Structural Empowerment: Outcomes of Adding Nurse Practitioners to Interprofessional Teams

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Objectives

- Summarize structural empowerment theory and its applicability in the development of NP models of care.
- Identify metrics and methods for measurement of NP associated outcomes.
- Quantify NP associated quality outcomes in terms of cost savings and cost avoidance.


Vanderbilt LifeFlight

VUMC

- Quaternary academic medical center located in Nashville, Tn with 3 hospitals:
  - Vanderbilt University Hospital (VUH)
  - Monroe Carell Jr Children's Hospital at Vanderbilt
  - Vanderbilt Psychiatric Hospital.
- Outpatient locations and affiliations across the region.
- Nationally ranked Medical (14^{th}) and Nursing Schools (15^{th}).

Vanderbilt University Hospital

- 619 beds
- High acuity provider - Level 1 trauma center, burn center, organ transplant, high-risk obstetrics (fetal surgery), and LifeFlight (5 rotor wing, 1 fixed wing).
- **36,711** annual admissions, **60,479** ED visits and **35,112** surgical cases
- Vanderbilt Medical Group - **1,725,901** visits
- The hospital and associated outpatient areas - **5,420** FTEs and clinics **1700** FTEs

*Fiscal Year 2012

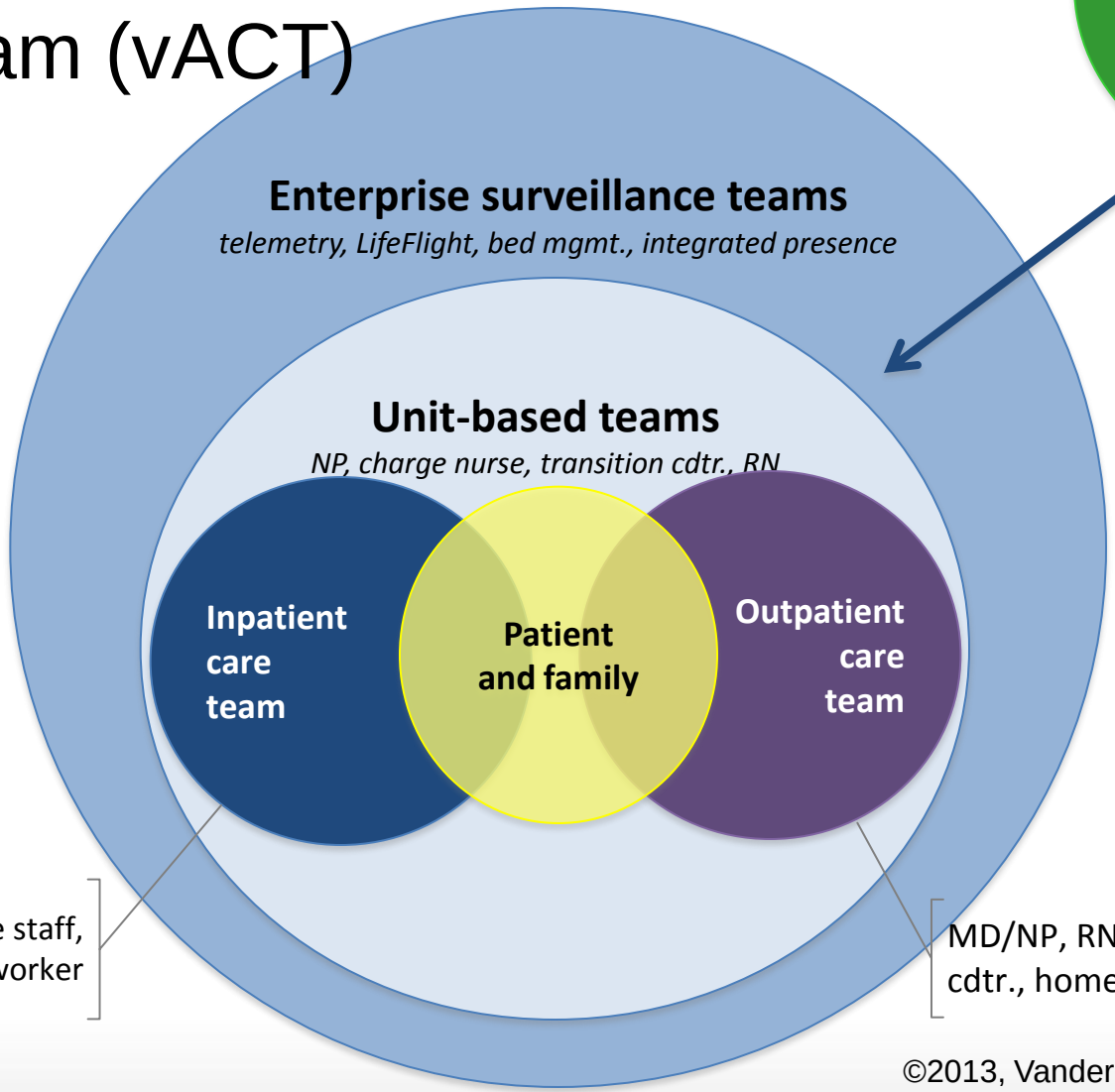
APRN Practice

- Center for Advanced Practice and Allied Health Professionals (CAPNAH) – established in 2005.
- Over 700 APRNs practicing at VUMC.
- Faculty appointed and billing provider status for most.
- 85 APRNs in VUH.
- Collaboration and supervision required by state law.

Unique Scholarly Project Opportunity

- Three DNP students in leadership roles
  - Chief Nursing Officer (CNO)
  - Assistant Director for Advanced Practice
  - Associate Hospital Director for Perioperative Services
- CNO and Assistant Director – already partnered in development of acute care APRN practices
- DNP student led organization-wide project to develop an innovative care model with APRNs at the center.

Vanderbilt Anticipatory Care Team (vACT)



Intervention teams: rapid response, glycemic mgmt., comprehensive pain svc.

MD/NP, RN, house staff, transition cdtr., social worker

MD/NP, RN, transition cdtr., homecare

vACT Poof of Concept Interventions

- Unit-based APRN led team providing both routine and enhanced care
- Structured huddles
- Coordinated activities with intervention teams to provide targeted interventions based on patient specific need
- Role clarification and team training for increased communication, efficiency and reliability
- Use of a dynamic risk profile to anticipate care needs

Long-term Evaluation (Post POC)

Throughput

- Length of stay

Transitions

- Readmission rates
- HCAHPS – discharge information

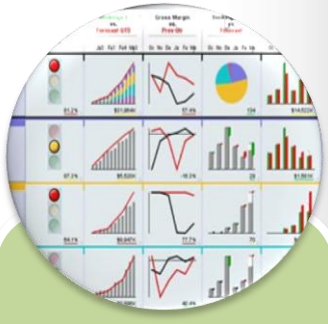
Patient Experiences

- HCAHPS – overall quality of care
- HCAHPS pain mgmt.
- PRC

Team Effectiveness

- Team devel. measure
- AHRQ culture of safety
- HCAHPS teamwork

Cost and Quality Effectiveness



- NDNQI fall and pressure ulcer metrics
- Rate of adverse events
- Core measures
- Cost per discharge

Structural Empowerment of Inpatient APRNs within an Academic Medical Center

Project 1 – Structural Empowerment and Unit-based APRN Role

Aims:

- Describe the structures associated with the role of the unit-based APRN using the inpatient nurse practitioner structural empowerment concept map as a framework.
- Create a preliminary unit-based APRN role description and implementation plan using Bryant-Lukosius and DiCenso's (2004) PEPPA framework.
- Implement the unit-based APRN on the vACT pilot unit.
- Complete a written role description and proposed workflow map for the unit-based APRN at the time of implementation of the proof of concept vACT unit.

Synthesis of Evidence- Structural Empowerment

- Seminal work – Kanter's (1977, 1993) Theory of Structural Power in Organizations
- Developed in nursing realm by Chandler (1992), Laschinger (1997), **Almost & Laschinger (2002)**, Manojlovich (2007), and **Stewart et al. (2010)**.
- Primarily descriptive, qualitative or quasi-experimental. Limited quantitative data
- Limited evidence specific to structural empowerment of APRNs – opportunity for further research and strengthens project

Bold – APRN specific

Concepts

- Structural empowerment is defined as those environmental and situational characteristics that promote empowerment (Manojlovich, 2007).
- Empowerment can be defined as enabling someone to act (Chandler, 1992, p.65).
- Laschinger (1996) states that employees must have "access to resources, information, support, and opportunity" (p. 26) to be empowered.

Structural Empowerment Interviews

- Interviews of 10 current Acute Care APRN within VUH
- Convenience sample based on schedule availability
- Components of interviews
  - Provided with definition of structural empowerment
  - Structured series of questions
  - Given concept map and asked to mark each element as Important (I), Somewhat Important (SI) or Not Important (NI)
  - Recorded, transcribed and sorted for themes

Interview Questions

- *Given your experiences as an APRN, please describe what makes you feel empowered?*
- *Are there specific processes, structures or relationships that increase your feelings of empowerment?*
- *Please describe what decreases your feelings of empowerment.*
- *Can you provide suggestions for strategies to mitigate these barriers?*
- *Anything else you would like to add?*

Characteristics of Participants

Participant	Clinical Area	Clinical Grouping	Years of Experience
1	SICU	ICU	5.4
2	CVICU	ICU	6
3	SICU	ICU	6
4	Neurosurgery	Medical/Surgical	25
5	Medicine	Medical/Surgical	22
6	CVICU	ICU	22.2
7	Trauma	Medical/Surgical	16
8	Trauma	Medical/Surgical	16
9	CVICU	ICU	13
10	Administration	All	8.2
		Mean	**14.0**

RESULTS

	Participant Number										
Themes	1	2	3	4	5	6	7	8	9	10	**Percent**
Leadership Characteristics											
Overall leadership support	E			E	E		E			E	50%
Medical director support	E								E		20%
Specific leader for APRNs	E	E	E	E	E	E			E	E	80%
Importance of leader being an APRN		E	E	E	E	E			E	E	70%
Organized internal APRN network (CAPNAH)				E	E						20%

Physician Characteristics											Percent
Practice site physician relationships/trust	E	E	E	E	E	E	E	E	E	E	100%
Distrust by physicians	D	D							D		30%
Physician comfort with and understanding of NP role	E	E	D		D				D		50%
Physician's failure to agree on care/protocols							D	D			20%
Physician disregarding/ignoring APN plan of care		D					D	D	D		40%
Micromanagement of clinical decisions by physicians		D				D			D		30%

Team Characteristics											Percent
Functional Interprofessional team		E		E			E	E	E	E	60%
Empowering/enabling bedside nurses		E	E	E			E		E		50%
Internal APRN team cohesion/Self-governance						E			E	E	30%

Other											Percent
Autonomy of practice		E				E	E		E		40%
Effective communication	E	E						E	E	E	50%
APRN role definition				E							10%
Continuing education/formal orientation	E		E	E					D		40%
Personal experience as APRN		E					E				20%
Consistent practices across APRNs		E							E		20%
Learning from mistakes		E									10%
Tools to do the job				E						E	20%
Inadequate staffing									D		10%
Peer support/networking					E						10%
Marginalizing the role					D			D			20%

Other

Importance of Elements of Concept Map

Description	Average Score
NP Leader	2.0
Alignement with Nursing and Medical Staff	2.0
Continuing Education	2.0
Role Delineation	1.9
Peer Support	1.9
Peer Review	1.8
EBP and Dissemination	1.8
Medical Director	1.7
Financial Value Creation	1.6
Professional Involvement	1.6
Aligned Financial Incentives	1.3

Numerical rankings: I = 2, SI = 1, NI = 0

Limitations

- Academic medical center specific
- Intended as descriptive and performance improvement (not qualitative research)
- Potential influence of CNO role on participants responses

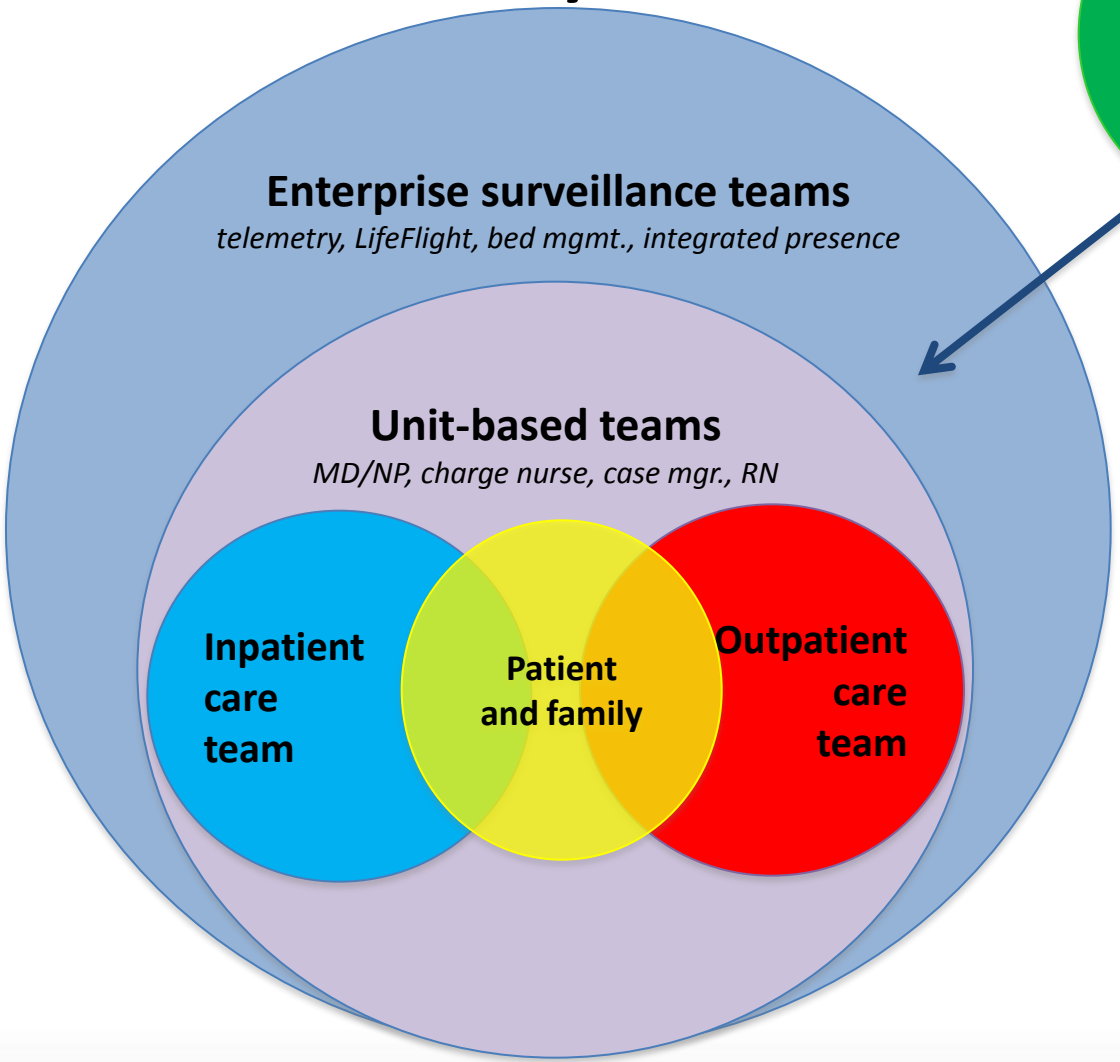
APRNS -- Certified NPs to Interprofessional Teams

- Health care in need of solutions to maximize cost-effectiveness while improving quality, safety and delivery of health care.
- Specific concerns regarding LOS, readmissions, HAC and AE related to inpatient care.
- IOM's emphasis on critical role nurses will play in safe, quality care and coverage.
  - APRNS should practice to full scope of their license
  - Theoretical contributions of nursing
  - Exploration of certified NPs in the acute care inpatient environment.

Purpose and Significance

- Investigate inpatient NP practice outcomes at Vanderbilt University Hospital as they relate to quality and reduction in health care costs.
- What is the evidence that this provider type can provide cost-effective, consistent quality care?
- The evidence should support future initiatives on behalf of nursing, advanced practice and health care, in addressing challenges to improve healthcare and reduce associated costs.

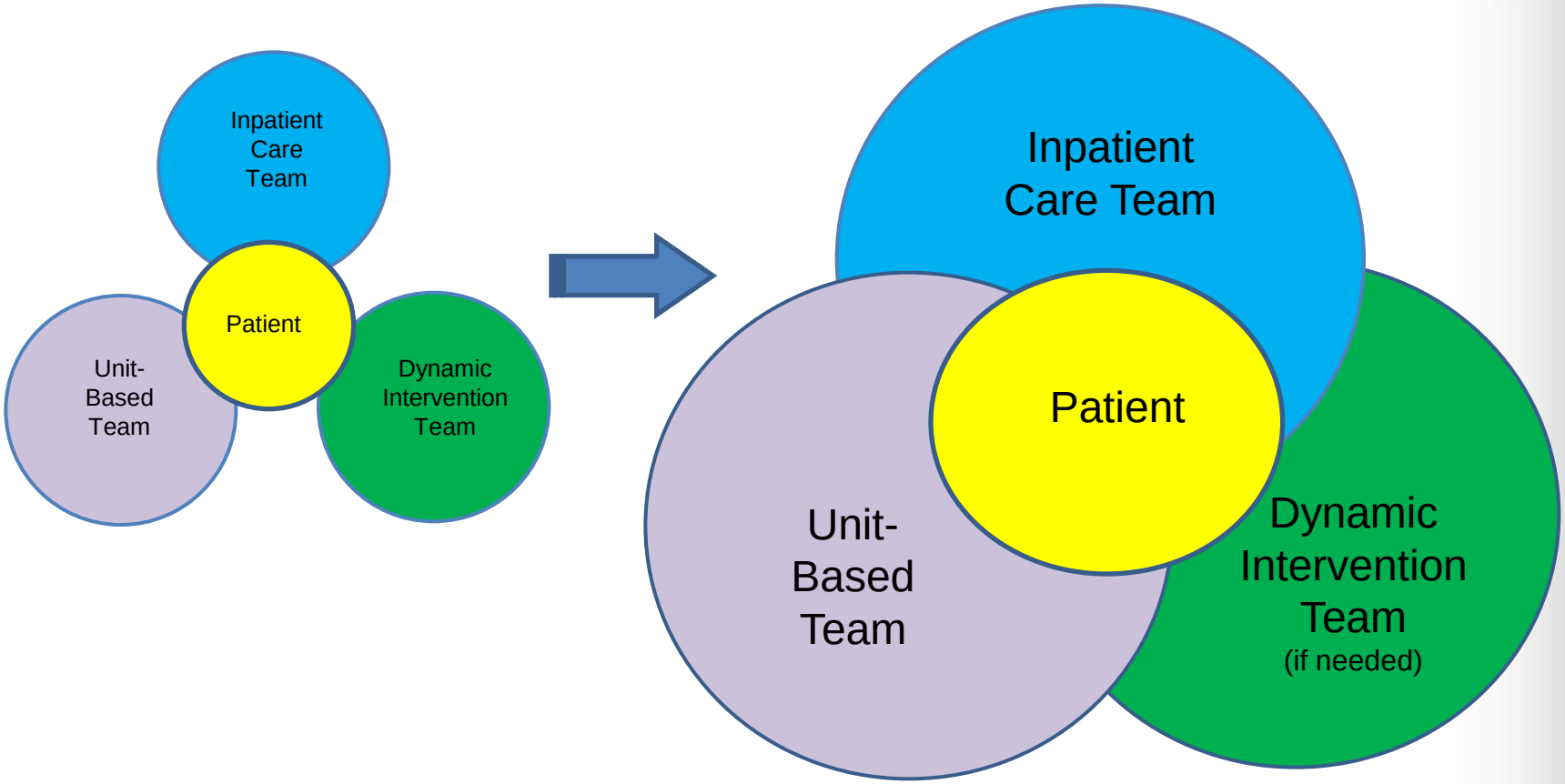
vACT Care Delivery Model



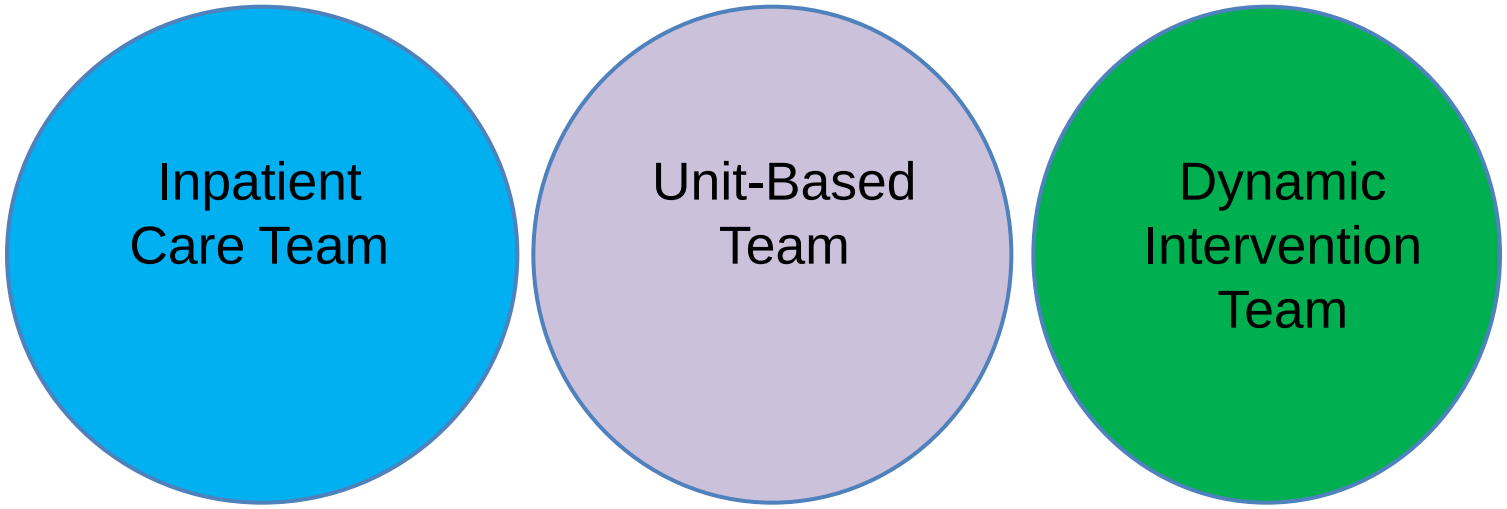
Intervention teams: rapid response, glycemic mgmt., comprehensive pain svc.

P. Jones & N. Feistritzer, 2012

Vanderbilt Anticipatory Care Teams



Can NPs effectively lead these teams?



Adding NPs to Inpatient Care Teams -- Literature Review

- Inpatient studies that have shown the impact NPs have had on standardization of evidence based guidelines and quality of care.
- In each selected study, NP associated quality outcomes were attached to financial outcomes attributed to cost savings or cost avoidance.
- Analyzed inpatient related issues -- LOS, Resource utilization, HAC and/or AE

Source	Findings
Burns, et al., 2002	Per pt. savings $16,293.
Burns, et al., 2003	Over $3,000,000 in cost savings.
Butler et al., 2011	Increase in charge capture by 48%.
Chen et al., 2009	Total drug costs per patient for $208
Cowan, et al., 2006	Increased hospital profit by $952 per pt.
Ettner, et al., 2006	Net cost savings of $978 per patient.
Meyer, et al., 2005	Total cost decreased by $5039 per pt.
Russell, et al., 2002	Total cost savings of $2,467,328.
Sise et al., 2011	Decreased complications by 28.4%, LOS by 36.2%, costs of care by 30.4%

APRN Role Definition

- PEPPA Framework by Bryant-Lukosius & DiCenso (2004)
- Established specific implementation teams
- Interprofessional participants and stakeholder feedback
- Qualitative and quantitative data used to determine APRN focus

PEPPA Framework for APRN role design, implementation and evaluation

- Logically congruent with concept map
- Participatory, evidence-based, patient focused
- 9 step process
- Participatory action research (PAR) principles embedded
- Excellent roadmap
- Roles – stakeholders, participants and facilitator

Bryant-Lukosius & DiCenso (2004)

Preparation

- Proforma for each practice
- Protocol development
- Established professional practice evaluation
- Outcomes identified and tools developed
- Job description and job requirement of ACNP
- 90 day credentialing and privileging
- Orientation, training and ongoing education

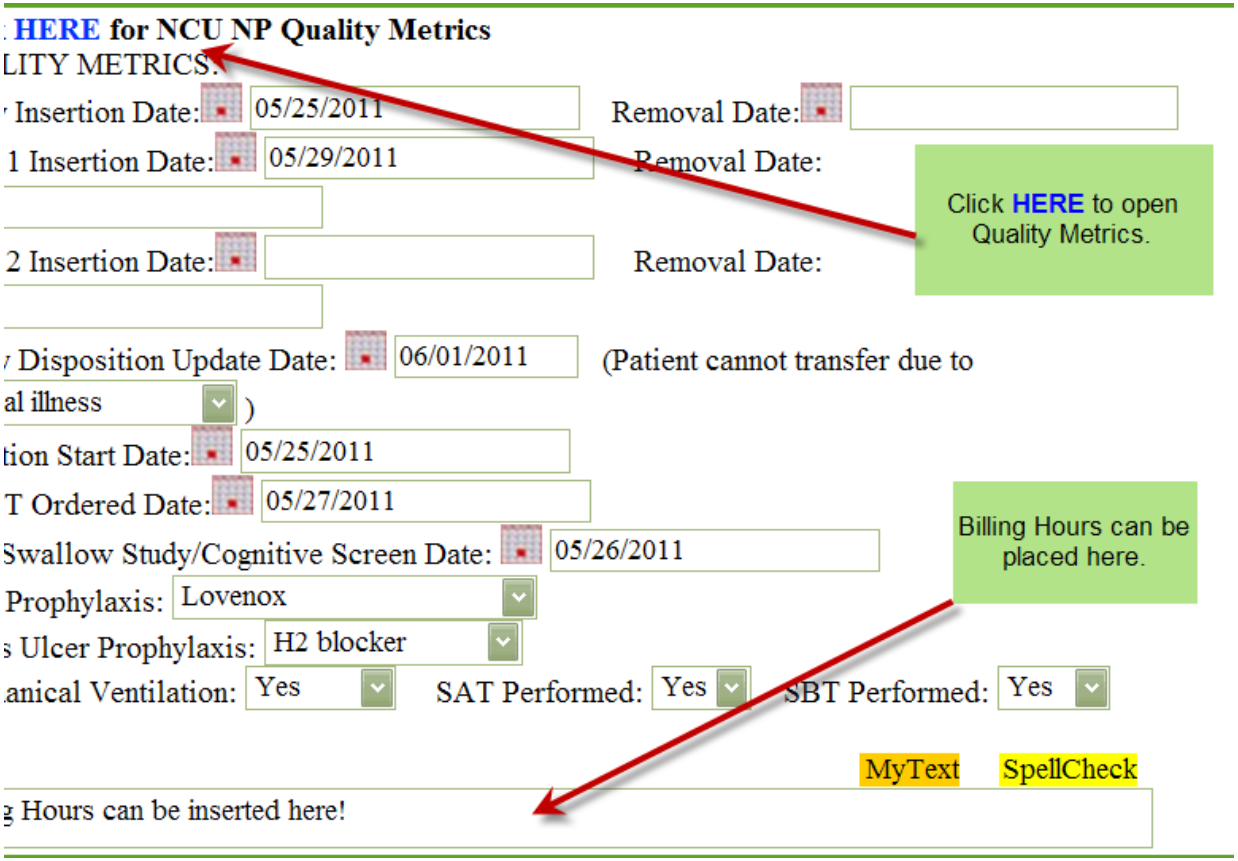
Project Design

- Retrospective, secondary analysis of 5 inpatient NP-led anticipatory teams
- Analysis of financial productivity
- Comparison of average length of stay (LOS)
- Assessment of quality outcomes associated with cost avoidance

Length of Stay

- Average length of stay
  - Actual and Risk-adjusted
    - MSDRG, age, complications, co-morbidities, complexity, etc.; UHC O/E calculation of acuity
  - Admissions, Transfers and Discharge (ADT) tracking software
- Statistician, Byron Lee, BS, MBA

Quality Data Collection Imbedded in Daily Progress Notes



NP Specific Dashboards

NP MICU Mechanical Ventilation patients with Stress Ulcer Prophylaxis

MICU

MICU Quality Measure - MICU : MICU

9/30/2012

BY MICU Provider	% Mech Vent Pts with SUP	Mech Vent Cases	% Mech Vent Pts with SUP FYTD	Mech Vent Cases FYTD
CHASSAN, CHERRY B. ACNP, NURSE PRACTITIONER	92%	13	90%	41
CLEVELAND, CHRISTINA M, NURSE PRACTITIONER	100%	25	98%	51
DAVIDSON, STEPHANIE, NURSE PRACTITIONER	100%	24	100%	50
EVANS, EMILY, NURSE PRACTITIONER	100%	16	98%	54
FLEMMONS, LISA N, NURSE PRACTITIONER	100%	10	98%	41
HELLERVIK, SUSAN, NURSE PRACTITIONER	94%	18	94%	64
HOLCOMBE, EMILY, NURSE	74%	19	74%	19
LANDSPERGER, JANNA S, NURSE PRACTITIONER	75%	4	97%	31
WILLIAMS, KRISTINA JILL, NURSE PRACTITIONER	96%	28	99%	75
Total	94%	157	96%	426

5 Inpatient NP-Led Teams

- **Dynamic Focused Team: RRT**
- **Dynamic Focused Team: GMS**
- **Unit-Based Teams: SICU, CVICU, NCU**
- **Primary, Unit-Based Team: Trauma**
- **Primary, Unit-Based Team: MICU**

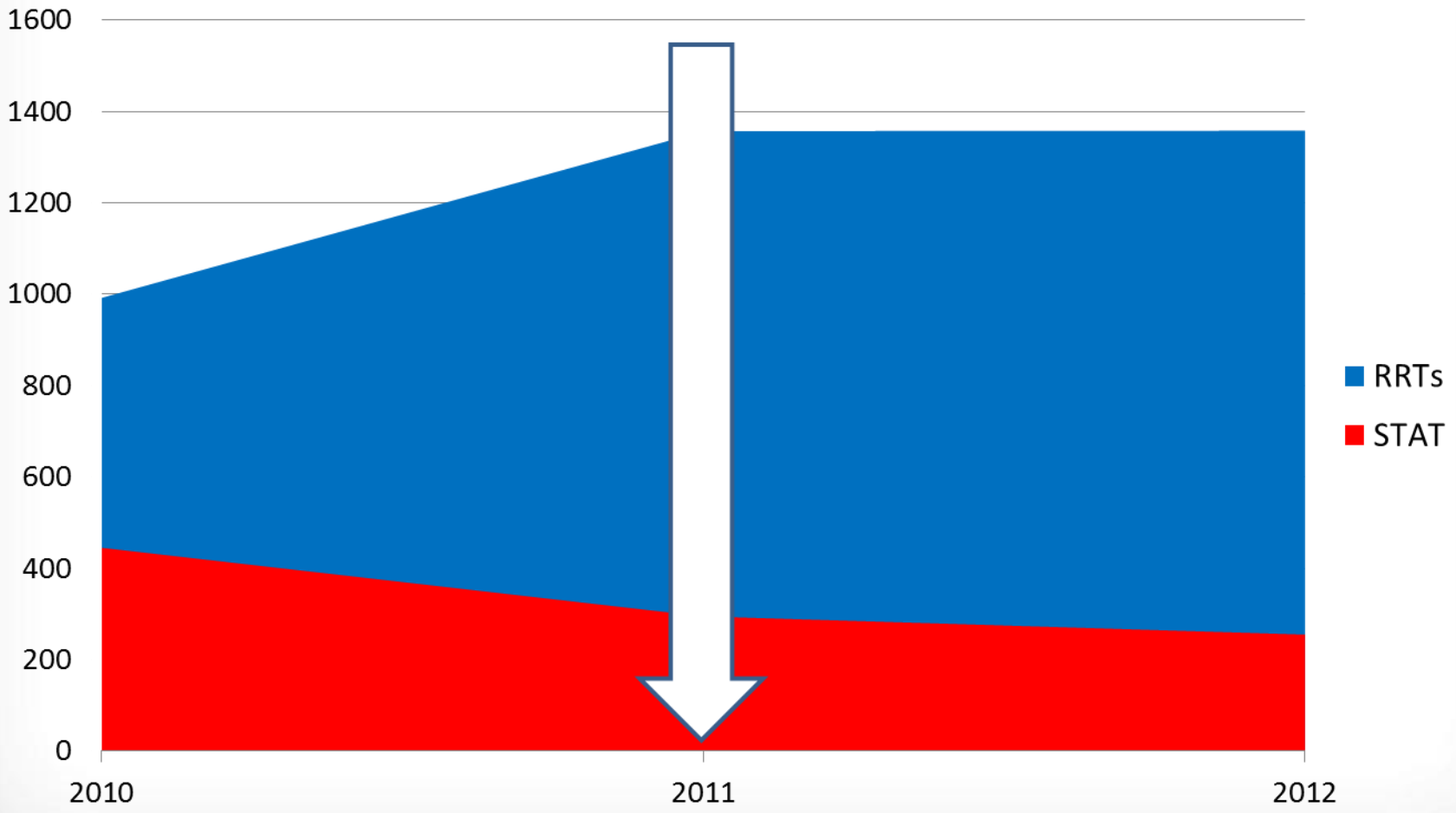
Dynamic Intervention Team

NP-Led RRT

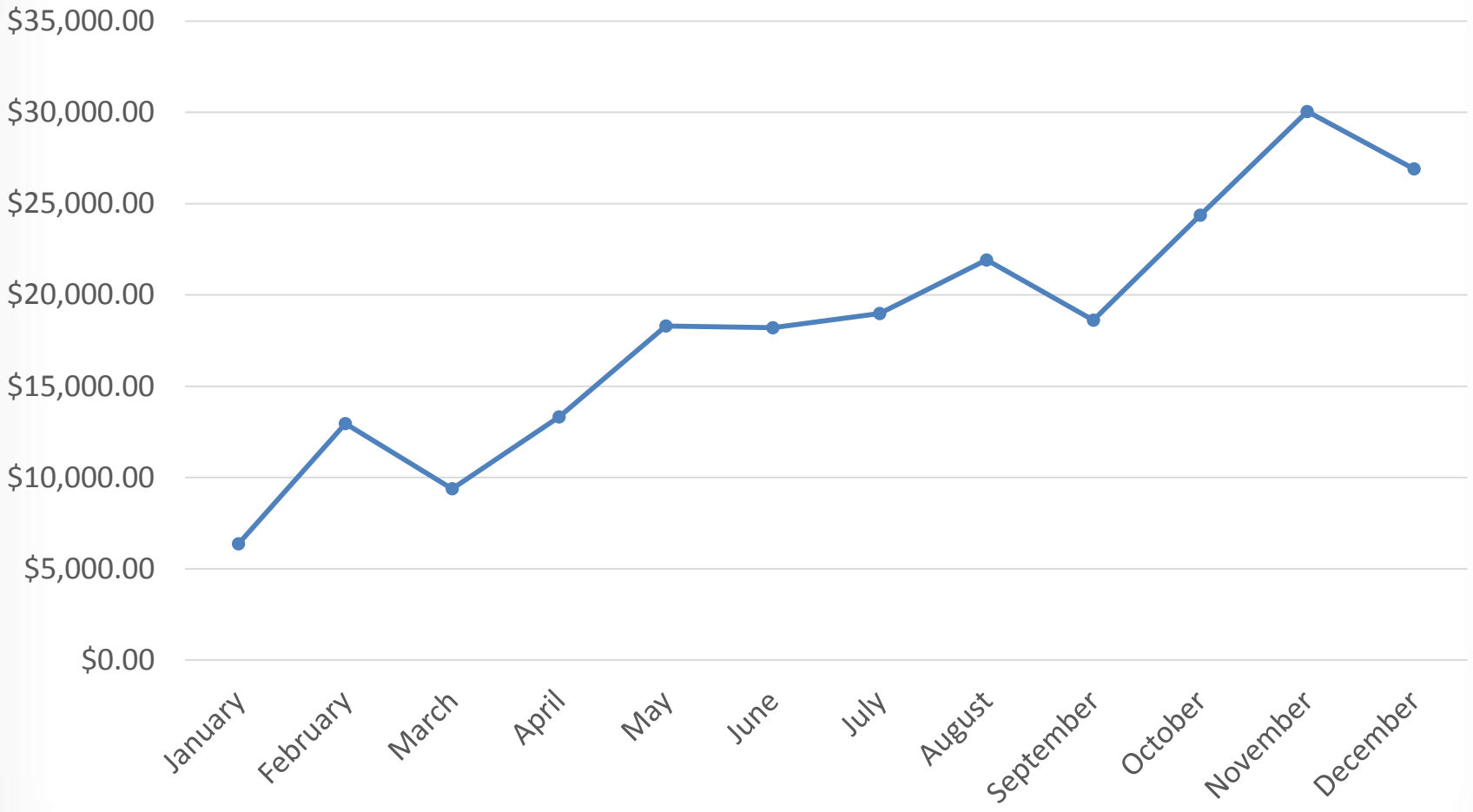
- Provide immediate prescriptive provider on calls for early diagnosis and management
- NPs added 2011
- Charge nurses expressed 96% satisfaction
- NPs collected data on each call via secure database
- NPs billed for some calls

2011-2012 Charges	2011-2012 Average time on call	2011-2012 Reasons for call	2011-2012 Location after call
No charge (1052) **Charge posted (759)** **No data (39)**	31.85 minutes	Circulatory (689) Respiratory (498) Neurological (341)	Remained in same location (1074) ICU (592) Non-ICU, higher level of care (156) Death (7) No data (21)

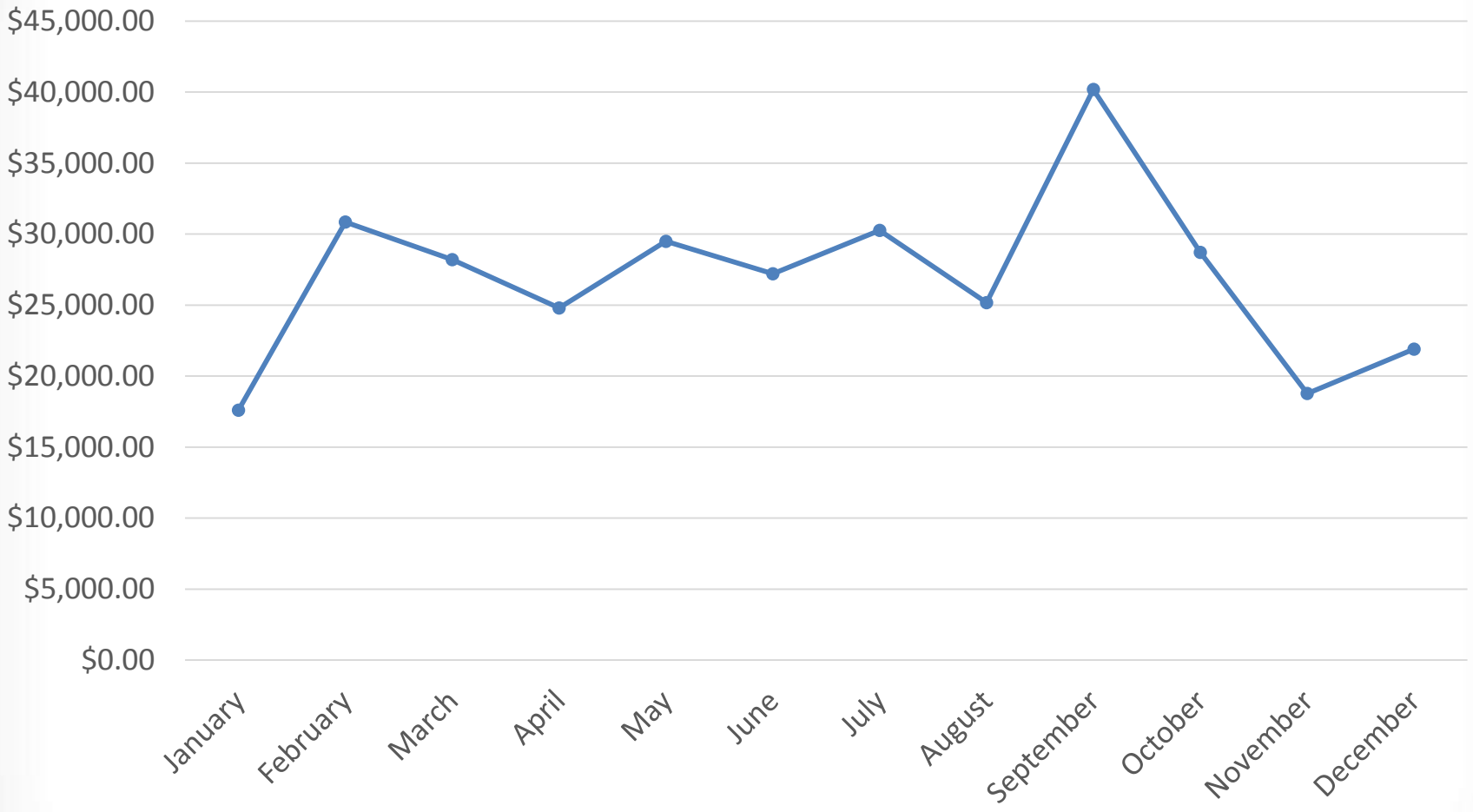
Proportion of STAT calls to overall STAT/RRT calls
NPs added 2011



Posted NP RRT Charges 2011



Posted NP RRT Charges 2012



Dynamic Intervention Team

NP-Led Glucose Management Service

- Provide diabetes management, reduce complications and length of stay
- Service began August 1, 2012
- Review of encounters August 1, 2012 – January 31, 2013
- NP billed for 202 calls
  - Posted charges $204,304.00
  - Gross collections $82,762.00
  - Salary and fringe expenses $50,000

Time	# consults seen by GMS NP	GMS NP Risk-adjusted ALOS	Hospital Risk-adjusted ALOS	Average # days from admission to consult
August 1, 2012 – January 31, 2013	202	1.11	0.94	4.3

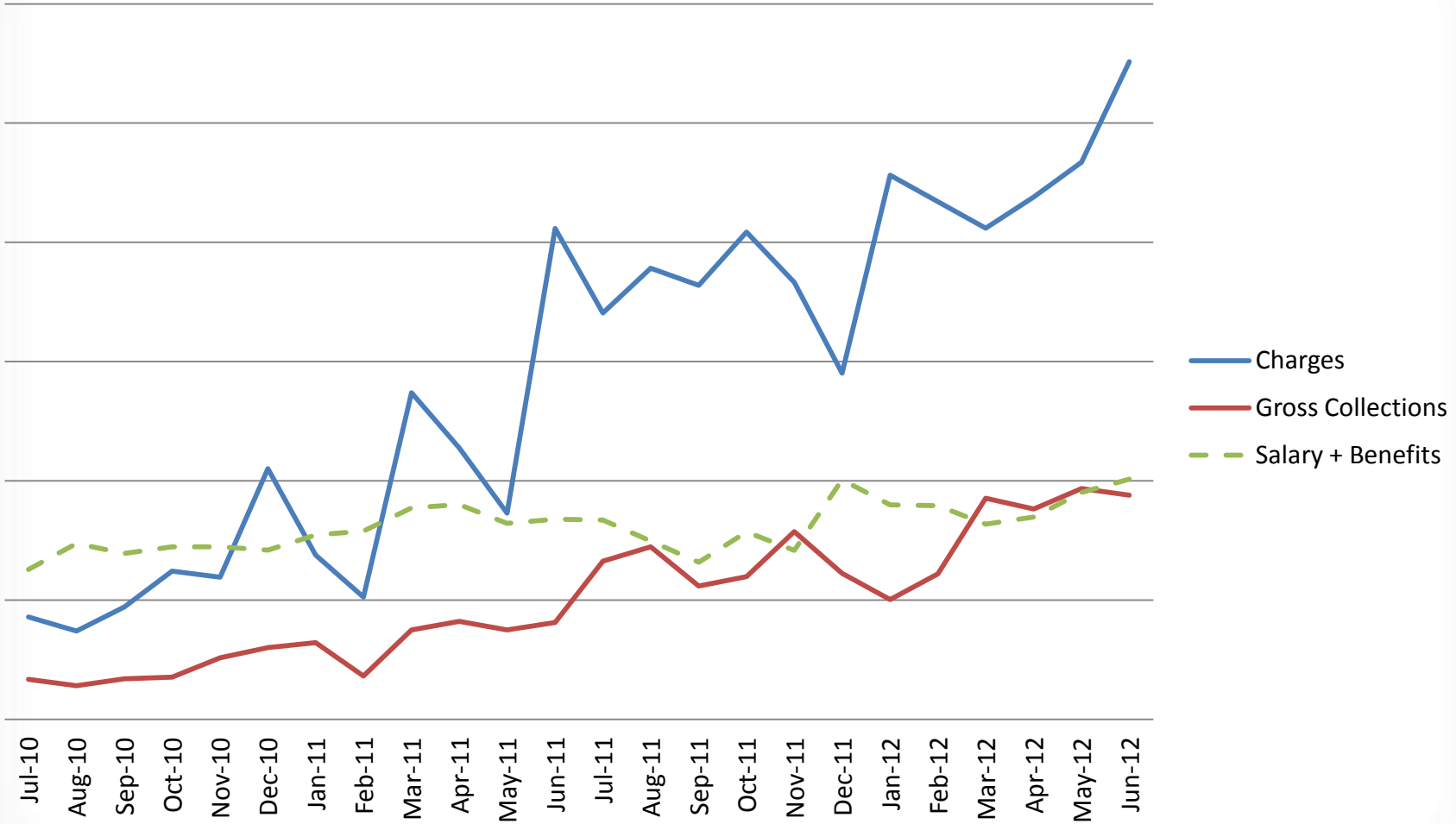
Unit-Based Teams

3 ICUs -- NCU, SICU, CVICU

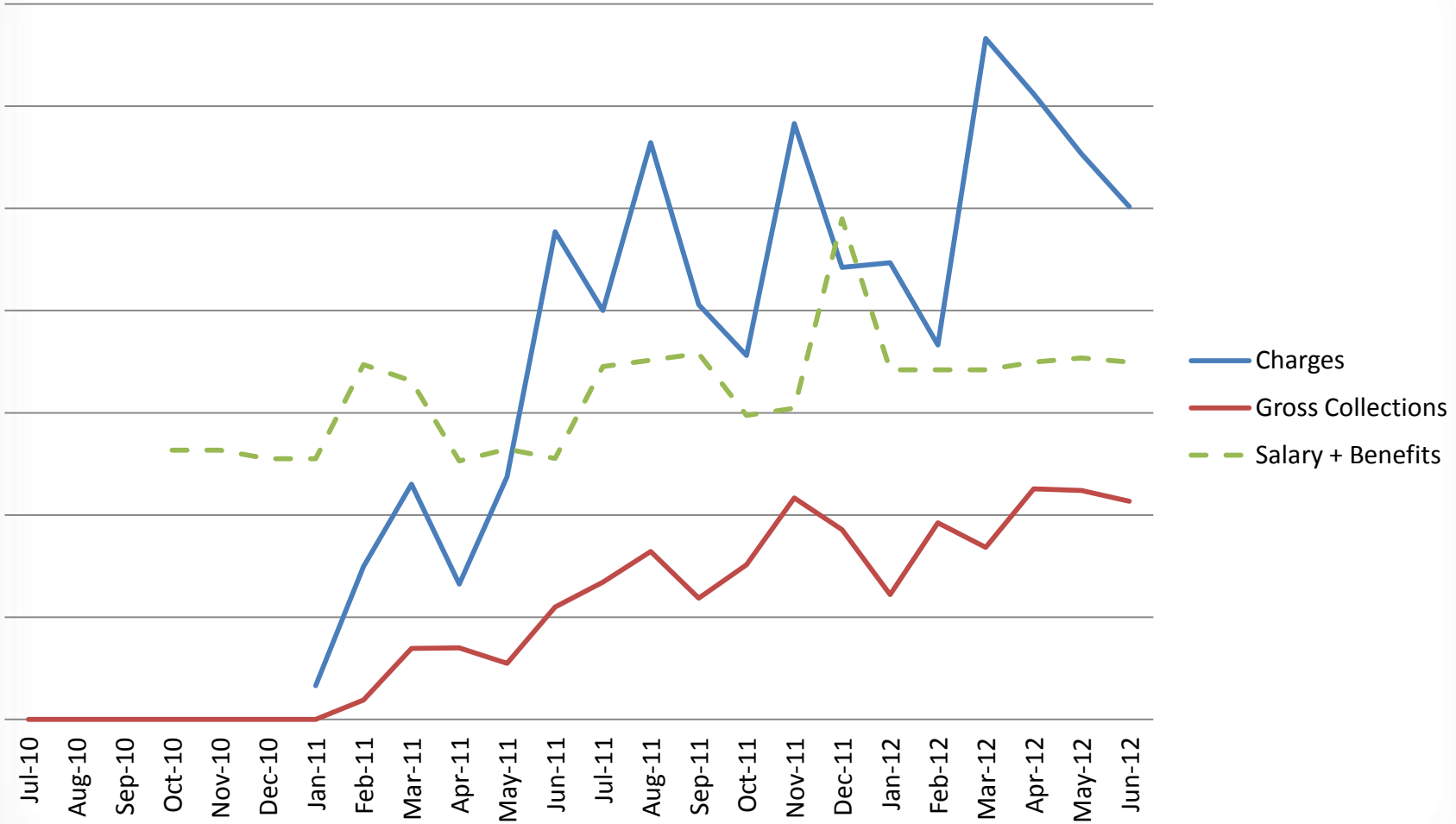
- Provide 24/7 ICU provider coverage, meet quality imperatives
- LOS pre and post adding NPs 24/7
  - Actual ICU LOS and risk-adjusted LOS
- Billing provider
- Quality dashboards

Time frame	Team	ICU ALOS Pre-NP	ICU ALOS Post-NP	UHC O/E ALOS Pre-NP	UHC O/E ALOS Post-NP
FY9 (pre) FY11&12 (post)	NCU	4.04	3.57	1.19	0.92
FY10 (pre) FY11&12 (post)	SICU	4.64	4.47	1.39	1.25
				CMI Pre-NP	CMI Post-NP
FY5 (pre) FY11&12 (post)	CVICU	5.37	3.59	6.1	6.31

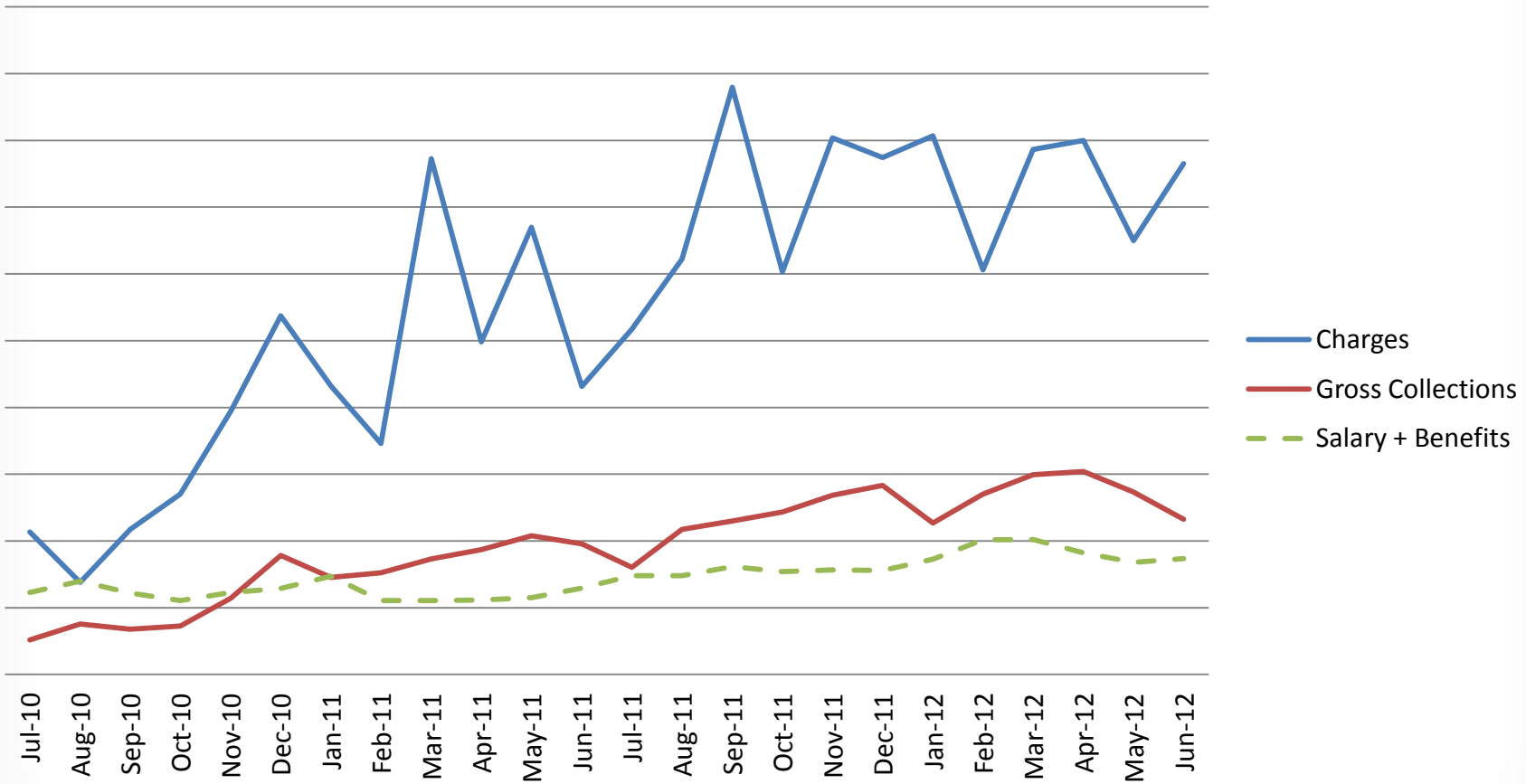
NCU FY11- FY12



SICU FY11- FY12



CVICU FY11-FY12



Primary and Unit-Based Team

Trauma NP Team

- Increase throughput, access to provider, quality
- Experienced Trauma NPs added 12/1/11
- 1 year compared with 2 years prior to adding NPs
- Impact on LOS for each Trauma area, pre and post adding NPs daily
- Injury severity score, p = 0.46 for being different year to year

Time frame	Overall Trauma service cases	Overall Trauma Service, T1,2,3	T2 Intervention Unit	Average hospital charges per case	CMI	ISS
12/1/09 - 11/30/10	2559	7.4	2.6 (1827 cases)	$106,162	3.94	19.124
12/1/10 - 11/30/11	2671	7.0	2.5 (1875 cases)	$106,673	3.69	18.879
12/1/11 - 11/30/12	3053	6.4	2.2 (2202 cases)	$97,306	3.35	19.045

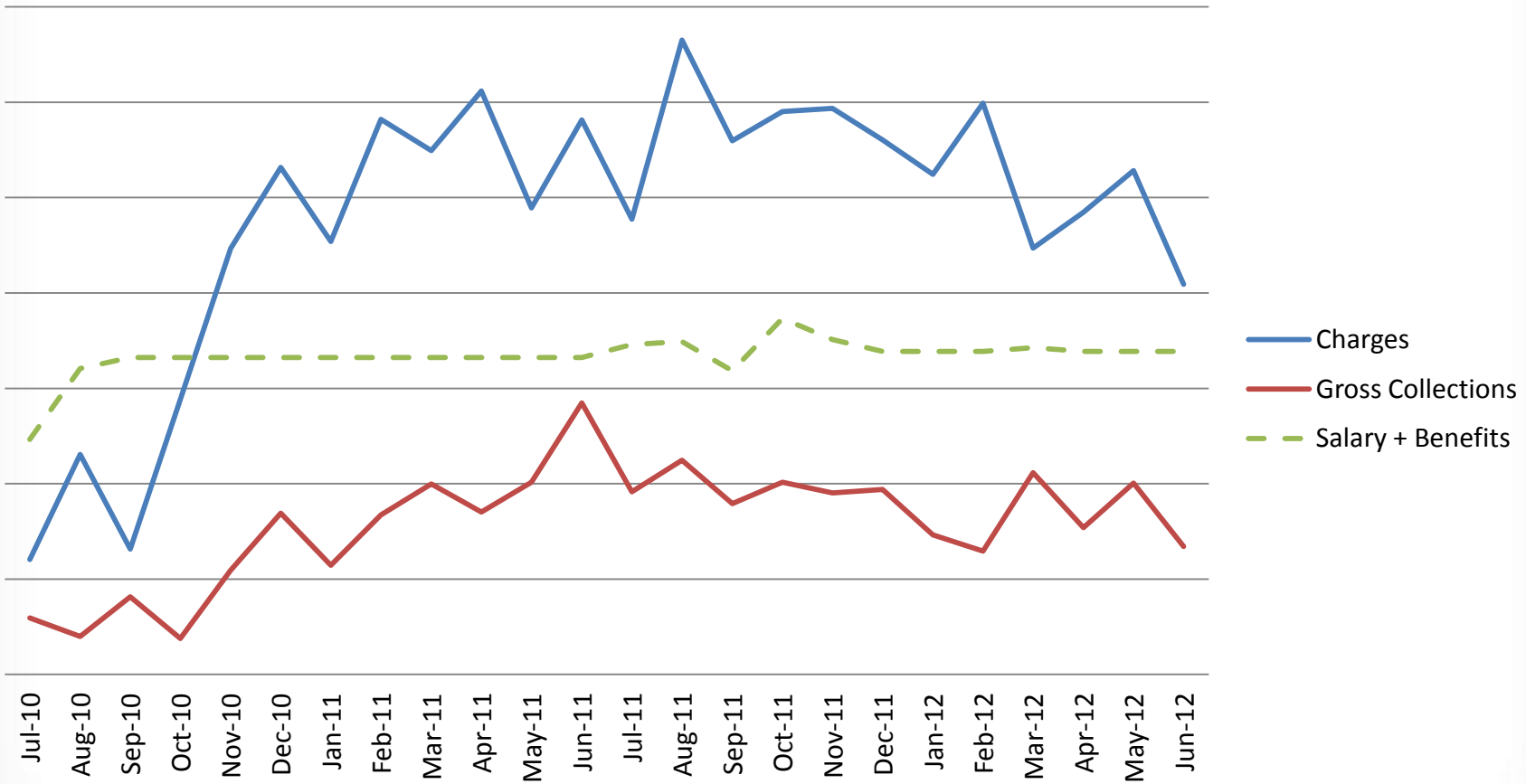
Primary and Unit-Based Team

MICU NP Team

- Provide 24/7 ICU provider coverage, meet quality imperatives
- MICU had 34 ICU beds with 2 housestaff teams and 1 NP team
- Comparison NP team to 2 housestaff teams
  - LOS and risk-adjusted LOS
- Billing providers
- Quality dashboards

Time period	MICU A ICU LOS	MICU B ICU LOS	MICU NP ICU LOS	MICU A R/A LOS	MICU B R/A LOS	MICU NP R/A LOS
FY11&12	5.12	6.24	3.66	1.07	1.16	0.99

MICU FY11-FY12



Conclusions

- We found that adding NPs to inpatient care teams decreases costs associated with length of stay.
- NPs as billing providers can generate added revenue.
- NPs can improve quality of care through consistent application of evidence based standards.

Impact on Practice

- National health initiatives have provided the for NPs to showcase their abilities and contributions.
- Structural empowerment provides the environment and resources necessary for NPs practice at the top of their license.
- NP associated outcomes quantified in terms of dollars can make a powerful statement in the valuation of NP practice.
- Inform healthcare initiatives to increase access, quality and cost-effectiveness.

Questions

- What is the utility and applicability of structural empowerment theory in the inpatient setting?
- How might structural empowerment theory affect the planning, development and implementation of NP models of care?
- How would you identify NP associated metrics and develop tools for measurement of outcomes?
- Why value NP programs and associated outcomes in financial terms?
- How might the DNP support leadership growth and development and what is the potential downstream impact to an organization?

References

- Accreditation Council for Graduate Medical Education (ACGME). (2004). *The ACGME's approach to limit resident duty hours 12 months after implementation: A summary of achievements* [Report]. Retrieved from http://www.acgme.org/acgmeweb/Portals/0/PFAssets/PublicationsPapers/dh_dutyhoursummary2003-04.pdf
- American Nurses Credentialing Center (ANCC). (2008). *Announcing a new model for ANCC's Magnet recognition program* {Brochure}. Retrieved from: http://www.nursecredentialing.org/Documents/Magnet/NewModelBrochure.pdf
- Boord, J. (2012). *Hospital diabetes management and transitions of care* [Powerpoint slides]. Retrieved from Jeffrey Boord, Vanderbilt University, Nashville, Tennessee.
- Burns, S., & Earven, S. (2002). Improving outcomes for mechanically ventilated medical intensive care unit patients using advanced practice nurses: A 6-year experience. *Critical Care Nursing of North America, 14*, 231-243.

- Burns, S., Earven, S., Fisher, C., Lewis, R., Merrell, P., Schubart, J., . . . Bleck, T., (2003). Implementation of an institutional program to improve clinical and financial outcomes of mechanically ventilated patients: One-year outcomes and lessons learned. Critical Care Medicine, 31(12), 2752-2763. doi: 10.1097/07.CCM.0000094217.07170.75
- Butler, K., Calabrese, R., Tandon, M., & Kirton, C. (2011). Optimizing advanced practitioner charge capture in high-acuity surgical intensive care units. *Arch Surg, 146*(5), 552-555.
- Chen, C., McNeese-Smith, D., Cowan, M., Upenieks, V., & Afifi, A. (2009, June). Evaluation of a nurse practitioner-led care management model in reducing inpatient drug utilization and cost. *Nursing Economics*, *27*(3), 160-168.
- Collins, N., Forrester, M., Morton, M., Kapu, A., Martin, R., Atkinson, S., . . . Miller, R. (2013). *Outcomes of adding acute care nurse practitioners to a level one trauma service with the goal of decreased length of stay and improved physician and nursing satisfaction.* Manuscript submitted for publication, Department of Trauma and Surgical Critical Care, Vanderbilt University, Nashville, Tennessee.
- Cowen, M., Shapiro, M., Hays, R., Afifi, A., Vazirani , S., Ward, C., & Ettner, S. (2006, February). The effect of a multidisciplinary hospitalist/physician and advanced practice nurse collaboration on hospital costs. *JONA, 36*(2), 79-85.

- Enguidanos, S., Gibbs, N., & Jamison, P. (2012). From hospital to home: A brief nurse practitioner intervention for vulnerable older adults. *Journal of Gerontological Nursing*, *38*(3), 40-50. doi: 10.3928/00989134-20120116-01
- Ettner, S., Kotlerman, J., Afifi, A., Vazirani, S., Hays, R., Shapiro, M., & Cowan, M. (2006). An alternative approach to reducing the cost of patient care? A controlled trial of the multi-disciplinary doctor-nurse practitioner (MDNP) model. *Medical Decision Making, 26*(9), 9-17. doi: 10.1177/0272989X05284107
- Fitzgerald, J., Kanter, G., Trelease, R., & Benjamin, E. (2007). Best practice protocols: Reducing surgical complications. Retrieved from http://www.nursingmanagement.com
- Gershengorn, H. B., Wunsch, H., Wahab, R., Leaf, D., Brodie, D., Li, G., & Factor, P. (2011, June). Impact of nonphysician staffing on outcomes in a medical ICU. *Chest*, *139*(6), 1347-1353. doi: 10.1378/chest.10-2648
- Harris, P., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde J. (2009). Research electronic data capture (REDCap) - A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. *42*(2), 377-81.
- Hospital Consumer Assessment of Healthcare Providers and Systems. (2012). HCAHPS fact sheet. Retrieved from http://www.hcahpsonline.org/files/HCAHPS%20Fact%20Sheet%20May%202012.pdf

- Institute for Healthcare Improvement (IHI). (2006). *Establish a rapid response team* [Guideline]. Retrieved from http://www.ihi.org/IHI/Topics/CriticalCare/IntensiveCare/Changes/EstablishaRapidResponseTeam.htm
- Institute of Medicine of National Academies (IOM). (2010). *The future of nursing: Leading change, advancing health* [Report Brief]. Retrieved from http://www.iom.edu/~/media/Files/Report%20Files/2010/The-Future-of-Nursing/Future%20of%20Nursing%202010%20Report%20Brief.pdf
- Institute of Medicine of National Academies (IOM). (2012). *Best care at lower cost: The path to continuously learning in health care* [Recommendations]. Retrieved from http://www.iom.edu/~/media/Files/Report%20Files/2012/Best-Care/Best%20Care%20at%20Lower%20Cost_Recs.pdf
- Joint Commission Resources. (2009). Are you on board with The Joint Commission's FPPE/OPPE requirements? *Hospital Peer Review, 34*, 137-141.
- Kleinpell, R. M. (Ed.). (2009). *Outcome assessment in advanced practice nursing* (2nd ed.). New York, NY: Springer.

- Laschinger, H. (1996). A theorectical approach to studying work empowerment in nursing: A review of studies testing Kanter's theory of Structural Power in Organizations. *Nursing Administration Quarterly, 20*(2), 25-41.Laschinger, H.K., & Finegan, J. (2005). Empowering nurses for work engagement and health in hospital settings. *Journal of Nursing Administration, 35*(10), 439-448.
- Mason, C. M. (2005, July). The nurse practitioner's role in helping patients achieve lipid goals with statin therapy. *Journal of the American Academy of Nurse Practitioners*, *17*(7), 256-262.
- Meyer, S., & Miers, L. (2005). Cardiovascular surgeon and acute care nurse practitioner: Collaboration on postoperative outcomes. *AACN Clinical Issues, 16*(2), 149-158.
- Morse, K., Warshawsky, D., Moore, J., & Pecora, D. (2006). A new role for the ACNP: The rapid response team leader. *Critical Care Nurse, 29*(2), 137-146.
- Pirret, A. (2008). The role and effectiveness of a nurse practitioner led critical care outreach service. *Intensive and Critical Care Nursing, 24,* 375-382.
- Russell, D., VorderBruegge, M., & Burns, S. (2002). Effect of an outcomes-managed approach to care of neuroscience patients by acute care nurse practitioners. *American Journal of Critical Care, 11*, 353-362.

- Scherr, K., Wilson, D. M., Wagner, J., & Haughian, M. (2012). Evaluating a new rapid response team: NP-led versus intensivist-led comparisons. *AACN Advanced Critical Care*, *23*(1), 32-42. doi: 10.1097/NCI.0b013e318240e2f9
- Shapiro, S., Donaldson N., & Scott M. (2010). Rapid response teams: Seen through the eyes of the nurse. *American Journal of Nursing, 110*(6), 28-34.
- Sise, C. B., Sise, M. J., Kelley, D. M., Walker, S. B., Calvo, R. Y., Shackford, S. R., & Osler, T. M. (2011, March). Resource commitment to improve outcomes and increase value at a Level 1 Trauma center. *The Journal of TRAUMA Injury, Infection and Critical Care*, *70*, 560-568. doi: 10.1097/TA.0b013e31820c7b79
- Skinner, H., Skoyles, J., Redfearn, S., Jutley, R., Mitchell, I., & Ritchens, D. (2012, August 8). Advanced care nurse practitioners can safely provide sole resident cover for level three patients: impact on outcomes, cost and work patterns in a cardiac surgery programme. *Eur J Cardiothoracic Surg*. Retrieved from http://www.ncbi.nlm.nik.gov/pubmed/22875555
- Sonday, C., Grecsek, E., & Casino P. (2010). Rapid response teams: NPs lead the way. *The Nurse Practitioner, 35*(5), 40-46.
- Vanderbilt University School of Nursing (VUSN). (n.d.). *Adult-Gerontology Acute CareNurse Practitioner (AG-ACNP)* [Course description]. Retrieved from http://www.nursing.vanderbilt.edu/msn/acnp.html
- World Health Organization. (2012). Preventing bloodstream infections from central line venous catheters: Eliminating catheter related bloodstream infections. Retrieved from http://www.who.int/patientsafety/implementation/bsi/en/index.html

Agency for Healthcare Research and Quality. (n.d.). TeamSTEPPS training. Retrieved March 8, 2013, from http://teamstepps.ahrq.gov/

Almost, J., & Laschinger, H. K. (2002). Workplace empowerment, collaborative work relationships, and job strain in nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, *14*, 408-420. http://dx.doi.org/10.1111/j.1745-7599.2002.tb00142.x

Bryant-Lukosius, D., & DiCenso, A. (2004). A framework for the introduction and evaluation of advanced practice nursing roles. *Journal of Advanced Nursing*, *48 (5*), 530-540.

Chandler, G. E. (1992). The source and process of empowerment. *Nursing Administration Quarterly*, *16(3*), 65-71.

Cowan, M. J., Shapiro, M., Harris, R. D., Abdelmonem, A., Vazirani, S., Ward, C. R., & Ettner, S. (2006). The effects of a multidisciplinary hospitalist/physician and advanced practice nurse collaboration on hospital costs. *Journal of Nursing Administration*, *36(2*), 79-85.

Institute of Medicine (IOM). (2011). *The future of nursing: Leading change, advancing health.* Washington, DC: The National Academies Press.

Kanter, R. M. (1977). *Men and women of the corporation*. New York, N.Y.: Basic Books.

Kanter, R. M. (1993). *Men and women of the corporation*. New York, N.Y.: Basic Books.

Laschinger, H. K. (1996). A theoretical approach to studying work empowerment in nursing: A review of studies testing Kanter's theory of structural power in organizations. *Nursing Administration Quarterly*, *20(2*), 25-41.

Manojlovich, M. (2007, January). Power and empowerment in nursing: Looking backward to inform the future. The current state of nursing empowerment related to nursing care. *OJIN: The Online Journal of Issues in Nursing*. Retrieved from http://www.nursingworld.org

Stewart, J., McNulty, R., Griffin, M., & Fitzpatrick, J. (2010). Psychological empowerment and structural empowerment among nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, *22(1*), 27-34.