LLC

KVOLLMAN@COMCAST.NET

WWW.VOLLMAN.COM

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Disclosures for Kathleen Vollman

- Consultant-Michigan Hospital Association Keystone Center
- Consultant/Faculty for CUSP for MVP—AHRQ funded national study
- Subject matter expert for CAUTI and CLABSI for CMS/HEN 1.0 & 2.0
- Consultant and speaker bureau for Sage Products LLC
- Consultant and speaker bureau for Hill-Rom Inc.
- Consultant and speaker bureau for Eloquest Healthcare
- Niveus medical



Learning Objectives

At the completion of this activity, the participant will be able to:

- Build the will
- Outline the impact of immobility on various organ systems
- Identify neuro-cognition & skeletal muscle changes that occur with immobility
- Demonstrate the influence mobility has on patient outcomes

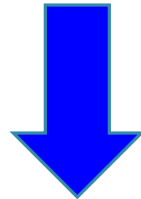
Notes on Hospitals: 1859

“It may seem a strange principle to enunciate as the very first requirement in a Hospital that it should do the sick no harm.”

Florence Nightingale

Advocacy = Safety

Protect The Patient
From Bad Things
Happening on Your
Watch



Implement
Interventional Patient Hygiene

Interventional Patient Hygiene

Mobility Program

Hand Hygiene

Hygiene...the science and practice of the establishment and maintenance of health

Interventional Patient Hygiene....nursing action plan directly focused on fortifying the patients host defense through proactive use of evidence based hygiene care strategies

Catheter Care

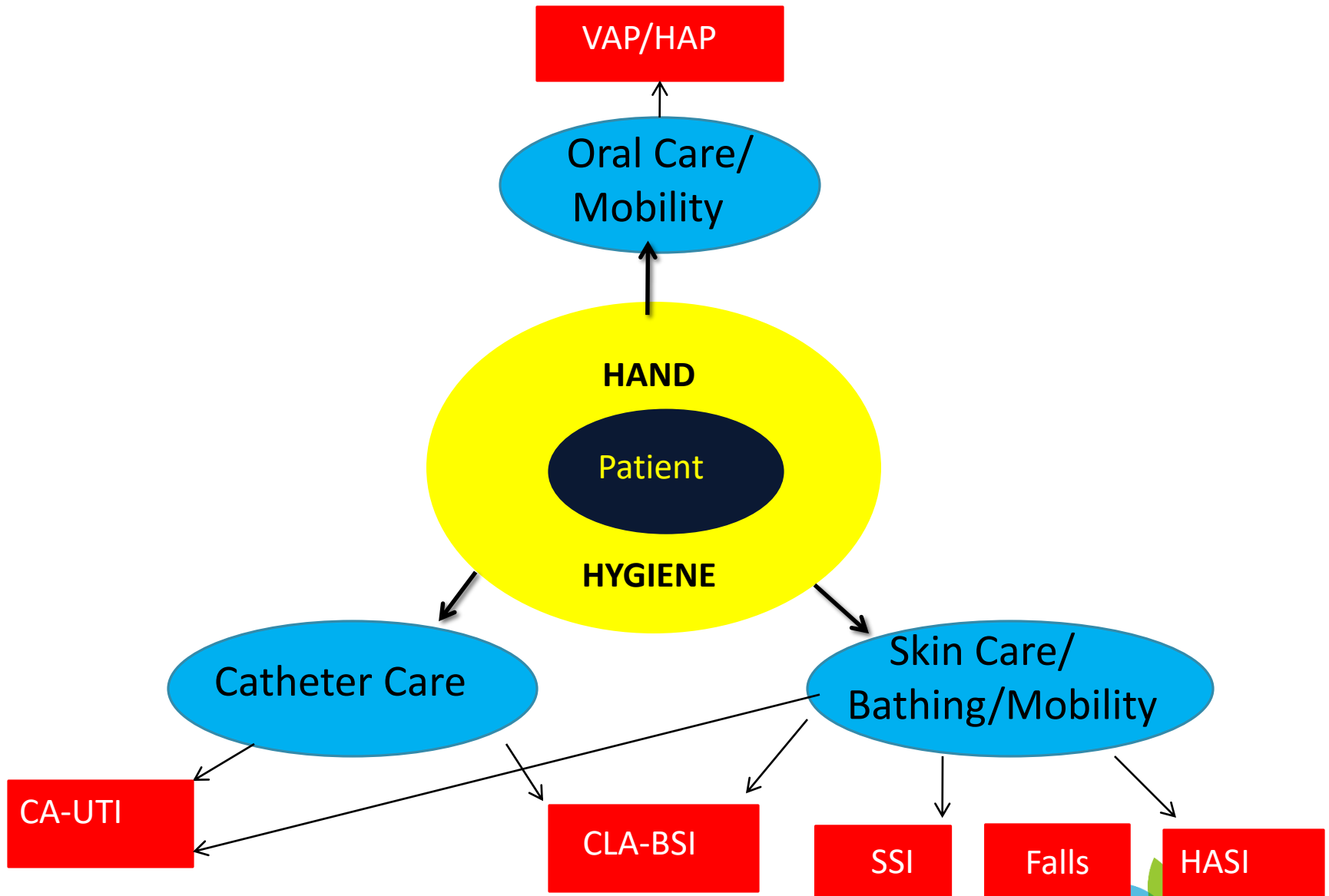
Bathing & Assessment

Comprehensive Oral Care Plan

Incontinence Associated Dermatitis Prevention Program

Pressure Injury Prevention

INTERVENTIONAL PATIENT HYGIENE(IPH)



Achieving the Use of the Evidence



Vollman KM. Intensive Crit Care Nurs, 2013;22(4): 152-154

Missed Nursing Care

- “Any aspect of required patient care that is omitted (either in part or whole) or significantly delayed.”
- A predictor of patient outcomes
- Measures the process of nursing care



Hospital Variation in Missed Nursing Care

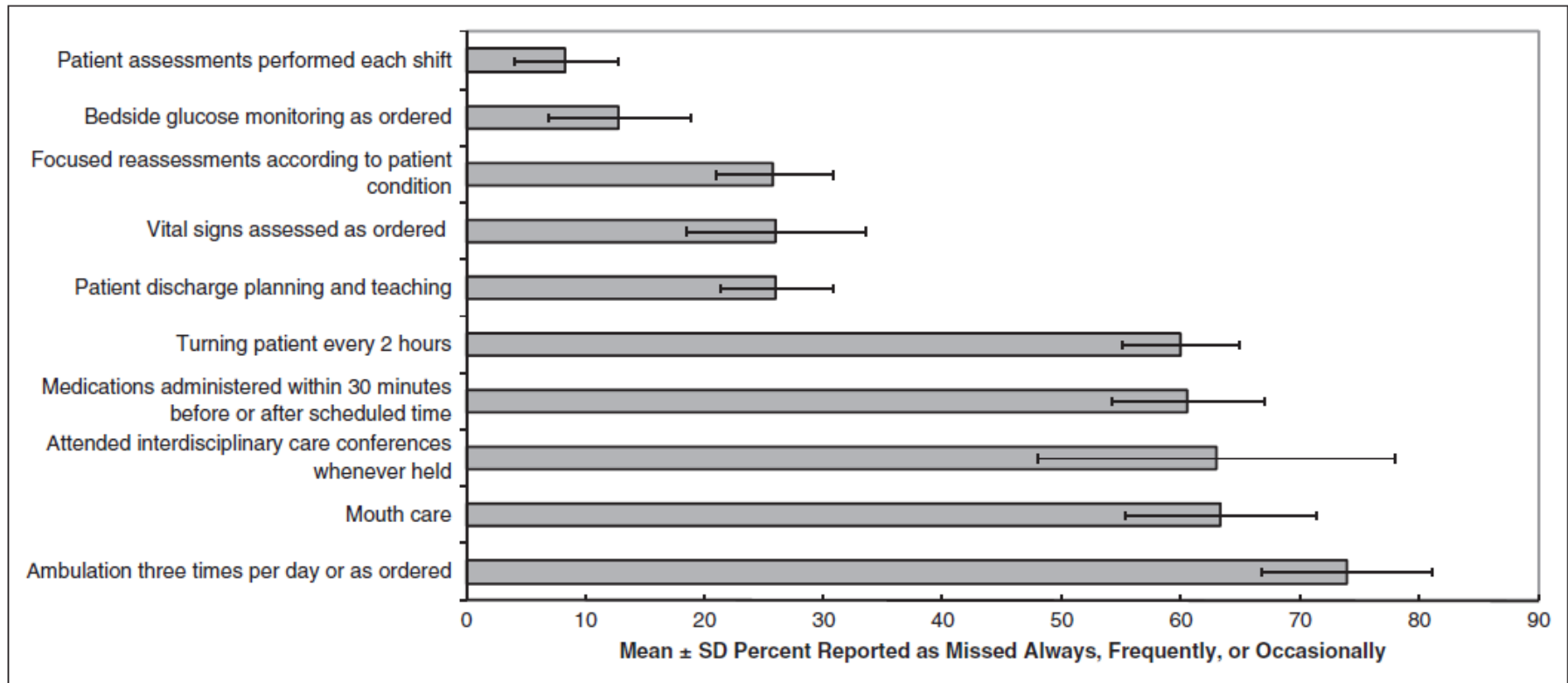


Figure 2. Elements of care most and least frequently missed. The solid bars represent the means across all 10 hospitals, and the range lines indicate the standard deviations.

Facing the Facts about Mobility

Mobility interventions are regularly missed

- Nursing perceptions
 - Lack of time
 - Ease of omission
 - Belief it is PTs responsibility
- Survey results
 - Concern for patients level of weakness, pain and fatigue
 - Presence of devices – IVs and Urinary Catheters
 - Lack of staff to assist

Doherty-King, B Bowers, B. How nurses decide to ambulate hospitalized older adults: development of a conceptual model. Gerontologist. 2011 Dec;51(6): 786-97



Teach us to live that we may dread,
Unnecessary time in bed,
Get people up and we may save,
Our patients from an early grave”

RAJ Asher

Bed Rest: Potentially Harmful

Methodology

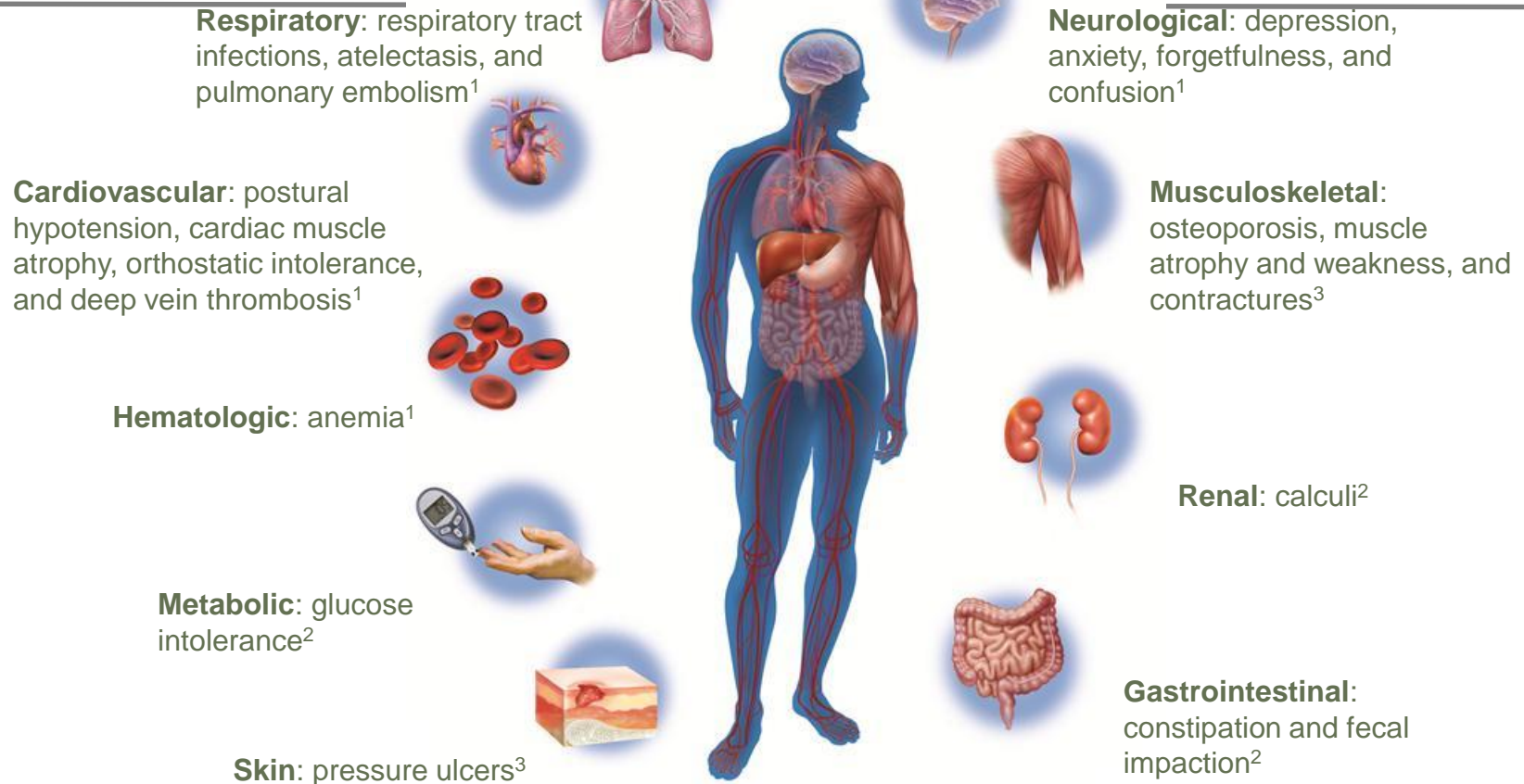
- Systematic review of the literature
- 39 trials of bed rest for 15 different conditions
- 5777 patients

Results

- 24 trials investigating bed rest following a medical procedure
 - No outcomes improve significantly/ 8 worsened
- 15 trials looking at bed rest as a primary treatment
 - No outcomes improved significantly/ 9 worsened

Allen C, et al. Lancet, 1999;354:1229-1223

Potential Complications of Immobility

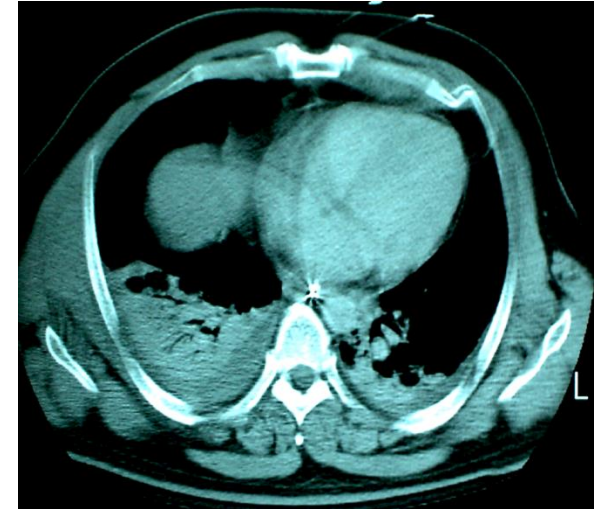


Older Patients Spend a Median of 4% of the Day Out of Bed⁴

1. Knight J, et al. *Nurs Times*. 2009;105(21):16-20.
2. Knight J, et al. *Nurs Times*. 2009;105(22):24-27.
3. Nigam Y, et al. *Nurs Times*. 2009;105(23):18-22
4. Brown CJ, et al. *J Am Geriatr Soc* 2009; 57: 1660-5..

Effects of Immobility on Respiratory Function

- Decreased movement of secretions
- Decreased respiratory motion
- Increased risk of pulmonary embolism
- Increased dependent edema
- Increased risk of atelectasis
- Increased risk of pneumonia
- Decreased arterial oxygen saturation



Respiratory

Knight J, et al. *Nurs Times*. 2009;105(21):16-20.
Vollman KM. *Crit Care Nurse*. 2010;30:S3-S5.

Ventilator-Associated Pneumonia (VAP) Rates

In North America

- In the United States, the Centers for Disease Control (CDC), through the National Healthcare Safety Network, has reported critical care unit VAP rates, per 1,000 ventilator-days, ranging from 0.2 (pediatric cardiothoracic) to 4.4 (burn ICU)
- On average, ICU patients with VAP had an additional 10.5-day LOS³
- Per case: VAP \$40,144. (95% CI, %36,286-\$44,220)⁴

National VAE Benchmark Data Not Available

Rosenthal VD, et al. *Am J Infect Control*. 2012;40(5):396-407.

Dudeck MA, et al. *National Healthcare Safety Network (NHSN) Report, Data Summary for 2012, Device-Associated Module*. American Journal of Infection Control. 2013;41:1148-66.

Restrepo MI, et al. *Infect Control Hosp Epidemiol*. 2010;31(5):509-515.

Zimlichman E. et al. *JAMA Internal Med*, 2013;173(22):2039-46

<http://www.hpsc.ie/AZ/MicrobiologyAntimicrobialResistance/InfectionControlandHAI/Surveillance/HospitalPointPrevalenceSurveys/2012/PPS2012ReportsforIreland/File,13788,en.pdf>

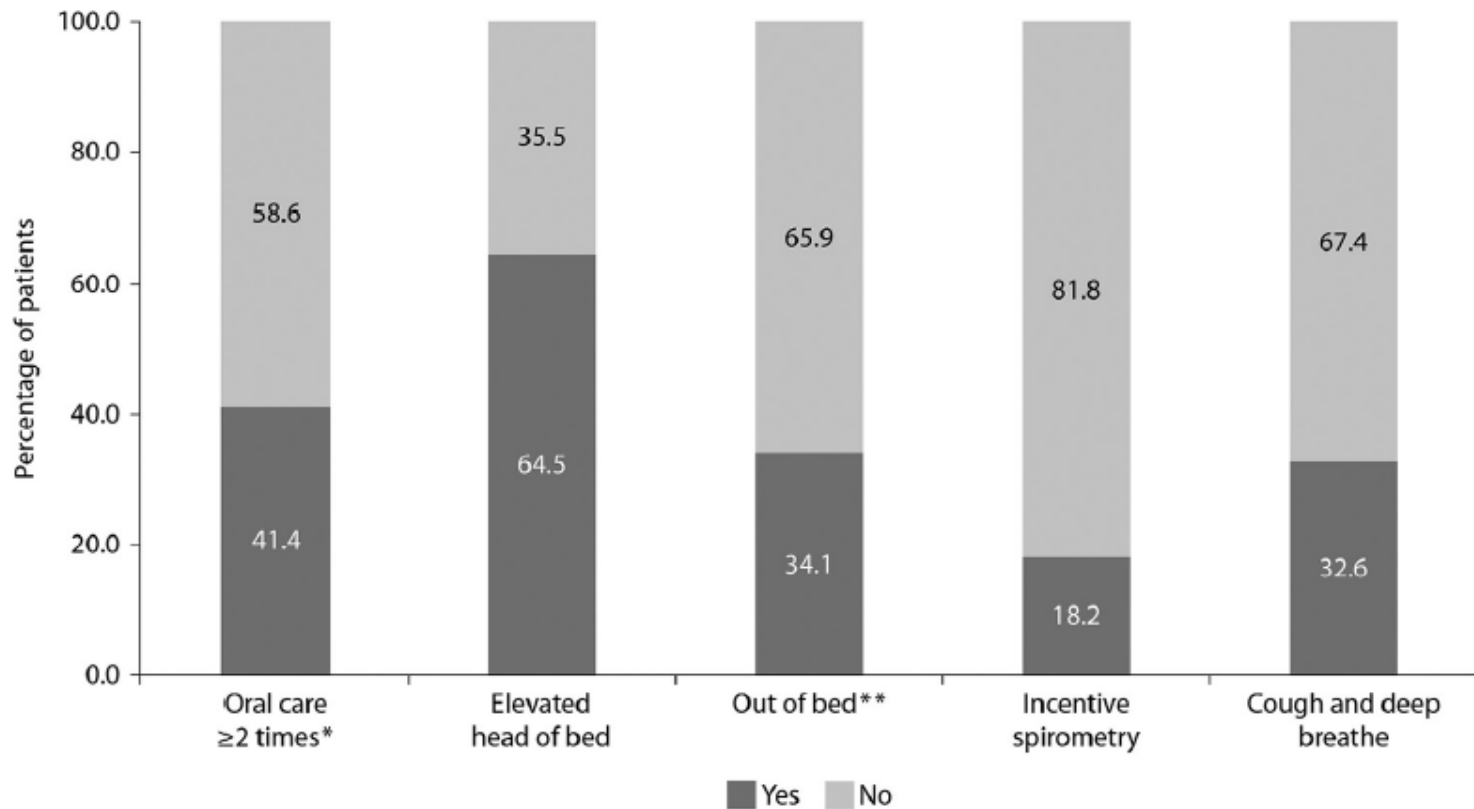
Current Literature: NV-HAP is a National Problem in Hospitals

Study	Incidence	Mortality	+LOS	Cost
J. Davis (2012)	5,600 /3 yrs	18.9%	Not queried	\$28,000
HCUP National database (P)	2/100 pts	14.5%	4 days	\$36,400
Magill et al. CDC (2014)	13% of all HAIs	19%	4-9 days	\$40,000
Micek, Chew, Hampton & Kollef (2016)	Matched controls 174 cases NV-HAP	15.5%vs. 1.6% 8.4 more likely to die	15.9 days vs. 4.4	
See, et al. (2016).	Retrospective review 8 hospitals in PA 2011-2012 VAP excluded 30% of 838 cases/reviewed by CDC	30.9%		

Davis, Pt Safety Authority 2012 9(3).
 Giuliano, K. et al. (2016) AORN Poster 2016
 Magill, S.S. et al. (2014) NEJM. 370(13), p 1198-1208
 Micek, et. al. CHEST 2016 Online first
 See, et. al.. ICHE, 37, pp 818-824
 doi:10.1017/ice.2016.74

HAPPI-2 Incidence of Non-Ventilator Hospital Acquired Pneumonia

Missed nursing care 24 hrs prior to Non-Vent HAP dx.



*No reflects oral care 0–1 times; **Excludes cases where mobility was not allowed (n=1093)

Effects of Immobility on Cardiovascular Function

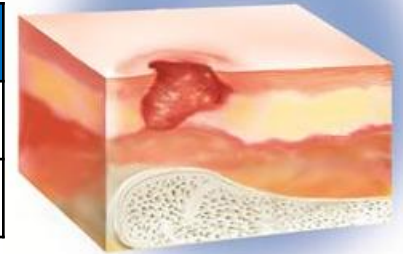
- Fluid shift
 - Occurs when the body goes from upright to supine position^{1,2}
 - 10% of total blood volume is shifted from lower extremities to the rest of the body; 78% of this is taken up in the thorax^{3,4}
 - Decreased blood volume (~15% of plasma volume is lost after 4 weeks of bed rest)²
- Cardiac effects
 - Increased resting heart rate (an increase of ~10 beats/min is observed after 4 weeks of bed rest)^{1,2}
 - Cardiac deconditioning²
- Orthostatic intolerance
 - Increased in bedridden patients due to decreased baroreceptor sensitivity, reduced blood volume, cardiac deconditioning, decreased venous return and stroke volume, and venous distensibility^{1,2}

1. Winkelman C. *AACN Adv Crit Care*. 2009;20:254-266.
2. Knight J, et al. *Nurs Times*. 2009;105(21):16-20.
3. Harms MP, et al. *Exp Physiol*. 2003;88:611-616.
4. Sjostrand T. *Physiol Rev*. 1953;33:202-228.

Effects of Immobility on Integumentary Function

The current facility acquired rate of pressure injuries is high

Setting	Facility –Acquired Rates
Critical Care	3.3% to 53.4%
Acute Care	0% to 12%



Skin

- Rate of 35% for HAPII in 1 South Africa Hospital Stage 3 or 4 facility-acquired pressure injury are not reimbursed & impact value based purchasing
- The average cost per hospital stay for a patient with a stage 3 or 4 pressure injury in the acute care setting is \$43,180

1. National pressure ulcer Advisory panel, European pressure ulcer Advisory panel and Pan Pacific pressure injury alliance. Clinical practice guideline, 2014
2. Hospital-acquired conditions. Centers for Medicare & Medicaid Services website. http://www.cms.gov/HospitalAcqCond/06_Hospital-Acquired_Conditions.asp. Accessed 1/3/12.
3. CMS. *Fed Regist*. 2008;73:48433-49084.
4. Jankowski IM, Nadzam DM. *Jt Comm J Qual Patient Saf*. 2011;37:253-264.
5. <http://www.coloplast.co.za/Documents/South%20Africa/COLOPLAST%20PRESSURE%20ULCER%20SUMMIT%20PRESENTATIONS.pdf>/ (Helen Joseph Hospital)

Skeletal Muscle Deconditioning

Skeletal muscle strength reduces 4-5% every week of bed rest (1-1.5% per day)

Without activity the muscle loses protein

Healthy individuals on 5 days of strict bed rest develop insulin resistance and microvascular dysfunction

2 types of muscle atrophy

- Primary: bed rest, space flight, limb casting
- Secondary: pathology

Candow DG, Chilubick PD J Gerontol, 2005;60A:148-155
Berg HE., et al. J of Appl Physiol, 1997;82(1):182-188
Homburg NM,. Arterioscler Thrombo Vasc Biol, 2007;27(12):2650-2656
Siebens H, et al, J Am Geriatr Soc 2000;48:1545-52
Topp R et al. Am J of Crit Care, 2002;13(2):263-76
Wagenmakers AJM. Clin Nutr 2001;20(5):451-4

Deconditioning During Critical Care

Deconditioning
Can Occur
Within
1 Week of
Bed Rest

MUSCLE MASS

> 15%

MUSCLE STRENGTH

Up to
40%

Puthucheary et al. Acute skeletal muscle wasting in critical illness. JAMA. 2013 Oct 16;310(15):1591-600 .
Hirose et al. The effect of electrical stimulation on the prevention of disuse atrophy in patients with consciousness disturbance in the intensive care unit. J Crit Care. 2013.
Topp et al. The Effect of Bed Rest and the potential for prehabilitation on patients in the intensive care unit. AACN Clin Issues. 2002;13(2):263-276.

Skeletal Muscle Deconditioning

- Muscle groups that lose strength most quickly related to immobilization are those that maintain posture, transferring positions & ambulation.
- > 1/3 of patients with ICU stays greater than two weeks had at least two functionally significant joint contractures.
- Muscle atrophy in mechanically ventilated patients contributes to fatigue of the diaphragm and challenges with weaning.
- Degradation within 6-8 days; continues as long as bedrest occurs
- One day of bed rest requires two weeks of reconditioning to restore baseline muscle strength

Siebens H, et al, J Am Geriatr Soc 2000;48:1545-52

Topp R et al. Am J of Crit Care, 2002;13(2):263-76

Wagenmakers AJM. Clin Nutr 2001;20(5):451-4

Candow DG, Chilibick PD J Gerontol, 2005;60A:148-155

Berg HE., et al. J of Appl Physiol, 1997;82(1):182-188

Hamburg NM,. Arterioscler Thrombo Vasc Biol, 2007;27(12):2650-2656

DeJonghe B, et al. Crit Care Med, 2007;39:2007-2015

Zhang et al. 2008 GenomProtBioinf: 6Kortebien et al. 2008 J Gerontol Med Sci: 63)

ICU-Acquired Weakness (ICUAW)

Definition:

- Syndrome of generalized limb weakness that develops while the patient is critically ill and for which there is no alternative explanation other than the critical illness itself. Average Medical Research Council Scale (MRC) score <4 across all muscles tested.

Incidence:

- 25% of patients with prolonged mechanical ventilation will develop ICUAW
- Est 75,000 pts in US, 1 million worldwide

Caused By:

- Critical illness polyneuropathy, myopathy &/or muscle atrophy
- Combination

ICU-Acquired Weakness (ICUAW)

Risk factors:

- Severe Sepsis^{1,6}
- Duration of mechanical ventilation^{1,4}
- ICU LOS^{5,7}
- Systemic inflammatory response syndrome²
- Multiple organ failure^{2,4}
- Immobility^{2,7}
- Use of corticosteroids/neuromuscular blockers^{2,3,5,6,7}

Negative impact:^{1,2}

- Prolong mechanical ventilation
- Reoccurring respiratory failure & VAP
- Increased ICU and hospital length of stay
- Increase mortality

1. Fan E, et al. *Am J Respir Crit Care Med*. 2014 Dec 15;190(12):1437-46.

2. Kress JP et al. *N Engl J Med*, 2014;370:1626-1635

3. Hermans G, et al. *Crit Care*. 2008;12:238.

4. De Jonghe B, et al. *Crit Care Med*. 2007;35(9):2007-2015.

5. Needham DM, et al. *Am J of Respir and Crit Care Med*. 2014;189(10):1214-1224

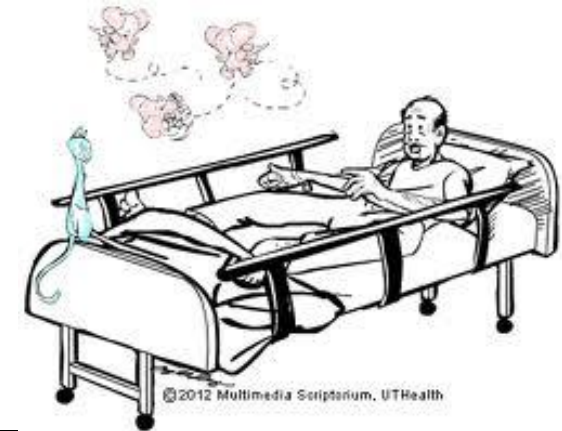
6. Penuelas O, et al. *J of Intensive Care Medicine*, 2016;1-13

7. Hashem MD, et al. *Chest*, 2016;doi:10.1016/j.chest.2016.03.003

The Effects of Hospitalization/ Immobility on Neurological Function

- Delirium
 - Acute, fluctuating change in consciousness and cognition
 - Develops over a brief time period
 - Often an ICU and hospital complication

- Psychological effects
 - Depressed mood
 - Poor appetite or overeating
 - Insomnia or hypersomnia
 - Low energy or fatigue



Brain-ICU Study

Multicenter RCT- medical-surgical ICU's

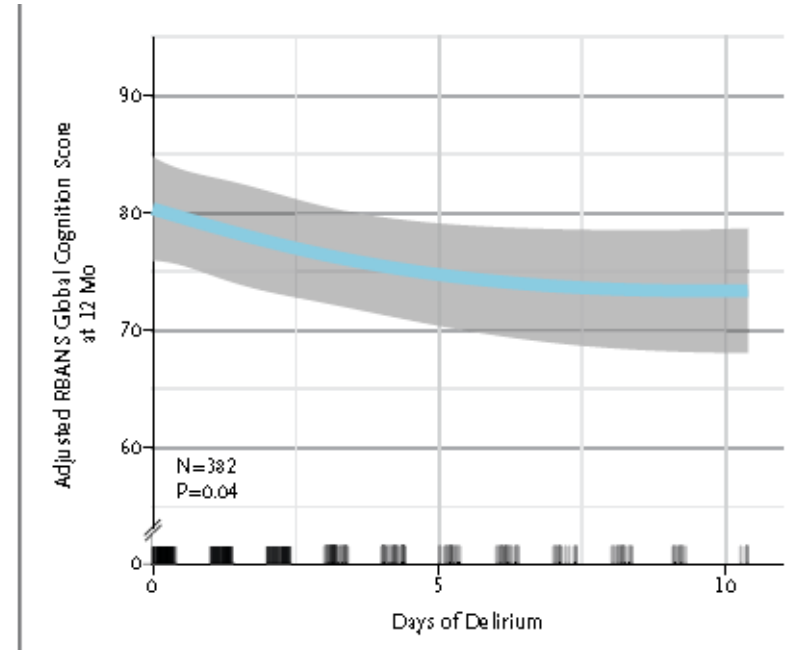
821 patients with ARF or Shock

Evaluated in-hospital delirium and cognitive impact 3-12 months post d/c

1 out of 4
cognitive
Impairment
at 12
months

Results

- 74% of patients developed delirium during hospital stay
- 3 months: 40% had global cognition scores 1.5 SD below population mean, 26% had scores 2 SD below pop mean
- 12 months: 34%(older) & 24%(younger) global cognition scores below the mean



Pandharipande, PP. et al. N Engl J Med;369:1306:1316

Outcomes of Early Mobility Programs

- ↓ incidence of VAP
- ↓ time on the ventilator
- ↓ days of sedation
- ↓ incidence of skin injury
- ↓ delirium
- ↑ ambulatory distance
- ↑ function
- ↓ in hospital readmissions



Bassett RD, et al. Intensive Crit Care Nurs, 2012 Apr;28(2):88-97
Staudinger t, et al. Crit Care Med, 2010;38.
Abroung F, et al. Critical Care, 2011;15:R6
Morris PE, et al. Crit Care Med, 2008;36:2238-2243
Pohlman MC, et al. Crit Care Med, 2010;38:2089-2094
Schweickert WD, et al. Lancet, 373(9678):1874-82.
Thomsen GE, et al. CCM 2008;36;1119-1124
Winkelman C et al, CCN,2010;30:36-60
Azuh O, et al. The American Journal of Medicine, 2016,
doi:10.106/jmjmed.2016.03.032

Polling Question

In your hospital setting, who “owns” mobility?

For example: When your patient needs to do his or her highest level of activity,

Who initiates the mobility activity?

1. *Nurses*
2. *Nurses aides*
3. *Therapists, physical or occupational*
4. *Mobility Team/Lift Team*
5. *Physicians*

Next Webinars

Registration links will be sent to all registered participants of today's webinar

Early Mobility: Critical Care Environment and Science - How to Build a Program

Thursday, Jan. 11, 2018 – 11 a.m. - noon

Registration: <https://attendee.gotowebinar.com/register/5347988660025033217>

Early Mobility: Partnering to Ensure Safety in the Med-Surg Environment

Tuesday, Feb. 6, 2018 – 11 a.m. – noon

Registration: <https://attendee.gotowebinar.com/register/3514803709359896065>

Thank You

