TIMELINE OF SIGNIFICANT EVENTS IN APRN PRACTICE
Document prepared by Marcia Flesner of University of Missouri Sinclair School of Nursing
Updated 5/24/2018

Legend: GREEN Dates indicate info about cost savings
Text highlighted in YELLOW indicate Long-term care studies

1965 Loretta Ford and Henry Silver began the **first certificate APRN program** in Colorado that provided nurses with the skills to deliver primary care to children in community settings in response to needs of the underserved population. By 1970, education moved from the certificate program to programs in university settings.

1974 **1 year randomized controlled study of large suburban Ontario practice of 2 family physicians to assess effects of substituting nurse practitioners for physicians in primary care practice.** Both groups of patients had similar mortality experience and *no differences were found in quality and satisfaction of care between the 2 groups* (Spitzer, et. al. 1974).

1975 **Missouri Nursing Practice Act revised** in House and Senate to redefine scope of practice for nurses to reflect national trends and provide more autonomy for advanced practice. Governor veto billed.

1975 **Veto was overridden, the first override in 138 years of Missouri history.**

1980 Two NPs practicing in rural Missouri with collaborating physicians were charged with practicing medicine without a license. **The case was appealed to the Missouri Supreme Court.**

1983 **Sermchief v Gonzales.** *The Missouri Supreme Court ruled in favor of NPs* and their collaborating physicians, finding that NP acts were authorized under current nurse practice. Court recognized the intent of statutory language to *"avoid statutory constraints on the evolution of new functions for nurses delivering health services."*

1986 **U.S. Office of Technology Assessment** performs case study on nurse practitioners, physician assistants and certified nurse midwives. Reports "***within their areas of competence, NPs, PAs and CNMs provide care whose quality is equivalent to that of care provided by physicians."***

1989 **Geriatric NPs were employed in 30 nursing homes in 8 western states over 2 year timeframe. Retrospective review of records from the geriatric NP homes and a matched controls revealed favorable changes in 2 of 8 ADLs measures, 5 of 18 nursing therapies, 2 of 6 drug therapies and reduction in hospital admissions and total days in in geriatric NP homes.** *Results suggested that NPs have a useful and cost-effective role to play in NHs* (Kane, et. al. 1989).

1991 **National sample of 501 physicians and 298 NPs were presented a case vignette describing a patient with epigastric pain and gastritis.** The providers were encouraged

to ask more information and then make a recommendation. NPs asked an average 2.6 questions compared to 1.6 for physicians. *Nearly half the physicians indicated a prescription was single most effective therapy without seeking a relevant history. Only 19% of NPs opted to treat without asking further questions. When therapy was chosen NPs were far more likely to suggest nonpharmacological approaches as a result of obtaining additional history* (Avorn, Everitt & Baker 1991).

1993 **HB 564 passed.** The intent of the legislation was to clarify collaborative practice and prescriptive privileges for NPs in Missouri. The legislation focused on increasing access to healthcare and health care providers in Missouri. The bill stated that rules may be written addressing geographic areas, review of services and methods of treatment should be written by 3 boards: Medicine, Nursing and Pharmacy. Writing of the rules was a contentious event with little agreement among nursing and physicians.

1994 **276 patients over age 70 admitted to PA hospital for selected medical & surgical cardiac DRGs.** The patients were randomly assigned to a control group (routine care) or an intervention group (received comprehensive discharge planning designed by gerontological clinical nurse specialist [GCNS*]). Analysis at 6 weeks after discharge revealed patients in intervention had fewer readmissions, fewer total days rehospitalized, lower readmissions charges and lower charges for health care services after discharge (Naylor, et. al., 1994).*

1995 **Meta-analysis of nursing practitioners and nurse midwives in primary care covering 38 NP studies and 15 nurse midwives studies.** *NPs scored higher than physicians in improvement of BP, BS levels, symptom relief, resolution of otitis media, and patient satisfaction.* NPs and physicians were equivalent on quality of care, prescription of drugs, functional status and use of ER visits. *NM patients receive significantly less anesthesia, fetal monitoring, episiotomies, forceps delivery, amniotomies and IV fluids* (Brown & Grimes, 1995).

1996 **Collaborative practice regulations finally agreed upon after 3 years of meetings.** The Rules were not evidence-based and restricted APRNs from practicing without meeting burdensome limitations of physician supervision.

1997 **Collected data via phone interviews of rural hospital administrators in 8 Midwest and Northwest states in 1994 over 3 months.** 407 rural hospitals participated. Ask leaders information on how their hospitals used NPs and PAs. 53% used PAs in facility and 31% used NPs. 17% used both providers to deliver services. Reasons given for use were 1. Increase access to primary care, 2. Physicians were unavailable or too difficult to recruit, 3. Providers were cost effective for rural efforts, and 4. For Rural Health Clinic Certification (Krein, 1997).

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1997 **Study analyzed geographic distribution of NPs in US using data from State Boards of Nursing and DC in 1994.** Multivariate analysis showed that NPs were more likely to locate in a county where state laws allowed independent practice. *States that allow independent practice and direct third-party reimbursement will likely have greater availability and a larger supply of NPs in rural counties* (Lin, Burns & Nochajski, 1997).

1998 **A 1-year retrospective data analysis of revenues and cost for 1077 HMO enrollees residing in 45 LTC facilities**. A provider team consisting of a physician and geriatric nurse practitioner (GNP) cared for residents, compared to a physician alone visits. **Acute care and ED costs were significantly lower for the GNP/physician covered patients. There was a gain of $72 per resident per month (PRPM) with GNP/physician team with a loss of $197 PRPM with physicians alone.**

1998 **Report from the PEW Health Professions Commission on priorities for healthcare workforce regulations.** Report provides 10 recommendations for future regulatory systems that serve the public interests. Recommendation #9 advises states to develop mechanism for existing professions to evolve their existing scopes. (Finocchio, et. al 1998).

2000 **Randomized trial conducted from 8/1995 and 10/1997 of 4 community based clinics and 1 primary care clinic; sample was 1,316 patients comparing outcomes of nurse practitioners or physicians.** No significant differences in 8 health outcomes (except for hypertension) and satisfaction was found between 2 providers. *Patient outcomes between NPs and physicians were comparable* (Mundinger et. al., 2000).

2000 **Research performed to determine effect of clinical outcomes for newly admitted nursing homes residents when APRNs worked with staff to implement protocols for 4 clinical outcomes.** There was significantly greater improvement in incontinence, pressure ulcers and aggressive behavior after 6 months in the 2 intervention homes compared to the control home (Ryden, et. al., 2000).

2000 **Census in 1996 of all PA NPs and six contiguous states. Surveyed population of 2,280 NPs and 76% responded.** Of the NPs that were practicing a practice profile was created containing whether NP worked in urban or rural setting. NPs in rural settings were more likely to practice primary care in a primary care setting, see more patients per week and have higher proportions of patients for whom they are principal provider of care. Both groups indicated a willingness to practice in underserved areas (Martin, 2000).

2001 **Institute of Medicine releases *The Future of Nursing Leading Change, Advancing Health*** with Recommendation #1: APRNs should be able to practice to the full extent of their education and training. *To achieve the recommendation, state legislatures should*

reform scope of practice regulations to conform to National Council of State Boards of Nursing Model Practice Act and Model Nursing Administrative Rules.

2001 **A randomized trial of advanced practice nurses providing an intervention for women with high risk pregnancies in PA.** 173 High risk pregnant women were randomly assigned to control group (routine care) and intervention group (APRN care in home plus routine care) from 1/11992 to 1/1/1996.*The intervention group has lower fetal/infant mortality vs the control group, 11 fewer preterm infants, more twin pregnancies carried to term, fewer prenatal hospitalizations, fewer infant hospitalizations and a savings of more than 750 total hospital days and $2,880,000* (Brooten, Youngblut, Brown, Finkler, Neff & Madigan, 2001).

2002 **Systematic review of 40 years of research on APRNs demonstrated that APRNs have been delivering safe and effective health care to all populations across settings and in many specialties.** 11 trials and 23 observational studied were analyzed. *Research showed no difference in outcomes in primary care delivered by APRNs and physicians, including such outcomes as patient health status, number of prescriptions written, return visits requested, or referrals to other provid*ers. (Horricks, Anderson & Salisbury, 2002).

2002 **Article written by Yale Law School attorney describing the historical antecedents of medical practice acts, and demonstrates why turf battles among health care providers (HCP) are inevitable whenever modifications are proposed to existing scope of practice (SOP).** Physicians were first HCPs to secure licensure, and their legislatively-recognized scope of practice swept the entire human condition with their purview. Physicians then obtained statutory authority to control other HCPs who were useful to the physician. Physicians kept this control until the mid to late 1970s, when HCPs sought legal recognition of their expertise and authority, "carving out tasks" from medicines universal domain. The American Medical Association has directed the turf battle movement perceiving physicians' legal prerogatives to be both exclusive and inviolate, leading to the consistent argument against expanding SOP for any HCP, under the claim "That's the practice of medicine." As HCPs became more educated and prepared to perform complicated tasks and access to primary care decreased, the state-based licensure systems leads to rampant variation in the 50 states, and producing an unfair system, with significant waste and reduced access for consumers. ***The author concludes that urgent policy changes are needed if "protection of the public" claim by physicians is to be anything more than a gossamer-thin disguise of professional self-interest embedded in law*** (Safriet, 2002).

2003 **Cross-sectional analysis of administrative and survey data on primary care providers** (physicians, nurse practitioners, physician assistants and nurse midwives) for 1998 in 2 states. *Non physician primary care clinicians and family physicians have greater*

propensity to care for underserved populations than do primary care physicians in other specialties (Grumbach, Hart, Martz, Coffman & Palazzo, 2003).

2004 **Two year follow-up to 2000 study of primary care outcomes treated by NPs or physicians (Mundinger, et. al).** *The outcomes of patients assigned to NP practice did not differ from those patients assigned to a physician primary care provider* (Lenz, Mundinger, Kane, Hopkins & Lin, 2004)

2004 **Chart review done of care provided to nursing home residents in 8 facilities in one state by a nurse practitioner/physician team versus a physician only group**. *The level of care provided for residents by the two groups was basically the same and of similar quality. The NP/physician group residents were seen more often, increasing access to care* (Aigner, Drew & Phipps, 2004).

2004 **Research reported on Ever-Care, a managed care program that targeted long stay residents in nursing homes using nurse practitioners in addition to primary care physician**s. The Ever-Care NP monitor enrolled clients regularly and work with their physicians to intervene quickly if issues arise. 10 intervention sites and 10 control sites in 3 states were involved, with matching done at the resident level. Analysis of was done on mortality, preventable hospitalizations, quality indicators and change in ADL levels. **Analysis revealed decreases in preventable hospitalizations with no changes in overall functioning and a fairly even record with regard to QIs** (Kane, Flood, Berhadsky & Keckhafer 2004)

2004 **Literature review of studies to evaluate the impact of doctor-nurse substitution on patient outcomes, processes of care and resource utilization including cost**. 25 articles from 1966 to 2002 were analyzed. **Findings suggest that appropriately trained nurses can produce high quality care as primary care doctors and achieve as good health care outcomes for patients** (Laurant, Reeves, Hermens, Braspenning, Grol & Sibbald, 2004).

2004 **Survey of LTC Medical Directors who were AMDA members in all 50 states to obtain info six domains.** 63% of respondents reported involvement of NPs in care of residents performing a variety of tasks. NPs were more likely to be involved in care of residents in in larger NHs (>100-bed) and **were effective in maintaining physician satisfaction (90%), resident satisfaction (87%), and family satisfaction (85%).**

2005 **Legislation introduced to allow APRNs authority to prescribe controlled substance.** *The bill failed.*

2005 **Cochrane Database of Systematic Reviews** publishes review to evaluate the impact of doctor-nurse substitution in primary care outcomes, processes of care and resource utilization including cost. **16 studies were analyzed**. *The findings suggested that appropriately trained nurses can produce as high quality care as primary care doctors*

and achieve as good health outcomes for patients. (Laurant, Reeves, Hermens, Braspenning, Grol & Sibbald, 2005).

2005 **Report on United Health Care's Evercare program where NPs provided primary care delivery for long-stay nursing home residents in five states in 2002.** Six subscale roles (Collaborator, Clinician, Care Manager/Coordinator, Counselor, Communicator/Cheerleader and Coach Educator) and activities of NPs across the 5 sites were compared. Performance across the sites were generally consistent, with in significant differences in amount of time spent in Collaborator and Coach/Educator roles. *EverCare NPs provided proactive primary care to long-stay nursing home residents* (Abdallah, 2005).

2005 **Working paper prepared by the Federal Reserve Bank of St. Louis studying the economic and legal impact of practice boundaries of APRNs.** Findings revealed that states where APRNs acquired professional independence, the earnings of the APRNs were substantially lower and those of physician assistants (PA) were substantially higher. *The implication is that physicians have responded to the increase in professional independence of APRNs by hiring fewer APRNs and more PAs* (Dueker, Spurr, Jacox & Kalist, 2005).

2005 **AANP National Nurse Practitioner Sample Survey completed in 2004.** 25% of total US NP population were sent surveys. 16,543 (69%) NPs responded. The top three specialization groups were Family (36.4%), Adult Health (19%) and Women's Health (12.2%). The top 3 practice settings were Private physician (33.3%), School Health (19%), and Hospital Outpatient (12.6%). 80.4% of respondent's highest level of education was Masters (Goolsby, 2005). The survey was the largest survey of NPs to date and had been done in 1989 and 1999.

2006 **Report from American Colleges Physicians reports that very few physicians are going into primary care, while the demand of primary care is increasing.** Compared to other developed countries*, the US ranks lowest in its primary care functions and lowest in health care outcomes* (ACP, 2006).

2007 **4,253 articles were screened to evaluate the impact of doctor-nurse substitution in primary care on patient care, process of care and resource utilization from 1966 to 2002.** 25 articles, relating to 16 studies met the inclusion criteria. The outcomes varied across studies limiting the opportunity for data analysis. *In general, no appreciable differences were found between doctors and nurses in health care outcomes for patients, process of care, resource utilization or cost* (Laurant, Reeves, Hermens, Braspenning, Grol & Sibbald, 2007).

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2007 **Missouri Board of Healing Arts** given statutory authority to collect data about collaborative practice pairs during physician license renewal. The Board also has the authority to audit collaborative practice agreements.

2007 **The Center for Health Professions performs overview of Practitioner Scopes of Practice in the US.** The center finds NP Scopes of practice vary widely among the states. "The profession and public are Ill-served where practice authorities can be dramatically different between bordering states" (such as Iowa and Missouri*). "Such inconsistencies point to the inescapable realization that NPs are needlessly restricted by divergent practice laws for reasons that have nothing to do with their competencies."* (Christian, Dower & O'Neil, 2007).

2008 **HB 724 passed.** *Legislation gave Missouri APRNs limited ability to prescribe controlled substances (Schedule III-V)*. It took three years to pass regulations that would allow APRNs to apply for a BNDD number so they could finally prescribe controlled substances.

2008 **Chapter 34 of An Evidence-Based Handbook for Nurses reviews a sample of literature regarding what was known about patient safety and quality and the role of APRNs.** *The findings suggest that APRN delivered care, across settings, is at least equivalent to that of physician-delivered care as regards safety and quality*. More rigorous methodological practices as outline by AHRQ are recommended for future studies of APRN practice (O'Grady 2008).

2008 A systematic literature review of **38 studies of the care of *nursing home residents* by APRNs** reports that there is evidence that APRNs provide extensive education to residents, families and staff, which results in improved outcomes. *APRN interventions in nursing homes resulted in decreased use of restraints and side rails, reduced falls, less urinary incontinence, better pressure ulcer care and less depression* (Bakerjian, 2008).

2008 **Literature review on the role of the NPs and PAs in acute and critical care settings assessing the impact and outcomes of providers in the intensive care unit.** Time of review was from 1996 to August 2007. 31 studies were analyzed, finding only two RCT. The studies examined impact on patient care management, comparison to physician care, impact of team efforts and impact on reinforcement of practice guidelines, education, research and QI. *Authors conclude that there is research support for use of NPs and PAs in acute care and critical care settings, more RCT are needed to assess impact* (Kleinpell, Ely & Grabenkort, 2008).

2009 **Study done on 324,285 entries in the National Practitioner Data Bank dating from 1991 to 2007 analyzing physicians, physician assistants and APRNs.** During the study period, the probability of making a malpractice payment was 12 times less for physician

assistants and 24 times less for APRNs. ***There were no observations or trend to suggest that PAs and APRNs increase liability*** (Hooker, Nicholson & Lee, 2009).

2009 **The Cochrane Collaboration** publishes *Substitution of doctors by nurses in primary care*. Seven studies where the nurse assumed responsibility for first contact and ongoing care were reviewed. **The findings suggested that appropriately trained nurses can produce high quality care as primary care doctors and achieve as good health outcomes for patients.**

2009 **Systematic review of effectiveness of primary care nursing involving 31 studies, 6 of which were done in USA.** There was modest evidence that nurses in primary care settings can provide effective care and achieve positive healthcare outcomes similar to that provided by physicians. Nurse-led care may involve higher level of patient satisfaction and quality of life was even more evident and stronger than physician led care (Keleher, Parker, Abdulwadud & Francis, 2009).

2009 **RAND Corporation conducts policy analysis for state of Massachusetts after the adoption of universal coverage legislation.** Reports that substituting a nurse practitioner or physician assistant for physicians' visits *projects cumulative savings of $4.2-8.4 billion for the period of 2010 to 2020*. A second policy option in report was increased use of retail clinics staffed by NPs, *projecting a maximum savings of $6 billion over a 10 year period captured mainly by private insurance.*

2009 **24 systematic reviews and 3 observational studies were analyzed going back to 1980.** 18 studies looked at role revision between physicians and advanced practice registered nurses. Effects studied were clinical outcomes, patient outcomes, process of care outcomes, resource utilization, and effects on costs and cost-effectiveness. ***The evidence suggested that nonphysician clinicians working as substitutes or supplements for physicians in defined areas of care can maintain and often improve the quality of care and outcomes for patients*** (Laurant, Harmsen, Wollersheim, Grol & Faber, 2009).

2009 **Health Management Associates study funded by Missouri Foundation for Health suggests that Missouri has a shortage of HC professionals base on the ration of the population to the availability of healthcare services.** *Most acute shortage of physicians in rural areas shown by fact that 40% of population resides there but only 25% of the state's physicians practice there.* The access of HC in rural areas is compounded by fact that rural population is generally older, requiring more services and includes a rapidly growing Hispanic population which raises cultural and language challenges (Health Management Associates, INC, 2009).

2009 **Policy paper drafted by six healthcare regulatory organizations to assist legislators and regulatory bodies with making decisions about changes to healthcare professionals'**

scope of practice. The argument for scope of practice changes should have a foundational basis in 4 areas: 1. An established history of the practice score within the profession, 2. Education and training, 3. Supporting evidence, and 4. Appropriate regulatory environment. *If a profession can provide support evidence in these areas, the proposed changes in scope of practice are likely to be in the public's best interest.* (National Council of State Boards of Nursing, 2009)

2009 **Review of literature on APRN practice from 1970 to 2009.** Authors identify the biggest obstacle for independence practice remains the "unsubstantiated concerns for public safety." The struggle for APRN autonomy has politicized the debate over quality of care by the physician groups. The dialogue over "quality of care" has become a substitute for meaningful debate about the maintenance of medical dominance over primary health care or "turf". The major definitive research is reported on, revealing the APRNs provide equal care compared to physicians and occasionally superior performance. 7 recommendations are offer. **Recommendation #4: Policymakers should eliminate legislative restrictions on the NP's practice and ignore the cautions of organized medicine about quality of care provided by NPs since such arguments are not grounded in evidence** (Mullinix & Bucholtz, 2009).

2010 **Review of quality and effectiveness of care provided by APRNs** from 1990 to 2008 found that *APRNs provide as high a quality of care as p*hysicians (Newhouse, Stank-Hutt, White, Johantgen, Zangaro & Heindel, 2010).

2010 **A malpractice claims analysis of nurse practitioners by CNA HealthPro, from 1998 to 2008**, *reports that nurse practitioners with claims were more likely than nurse practitioners without claims to respond that their state regulations required direct physician supervision (Yellow and Red states).* **Working with a physician mentor did not decease the likelihood of having a claim** (CNA HealthPro, 2010).

2010 **A review of Southern U.S. Practice Laws by the Center of Champion Nursing in America, funded by AARP,** recommends that state government APRN regulations should reflect that APRNs can practice independently and that physician supervision should not be mandate in state laws. Of the 111 colleges and universities who confer nursing master's degrees in southern states*, the return on investment that the states put toward the education of APRNs would greatly increase by allowing these professionals to do the job they are prepared to do* (Center to Champion Nursing in America, 2010).

2010 **Citizen Advocacy Center** releases White Paper titled *Reforming Scope of Practice*. Paper concludes "*Patients benefit when professions are authorized to practice to the full extent of their training and skills. The benefits include improved access to care, probable financial savings, and no reduction in safety and quality."* (LeBuhn & Swankin, 2010).

2010 **Medical economist reports how a fundamental concept of economics, input substitution using nurse practitioners, can lead to economic and clinical gains for a large number of health services in a wide variety of settings.** Of more than 100 published studies, post the OTA report (see 1986), on quality of care provided by both NPs and physicians, ***not a single study has found that NPs provide inferior services within the overlapping scopes of practice*** (Bauer, 2010).

2010 **26 research articles were studied focusing on nurse practitioners in delivering primary care, with particular emphasis on contributions of NPs.** The analysis confirmed prior findings: APRNs quality of care was equivalent to care provided by physicians, patients seeing NPs were more satisfied, had longer consultations,, more tests, with no appreciable differences in patient outcomes, processes of care or resource use. Consistent findings included absence of group differences in health status, treatment practices and prescribing behavior (Naylor & Kurtzman, 2010).

2010 **In 2000, a final CMS rule was released that would allow State law determine which professionals would be allowed to administer anesthetics and the level of supervision required.** Known as the Opt-out policy, the researchers used 7 calendar years of 5% Medicare inpatient data set files (1999-2005) examining opt-out states and Medicare claims and three anesthesia provider arrangements: anesthesiologist, practicing solo, certified registered nurse anesthetists (CRNA) practicing solo, and team anesthesia (anesthesiologists supervise or direct CRNA).*The results of analysis showed that allowing states to opt-out of supervision requirement did not result in increased surgical risks or mortality (Dulisse & Cromwell, 2010).*

2011 **Rules promulgated and finalized, allowing Missouri APRNs to apply for BNDD number and to prescribe controlled substances if collaborating physician approved.**

2011 **Systematic review of research published between 1990 and 2008** to answer question: Compared to other providers (physicians or teams without APRN) are APRNs patient outcomes of care similar? *Results indicated APRNs provide effective and high quality patient care and could safely augment physician supply to expand access to care* (Newhouse, et. al., 2011).

2011 **AARP Public Policy Institute** recommends that APRNs practice to the full extent of their education and training. *Removing barriers to care reduces costs, increases consumer choice and improves health care quality* (AARP, 2011).

2011 **Editorial addressing role of acute critical care nursing (ACNP) in hospitals.** Author views the role as opportunity to restore nursing's inherent attributes of clinical judgment and sovereignty and as a chance to improve patient's outcomes. Cautions countries not to use ACNPs as a strategy to alleviate shortage of physicians, but as a way to focus on

nurse-sensitive outcomes. The resistance of medical associations is identified as one of main barriers to development of the role (Papathanassoglus, 2011).

2011 **Chapter in *The Future of Nursing* book written by attorney on federal options for maximizing the value of APRNs in providing quality, cost-effective care.** The attorney shares that the progress toward removing APRN barriers has been stymied by regulatory obstacles and restrictions that impede the full realization of their potential. Author describes 4 nurse-specific contextual factors: Diversity of nursing practice, economic invisibility, multiple routes of entry & care versus cure. As a group, APRNs have extensive experience across those settings. ***Their traditional approach of blending counseling with clinical care, and coordinating health services as well as appropriate community resources in support of patients, could be a model for policies that seek a more optimal balance of providers prepared to meet the needs of American public.*** (Safriet, 2011).

2012 **Using data from Medical Expenditure Panel Survey and US Census Bureau projections,** research projects primary care physicians to increase from 462 million in 2008 to 565 million in 2025. *The US will require nearly 52,000 additional primary care physicians by 2025* (Petterson, Liaw, Phillips, Rabin, Meyers & Bazemore, 2012).

2012 **Letter from Federal Trade Commission to Representative Jeanne Kirkton responding to request for comments on Missouri House Bill 1399 which would prohibit CRNAs from providing treatments that they currently provided to patients.** FTC advised that restricting the provisions of services by CRNAs could exacerbate problems of access to care, especially for rural and other underserved populations**.** Any limits on CRNAs should be no stricter than patient protection requires. (FTC, 2012)

2012 **Missouri Foundation for Health** releases **Bending the Health Care Curve in Missouri** report. Six policy scenarios are recommended that could help contain escalating health care costs in Missouri. Recommendation 6 reveals **key changes in Missouri legislation allowing broadening NP scope of practice without physician involvement would result in a net savings of $1.6 billion from 2012 to 2022.**

2012 **National Governors Association releases NGA Paper**. The NGA review of health services research suggests that NPs are well qualified to deliver certain elements of primary care and in light of the research evidence, *suggests state consider changing scope of practice restrictions and assure adequate reimbursement for their services in the provision of primary health care.*

2012 **Missouri Department of Health and Senior Services**, Office of Primary Care and Rural Health, reports that *Missouri was ranked 11th worse among all states in 12 out of 42 measures documented in United Health Foundation's American Health Ranking.*

2012 **Analyzed data from Health Care Cost Institute including 28 million individuals from 50 states and DC, ages 18 to 64, who were on 3 medications and enrolled in employer sponsored insurance for 12 months. Time period 2008 to 2012.** Study sought to examine whether states switching to allow NPs to practice and prescribe without supervision of a physicians were able to achieve better medication adherence rates, lower costs of care and lower prices for primary care services. **Study observed a small increase in total costs of care and a small decrease in prices for primary care services in states that implemented independent NP Scope of practice between 2008 and 2012 as compared to states that restricted NP SOP in time period.** Medication adherence did not change during study (Muench, Coffman & Spetz, 2012).

2012 **Researchers analyzed national database of 2004 Medicare claims data to study factors associated with use of APRN/PA nursing home visits compared to primary care physicians (PCP).** APRN/PAs provided care to 27% of 129,812 residents and were responsible for 16% of 1.1 Medicare NH fee for service. Study find that demand for visits may outpace the supply of available providers. **From an economic perspective, allowing APRN/PA substitution would increase access to care at a lower cost and save money, since APRN/Pas provide equivalent care to PCPs** (Bakerjian & Harrington, 2012).

2012 **Report from The Physicians Foundation titled 'Accept No Substitute: A Report on Scope of Practice.'** The authors interviewed 22 physicians, attorneys and medical state association officers and report on the growing demand of a broad array of non-physician providers for state legislatures to expand their scope of practice into areas that until then had been restricted to physicians. *They identify the following as driving forces for the expansion: pressure to cut costs, physician demand for midlevel providers, the pressure to increase access, the physician shortage, corporate interests, the FTC, and the evidence gap.* The report offers 4 steps to continue the efforts to stop the inappropriate scope of practice expansions by non-physician providers (Isaacs & Jellinek, 2012).

2013 **US Department of Health and Human Services** projects *that demand for primary care physicians is expected to grow more rapidly than physician supply to meet demand by 2020, with projected shortage of 20,300 physicians.* **Report concluded that primary care NP workforce is projected to grow far more rapidly than physician supply.**

2013 **A review of the nation's patchwork of restrictive scope of practice acts** reports the acts are a deterrent to addressing the population's health needs. *The main criterion for who should be allowed to care for patients, should be which professions have the knowledge and skills to provide safe care* (Elwood, 2013).

2013 **Analysis of health care utilization and health outcomes from the Medical Expenditure Panel Survey Full Year Consolidated Data Files for 1996 to 2010.** Estimating the change of regulations from Red/Yellow to Green in the US, and results showed that *allowing*

NPs to practice and prescribe drugs without physician oversight leads to increased health care utilization and improvements in health outcomes. Health care quality indicators rise and indirect costs of obtaining care fall for both adults and children (Traczynski & Udalova, 2013).

2013 **National Conference of State Legislatures** publishes brief *Meeting the Primary Care Needs of Rural America.* Legislators are asked to consider following when considering changes in scope of practice regulations: 1. Ensure patient safety, 2. Ensure quality of care, and 3. Ensure provider accountability. **Expanding the scope of practice for APRNs and PAs, access to primary care will be improved, quality of those services will be comparable to that provided by physicians and could also result in deceased costs.** (Ewing & Hinkley, 2013).

2013 **Study of administrative claims from a large health insurer that covered more than 85 million people receiving health care in retail clinics in 27 states from 2004 to 2007**. Retail clinics care was associated with lower total cost, compared to cost in other settings such as physician's office, urgent care clinics and emergency departments. *When NPs were allowed to practice independently, the cost savings of retail clinic episodes were even greater than when they could not practice independentl*y (Spetz, Parente, Town & Bazarko, 2013).

2013 **Systematic review of 37 studies regarding impact of NPs compared to physicians on health care quality, safety and effectiveness from 1990 and 2009.** Outcomes for NPs compared to physicians were comparable or better for all 11 outcomes reviewed. *A high level of evidence indicated that patient outcomes on satisfaction with care, health status, functional status, number of ER visits and hospitalizations, blood glucose, blood pressure and mortality were similar for NPs and MDs* (Stanik-Hutt, et. al., 2013).

2013 **Bipartisan Policy Center** releases *Rx for Patient-Centered Care and System-Wide Cost Containment* report. *Report recommends that Medicare and Medicaid payments to non-physician providers should allow them to practice to the full extent permitted under state law.* HHS should review and remove regulatory requirements in Medicare and Medicaid that interfere with the ability of states to regulate and determine scope of practice. To the same end, ***outdated or overly prescriptive language in the Medicare and Medicaid statute should be eliminated.***

2013 **Production of new physicians increased by less than 1% while growth of nurse practitioners and physicians assistants nearly double from 2003 to 2012** (Jolly, Erickson & Garrison, 2013).

2013 **Researchers studied Medicare beneficiaries age 65 or older with Parts A and B coverage, not in an HMO, for 3 years (1998 to 2010) looking at primary care providers**

(PCP) (physicians versus NPs). 1998 was the year that Medicare liberalized reimbursements to NPs. They categorized NPs according to 3 categories of practice (Red, Yellow, Green). *The percentage of Medicare beneficiaries having an NP as PCP increased from 0.2 percent in 1998 to 2.9 percent in 2010. The growth was greatest in states that allowed NPs to practice independently.* **Modifying state regulations of NPs' practice is one path to expanding access to primary care** (Kuo, Loresto, Rounds & Goodwin, 2013).

2013 **Systematic review of the effectiveness of APRNs in LTC published.** Data retrieved from 1996 to 2010. 4 studies conducted in US were examined. *LTC settings with APRNs had lower rates of depression, urinary incontinence, pressure ulcers, restraint use, and aggressive behavior; more residents who experienced improvements in meeting personal goals; and family members who expressed more satisfaction with medical services* (Donald, et. al., 2013).

2013 **From 11/23/2011 to 4/9/2012 conducted a national mail survey of physicians (505) and NPs (467) in primary care practice.** Response rate was 61.2%. 74.6% of NPs indicated they were able to practice to full extent of education, but state restrictions and hospital regulations limited their ability to do so. When asked whether physicians provided higher quality of care, the 2 groups were diametrically opposed: 66% of physicians agreed and 75% of NPs disagreed. *The findings of physicians suggest they will be unlikely to embrace policy recommendations aimed at expansion of roles and supply of NPs* (Donelan, DesRoches, Dittus & Buerhaus, 2013).

2013 **Research assessed the impact of state regulations on the increase in care provided by NPs in the US, using 5% national sample of Medicare beneficiaries.** Found that between 1998 and 2010 the number of patients receiving care from NPs increased fifteen fold. *By 2010 states with the least restrictive regulations of NP practice had a 2.5-fold greater likelihood of patients receiving their care from NPs than did the most restrictive states* (Kuo, Loresto, Rounds & Goodwin, 2013)).

2013 **Virginia Mason Medical Center implements a breast clinic using APRN in 2008.** Research on outcomes reports substantially improved care timeliness and efficiency compared to a control group. Savings were estimated at $316 per woman and direct care costs decreased by 19%, to $213 per woman (Blackmore, Edwards, Searles, Mecklenburg & Kaplan, 2013).

2013 **State laws limit overlap in scope of practice among professions that share tasks and the process of changing laws is slow and adversarial.** Article highlights reforms needed to strengthen health professions regulation, including aligning scopes of practice with professional competence; assuring regulatory flexibility needed to emphasize emerging and overlapping roles of health professionals; increasing input of consumers; basing

decisions on the best available evidence and allowing demonstration programs; and establishing a national clearing house for scope of practice information (Dower, Moore & Langelier, 2013). **These issues stem from the challenges of fitting today's health professional practice into an outdated regulatory scheme.**

2013 **Health & Medicine, a policy research group, releases report on eliminating scope of practice (SOP) barriers for Illinois Advanced Practice Nurses.** Reasons given for expanding SOP are aging population, prevalence of chronic diseases, increasingly diverse populations, and health disparities experienced by socially disadvantaged groups. 44.1% of children in state had no medical home, 100 counties were identified as State Physician and/or Federal Health Professional Shortage areas and Illinois had 25 primary care physicians per 10,000 people, while the APRN numbers were steadily increasing in state. ***Report concludes that eliminating the requirement for collaborative practice agreements between APRNs and physicians in state is viable mechanism for increasing primary care capacity and reducing health care costs*** (Health and Medicine Policy Research Group, 2013). [Changes to Illinois statues related to CP agreement passed in 2017]

2013 **Study of primary care services provided to Medicare beneficiaries in LTC nursing homes using data from 2006 to 2010.** Compared two primary care models: MD only practices and MD/NP collaborative services. *NPs provide comparable care that was both substitutive and complementary to that provided by MDs in LTC. Health Screening rates were similar, although NPs had higher completion rates of advanced directives related to DNR orders* (Melillo, Remington, Abdallah, Gautam, Lee & Van Etten, 2013).

2013 **Qualitative study to explore perceptions residents and family members regarding role of NP in LTC homes.** Residents and family members in 4 LTC settings in 2010 were interviewed individually and in group settings to understand their experiences and perceptions of participants related to the NP role. *The perceptions of residents and family members of the NP role were consistent with the concepts of person-centered and relationship-centered care. The relationships the NPs develop with residents and family members are central means through which enhanced quality of care occurs* (Ploeg, et.al. 2013).

2013 **Authors propose solutions to the demand for adult primary care explodes, while the capacity to provide care is shrinking.** Literature reflects insufficient primary care physicians for variety of reasons, that even the NP and PA numbers will not be able to bridge the gap for. Proposal focuses on increasing primary care capacity by redefining who does what in delivering primary care. 3 proposals address expanding roles of nonlicensed personnel, improved patient self-care practices, and telemedicine innovations (Bodenheimer& Smith, 2013).

2013 **Comprehensive literature review on nurse-led and nurse involved primary care interventions with particular focus on those serving people with chronic and complex conditions and hard to reach populations.** Lifestyle interventions provided by nurses have been effective for cardiac care, diabetes, smoking cessation and obesity. *The evidence gathered demonstrated that nurses working in primary care provide effective care, have high patient satisfaction and patients are more likely to comply with nurse instructions than general practitioner instructions* (Parkinson & Parker, 2013).

2013 **Regulation and licensure of health professionals is controlled by states via laws and regulations that define the scope of practice for practitioners.** Existing laws and regulations limit the effective and efficient use of the health care workforce by creating mismatches between professional competence and scope of practice (SOP) laws. Changes to legal SOP require legislative action, which is slow, adversarial and costly. Authors propose 7 policy reforms to transform health care delivery system and improve population health. **Key proposals are aligning SOP with professional competence and to recognize and accommodate overlapping SOP** (Dower, Moore & Langelier, 2013).

2014 **Missouri Hospital Association Special Report on Primary Care Physicians** reveals that 80% of Missouri is in a Health Professional Shortage Area, leaving 1 in 5 Missourians with limited access to primary care. *58% of Missouri primary care physicians in 2014 were age 50 and older and 41 rural communities have no hospital and of the 76 rural hospitals, 35 are critical access hospitals.*

2014 **Health Affairs Blog** shares findings from the **National Center for Health Workforce Analysis predicting physician shortages** as high as 20,400 by 2020. Only 19 more US graduate matches to primary care specialties were reported for 2014 over 2013. *Nurse practitioner primary care graduation rates increased by 1,804 more than previous year, with the substantial increase in NP expected to continue* (Polh, Barksdale & Werner, 2014).

2014 **Study examined financial impact of adding NPs to inpatient teams at Vanderbilt University of Hospital.** Retrospective secondary analysis of billing, acuity, length of stay and NP-associated metrics over 2 year time-frame. *Gross collections compared with expenses for 4 NP-led teams were 62%, 36%, 47% and 32%. Average risk-adjusted LOS after adding NPs decreased and charges decreased. Most clinical outcomes improved beyond pre-project baselines* (Kapu, Kleinpell & Pilon, 2014).

2014 **Missouri Board of Healing Arts** applies Collaborative Practice Regulations to the practice of Telehealth by APRNs.

2014 **State level study of impact of nurse practitioners on health care outcomes of Medicare and Medicaid patients** reports that *states with full practice of nurse practitioners (green*

states) have lower hospitalizations rates and improved health care outcomes in their communities than states with APRN restrictions (yellow and red states) (Oliver, Pennington, Revelle & Rantz, 2014).

2014 **Federal Trade Commission** releases policy paper titled '*Competition and the Regulation of Advanced Practice Nurses'.* The report advises "*mandatory physician supervision and collaborative practice agreements are likely to impede competition among health care providers and restrict APRNs' ability to practice independently***, leading to decreased access to HC services, higher health costs, reduced quality of care and less innovation in health care delivery."**

2014 **Systematic review of cost-effectiveness of nurse practitioners and CNS studying the quality of the evidence.** 17 studies of NPs were assessed for risk of bias assessment using a modified Cochrane risk of bias criteria. 10 of the 17 (59%) studies had a low overall risk of bias, 4 (24%) had a moderate risk of bias, and 4 (23%) had a high risk of bias. Future studies need inclusion of NP education, experience and role to consolidate evidence of cost-effectiveness of NP role (Donald, et. al., 2014).

2014 **This publication is primarily concerned with how the regulatory environment moderates the effect of increases in NP and PA supply on various health outcomes**. Thorough review over time reveals expanded NP and PA supply has had minimal impact on the office-based healthcare market overall, but *utilization has been modestly more responsive to supply increases in states permitting greater autonomy*. The results quantify the effects of increased supply of nonphysician providers. ***Results suggest the importance of laws impacting the division of labor, not just its quantity*** (Stange, 2014).

2014 **Systematic review of the evidence of clinical effectiveness and care costs of physicians-nurse substitution in primary care.** 24 RCTs and 2 economic studies were analyzed. Pooled analysis showed higher overall scores of patient satisfaction with nurse-led care. *Nurse led care was effective at reducing overall risk of hospital admission, and mortality* (Martin-Gonzalez, et. al. 2014).

2014 **Systematic review on the effects of nurse prescribing using studies with comparative design.** Analyzed 35 studies from 1974 to 2011 (13 conducted in US). Report that nurses prescribe in comparable ways to physicians, prescribe equal numbers of patients and prescribe comparable types and doses of medicine. *Patient health outcomes were the same or better for treatment by nurses, perceived quality of care was similar or better and patients treated by nurses were just as satisfied or more satisfied* (Gielen, Dekker, Francke, Mistiaen & Kroezen, 2014).

2014 **Paper funded by RWJF estimates the casual impact of NP independence on population health care utilization rates and health outcomes, following changes to state law**

passage from 1995 to 2012. *Found that more independent primary care providers increases the frequency of routine check-ups, improves care quality and decreases emergency room by patients with ambulatory care sensitive conditions* (Traczynski & Udalova, 2014).

2014 **The Status of Advanced Practice Registered Nurses in Missouri: A White Paper was revised in 2014.** Paper reviews the Missouri historical status of APRN regulations from 1974 till 2014. Provides over 40 years of research validating the effectiveness, safety and efficiency of APRNs**. Reveals the need for improved access to care and support removing barriers to Missouri citizens' allowing access to the full scope of all available APRN services.**

2014 **Missouri passes law creating position of "assistant physician". Creation of status is claimed as a method to respond to shortage of primary care physicians in Missouri.** Rules must be written before physicians, who graduated from medical school but did not obtain a residency program, can apply for designation.

2015 **Project by Westat Research Corporation exploring the effects of NP scope of practice (SOP) legislation on the distribution and practice patterns of NPs as well as their billing practices.** Five state-level case studies were conducted in 2 Red states (Florida, Texas) and 3 Green states (Nevada, New Mexico & Washington) from May to December 2014. Barriers identified that prevented NPs from practicing to their full capacity were state and federal regulations and statutes, hospital and facility bylaws that prescribe NP practice scope within institutions, and deep-rooted culture beliefs. Analysis found consistent effects of SOP, statistically significant differences in 8 of 9 dependent variables. *Addressing SOP laws are recommended as first step to reduce the barriers, potentially alleviating the effects of primary care physician shortages, while improving access to timely health care* (Westat, 2015).

2015 **Letter from Federal Trade Commission to Representative Kirkton of Missouri addressing impact of HB 633 which would revise collaboration practice rules.** The FTC letter discusses the considerable competitive concerns in the face of developing team-based healthcare. The letter concludes that the new burdens imposed by the bill may not achieve the potential efficiencies associated with off-site chart reviews and consultations and that additional responsibilities likely would increase cost (FTC, 2015).

2015 **US Supreme Court upheld FTC's decision** finding that NC Board of Dental Examiners was not exempt from federal antitrust laws when it sent a cease and desist letter to non-dentist whitening teeth service providers. Decision made clear that antitrust laws apply to activities of state agencies, such as licensing boards. **The Supreme Court recognized that antitrust laws limit the ability of market incumbents to suppress competition through state professional boards** (Sokler & Kim, 2015).

2015 **Study assessed the health status and functioning of Medicare beneficiaries in NHs from 2006 to 2008 who received primary care from either a MD, a MD dominant (seen by NP or PA less than half of visits and NP/PA dominant (more than ½ of visits provided by APRN or PA).** *Participants in NP/PA dominant cohort had more orientation and independence in activities compared to MD dominant cohort*. Other variables did not vary significantly by practice model (Abdallah, et. al. 2015).

2015 The **Health Resource and Services Administration** reports on **2012 first National Sample Survey of Nurse Practitioners.** 12,923 surveys were returned representing all 50 states and DC. *Nearly half of the respondents were working in primary care practices or facilities.*

2015 **Survey of New Mexico APRNs (green state) exploring autonomy and empowerment in relation to variables of physician oversight, geographic location, and practice setting.** 62% worked in urban settings and 41% of sample reported physician oversight. APRNs with physician oversight had significantly higher empowerment scores than those with no oversight. Analysis of the empowerment subscales reveled 2 subscales that were significantly correlated: resources and informal power. APRNs practicing in hospitals or LTC settings reported more empowerment than APRNs working in outpatient or clinic settings. Authors propose that more opportunity for APRNs to work within a team of providers in urban settings (Peterson, Keller, Way & Borges 2015)

2015 **Retrospective cohort design comparing Medicare payment amounts for inpatient and ambulatory services provided by NPs and primary care physicians during 2009 and 2010.** *Medicare evaluation and management payments for beneficiaries assigned to an NP were $207, or 29%, less than primary care physician assigned beneficiaries. The same pattern was observed for inpatient and total office visit paid amounts, with 11% and 18% less for assigned NP beneficiaries respectively* (Perloff, DesRoches & Buerhaus, 2015).

2015 **Economic impact analysis done to demonstrate impacts of making state scope of practice regulations less restrictive in North Carolina.** *Authors report that if NC adopted the same approach as the least restrictive states (green states), the economy of NC would benefit from substantial increases in economic output and employment. The state would also see increases in tax revenue.* The changes would also substantially shrink the projected provider shortage. (Conover & Richards, 2015).

2015 **Mail survey of 972 clinicians from 11/2011 to 4/2012** reports that *primary care nurse practitioners were more likely to practice in urban and rural areas, provide care in a wider range of community settings and treat Medicaid recipients and other vulnerable populations.* (Buerhaus, DesRoches, Dittus & Donelan, 2015)

2015 **The Commonwealth Fund Scorecard on State Health Performance** *ranks Missouri at 36th, a decline from 2014 when the ranking was 34th*. Five variables drive the score with Missouri placement in quartiles: 1. Access & Availability-3rd quartile, 2. Prevention & Treatment-2nd quartile, 3. Avoiding Hospital Use and Cost-3rd quartile, 4. Healthy Lives-4th quartile and 5. Equity-3rd quartile***. Overall, Missouri's ranking places the state in the 3rd quartile of Overall Performance*** (Commonwealth Fund, 2015).

2015 **Publication reports a cost analysis base on what would occur if more physician assistants and nurse practitioners were deployed over a 10 year period.** The state of Alabama was used as a case study because it is a state with restrictive legislation impacting scope of practice (red state). ***Even modest changes in legislation would result in net savings of $729 million over the 10-year period*** (Hooker & Muchow, 2015).

2015 **Researchers conducted a systematic review of randomized control trials (RCTs) of safety and effectiveness of primary care provided by APRNs.** The **7 RCTs** included data for 10,911 patients in primary care settings. *APRN groups demonstrated equal or better outcomes than physicians groups for physiologic measures, patient satisfaction and cost* (Swan, Ferguson, Chang, Larson & Smaldone, 2015).

2015 **Study purpose was to review literature on the effect of relaxing APRN scope of practice laws on health-care access, quality and costs in Ohio conducted by RAND Corporation.** Ohio-specific impacts were improvement in access to care in state, 70,000 fewer emergency room visits, as many as 1.2 million patients could report improved care experiences and price drops for certain types of visits (well-child) of 6%. *Conclusion demonstrates that granting APRNs full-practice authority would increase HC services for Ohioans with increases in quality and no clear increase in cost* (Martsolf, Auerbach & Arifkhanova, 2015).

2015 **Study designed to assess cost of services provided to Medicare beneficiaries provided by nurse practitioners as compared to primary care physicians.** Analyzed Medicare Part A (inpatient) and Part B (office visits) claims for 2009 to 2010. *Medicare evaluation and management payments for beneficiaries assigned to a NP were $207, or 29%, less than primary care physicians assigned beneficiaries.* **Results suggest that increasing access to NP primary care will not increase costs for Medicare program and may be cost saving** (Perloff, DesRoches & Buerhaus, 2015).

2015 **Research report by Rand Corporation to review literature on the effect of relaxing APRN scope of practice laws to allow APRNs to independently provide more-extensive services to their patient.** Focus of report was state of Ohio and addressed 3 outcomes: 1. Access and utilization-*Enacting independent practice would increase access to preventive visits*; 2. Quality and outcomes-*Lead to fewer ED visits in Ohio and 1.2 million patients could potentially report improved care experiences*, and 3. Costs-**Price of similar**

visits could drop in Ohio which would produce considerable savings for state and insurers (Martsolf, Auerbach & Arifkhanova, 2015).

2015 **Systematic review of 11 NP studies in primary care and ambulatory care from 1980 to 2012.** 7 studies in done in USA. *Nurse practitioners in alternative provider ambulatory primary care roles have equivalent or better patient outcomes that physicians and are potentially cost-saving* (Martin-Misener, et. al., 2015).

2015 **Systematic reviews published from 2006 and 2014 on the effectiveness of emergency room nurse practitioner service.** Of the 14 studies reviewed, primary outcomes found were cost, waiting times, patient satisfaction and quality of care. 2 studies were done in US. **The narrative findings from the systematic review suggest that emergency NPs do impact patient satisfaction and waiting times positively. Cost effectiveness of emergency NPs was equal to that of other health professionals in regards of soft tissue management and overall quality of care** (Jennings, Clifford, Fox & O'Connell, 2015).

2015 **AAMC report on Physician Profiles in US from 2014.** Missouri had 5,294 Primary Care physicians with 87.3 active Primary Care physicians per 100,000 population in 2014, ranking at 36 in comparison to other states. 28.1% of active physicians in Missouri were age 60 or older (AAMC 2015).

2015 **Systematic review of 12 RCTs compromising 22,617 randomized patients conducted mainly in Europe.** *84% of study estimates showed so significant difference between nurse-led care and physician-led care, nurses achieved better outcomes in secondary prevention of heart disease and greater positive effect in managing dyspepsia and at lowering cardiovascular risk in diabetic patients*. Publication dates of 12 RCTs ranged from 1998 to 2012 (Martinez-Gonzalez, Trandjung & Rosemann, 2015).

2015 **Systematic review to synthesize evidence of effectiveness and cost-effectiveness of CNS and NPs working in alternative or complementary roles in in inpatient settings.** Timeframe of 1980 to July 2012. 3 US studies were analyzed (1 of CNS and 2 of NP role). IN NP studies, *NP care was equivalent to physician care as was CNS usual care for outcomes. The economic analysis showed equal effectiveness and equal resource use.* As hospital budgets face financial challenges, the use of APRNs can assist hospitals to meet primary care shortage issues (Kilpatrick, et. al., 2015).

2015 **Article reports series of focus groups held with APRNs embedded in 16 Missouri nursing homes describing how they integrated their APRN role in NHs to influence care.** Three themes were identified: 1. Learning about the environment while changing the environment; 2.Building legitimacy through relationship building to move from being an outsider to an insider, and 3. Making a difference and success in problem solving in NH to make real change happen. *The research project, called the Missouri*

Quality Initiative (MOQI), required the APRN to move outside the role of primary care provider, with challenges turning into opportunities, as the APRNs learned new system skills and built relationships with nursing home staff and attending physicians, leading to reduced unnecessary hospitalizations (Vogelsmeier, Popejoy, Rantz, Flesner, Lueckenotte & Alexander, 2015).

2016 **Letter from Federal Trade Commission to Department of Veterans Affairs addressing VA proposal to maximize staff's capabilities by granting VA APRNs full capacity authority.** The FTC concludes *supporting the VA's efforts to grant full practice authority by removing the remaining state-law-based supervision restrictions on APRN scope of practice* (FTC, 2016).

2016 **Association of American of Medical College** updates projections that confirm that the physician shortage is real and is in four broad categories: Primary care, medical specialties, surgical specialties and other specialties. **By 2025, the study estimated a shortfall of between 14,900 and 35,600 primary care physicians.**

2016 **An estimated 22,000 nurse practitioners graduated in 2014-2015; 83.4% are certified in area of primary care** (AANP, 2016).

2016 **Review of National Practitioner Data Bank (NPDB) to compare rates of malpractice reports and adverse actions for physicians, PAs and NPs from 2005 to 2014.** During ten year time-frame, there were 11.2 to 19.0 malpractice payment reports per 1,000 physicians, 1.4 to 2.4 per 1,000 PAs, and 1.1 to 1.4 per 1,000 NPs. Data reveals a decline in malpractice claims during time-frame and comparing results to NPDB analysis reported in 2009 on 17 year time-frame, ***PAs and NPs continued to be less likely to make a malpractice payment than physicians.***

2016 **U.S Department of Veterans Affairs** moved *to permit full practice authority of three roles of APRNs within scope of VA employment*. Rule went into effect on January 13, 2017. **The ruling grants power to work independently without physician supervision everywhere in the VA network, the largest integrated health system in the United States.**

2016 **Research study examined national data of ambulatory visits to clinicians (physicians and APRNS**) between 1/1997 and 12/2011. *APRNs and physicians provided equivalent amount of low-value health services, dispelling myth that APRNs provide lower-value care than physicians*. Low value health care was defined as patient care that typically portends a greater probability of harm than benefit (Mafi, Wee, Davis & Landon, 2016).

2016 **A systematic review of the impact of state NP scope of practice regulations on health care delivery concludes** "*Removing restrictions on NP scope of practice regulations*

*could be a viable and effective strategy to increase primary care capacity" (*Xue, Ye, Brewer & Spetz, 2016).

2016 **Cross-sectional retrospective study of Medicare beneficiaries with COPD who had at least one hospitalization in 2010 examining process and outcome measures between NPs and primary care physicians.** A total of 7,257 Medicare beneficiaries were studied. *Compared to physicians, COPD patients cared for by NPs were more likely to receive short-acting bronchodilator, oxygen therapy, been referred to pulmonologist, and were less likely to visit the ER for COPD. There were not differences in hospitalization or readmission for COPD between physicians and NPs* (Agarwal, Zhang, Kuo & Sharma, 2016).

2016 **America's Health Rankings Annual Report**, prepared by the United Health Foundation, *ranks **Missouri's Overall Health Status as 37th, a decline from 36th in 2015 ranking**. The state ranks 40th for senior health and 35th for the health of women and children.*

2016 **The number of psychiatrists licensed in Missouri is 501**, according to Missouri Board of Health Arts, **for a population of 5.9 million Missourians** (2010 Census). *SSM Health care in the St. Louis region has 10 to 15 patients every day waiting for a mental health bed in St. Louis region, with patients waiting in emergency departments* (Dan Body, VP of SSM Behavioral Health Services). **There is no licensed psychiatrist in 72 Missouri counties and most psychiatrist do not accept Medicaid.** *Psychiatric nurse practitioners have the potential to address mental health workforce shortages is the CP regulations were removed in Missouri.*

2016 **Research done on 5,740,470 anesthesia-specific procedures from 2011-2012 data of Optum Research Database** to study if there was differences in anesthesia related **statistically significant differences in risk of anesthesia complications based on degree of restrictions placed on CRNA by state law.** *Evidences suggests there is no empirical evidence for SOP laws that restrict CRNAs* (Negrusa, Hogan, Warner, Schroeder & Pang, 2016).

2016 **Study of 259,000,000 prescriptions using 2012 Intercontinental Marketing Services Health data to investigate the relationship in opioid and benzodiazepine prescribing rates between independent versus non independent APRN prescribing states.** *There were significantly higher opioid and benzodiazepine prescriptions in states with nonindepedant APRN prescribing laws (red and yellow) states than in states with independent APRN prescribing laws (green states)* (Schirle & McCabe, 2016).

2016 **Paper examines how important changes to occupational licensing laws for nurse practitioners and physician assistants have affected the cost and access to health care for Medicaid patients. "***The results of this paper, combined with findings of other*

researchers, suggest that broader scope of practice for NPs and PAs has little effect on the quality of care delivered, increases access to health care, and also potentially reduces the cost of providing health care to patients. More generally, broadening the scope of practice of non-physician healthcare providers and reducing the monopoly power of physicians in the healthcare market is very likely to improve consumer welfare." (Timmons, 2016)

2016 **Article reviews the primary care workforce reporting on the growing gap between the population's demand for primary care and the number of primary care physicians available to meet the demand.** About 8,000 primary care physicians entered the workforce in 2015, up only slightly from 7,500 in 2005; the number of yearly entrants is expected to plateau at around 8,000. But the number of primary care physicians who retire each year is projected to reach 8,500 in 2020, indicating the PCP workforce will be declining. The NP workforce has mushroomed from 6,600 in 2005 to 18,000 in 2014. The number of NPs is projected to increase by 84% between 2010 and 2025 (Bodenheimer & Bauer, 2016).

2016 **Surveys sent to 12,000 NPs in 24 states (Missouri was one of the states) to ask perceptions of NPs on the impact of regulatory requirements for physician oversight (PO) on NP practice.** *The majority of participants indicated that PO did not improve safe NP practice, improved patient safety or enhanced public safety.* **The majority perceived that PO created provider-patient confusions, hindered provider-patient trust and impeded transitions to other levels of care.** Participants also PO impeded transitions patients to other levels of care (Lowery, Scott & Swanson, 2016).

2016 **US Department of Health and Human Service released National and Regional Projections of Supply and Demands for Primary Care Practitioners: 2013 to 2025.** *Nurse Practitioners (NP) projected to increase by 93% by 2025, primary care physicians (PCP) projected to increase by 11% by 2025, and Physician Assistants (PA) projected to grow by 76% by 2025..* The US Census Bureaus' South region is projected to experience greatest shortfall in supply of PCP needed to meet 2025 demand and the greatest oversupply of NPs. **More effective coordination of NP and PA services could mitigate regional disparities and improve access to primary care.**

2016 **Summary report from College of Registered Nurses of Nova Scotia on Nurs Practitioner-Sensitive Outcomes. Purpose is to identify research that demonstrates patient health outcomes sensitive to NP interventions.** The report is updated annually. *Overall researchers consistently found that patients are satisfied with NP care, similar health outcomes is provided by NPs and physicians, and collaboration between NPs and MDs teams achieve positive patient outcome. Care provided by NPs reduces costs, length of stay and wait times. NPs accurately order and interpret diagnostic tests, prescribe*

medications appropriately and use clinical practice guidelines (College of Registered Nurses of Nova Scotia).

2016 **Study of literature to examine existing literature on relationship between nursing practice scope of practice (SOP) regulations and various health care delivery outcomes by the Rand Corporation to establish the impact of full SOP for NPs in Michigan (a red state).** 14 studies were analyzed for recency of data used, generalizability of findings & risk of bias in estimates. All the studies were based on national datasets. Findings suggested that full SOP can potentially contribute to improvements in provider supply, access to care, utilizations of care and quality of care (patient-centeredness) as a result of establishing a full SOP for NPs in Michigan (Martsolf & Kandrack, 2016).

2016 **Purpose of article was to conduct literature review and develop a comprehensive model for NPs that identifies the potential factors affecting NP care and patient outcomes.** The model identifies the factors affecting NP care and patient outcomes and explains their interrelated impact: NP scope of practice regulations, institutional policies, NP practice environment and NP workforce outcomes. **The model provides guidance for NP policy, practice and research activity for the future** (Poghosyan, Boyd & Clarke, 2016).

2017 **2017 County Health Rankings Key Findings Report** advises that nearly 3,800 deaths in Missouri could be avoided if all residents in the state had a fair chance to be healthy. *Primary care physician ratio reported in worst counties to be 8,233:1. Ratio of population to mental health providers in worst counties reported to be 4,123:1.* (Worst counties represent bottom 10% of county-level values for a given measure.)

2017 **Review of 12 research studies (primary care and long term settings) examining patient outcomes, care provider outcomes, resource use outcomes, and costs.** All reviews showed a similar direction of effects: *substitution of NPs, PAs or nurses for physicians is feasible with at least maintenance of quality and no increase in costs* (Lovink, Persoon, Koopman & Vught, 2017).

2017 **Results of Missouri Quality Improvement (MOQI) federally funded research project after 3 years of placing FT APRNs in 16 Missouri nursing homes who had high hospital transfer rates.** The single group intervention study collected data on 1,750 long-stay Medicare, Medicaid and private pay long stay residents. *MOQI achieved a 30% reduction of all-cause hospitalizations and statistically significant reductions in 4 single quarters of 2.75 years of full implementation of intervention* (Rantz, et.al. 2017).

2017 **Analysis of CMS Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents from 2.2013 to 10.2016 in 7 states.** The Missouri Quality Initiative (MOQI), which was staffed by APRNs full-time in 16 Missouri nursing facilities, *revealed the*

intervention of APRN presence were associated with consistent and significant reduction in all four outcomes (5.9 % point decrease in probability of having any hospitalizations in 2014 and a 9.3% point decrease in 2015; a 5.5% point decrease in the probability of having any potentially avoidable hospitalizations in 2014 and a 7.2% point decrease in 2015***). The effect of MOQI intervention reduced Medicare expenditures per resident of $729 in 2014 and $1,369 in 2015 for all cause hospitalizations and of $456 in 2014 and $577 in 2015 for potentially avoidable hospitalizations*** (Ingber et. al. 2017).

2017 Association of American Medical Colleges releases 2017 Update on Complexities of Physician Supply and Demand: Projections from 2015 to 2030. Report predicts shortfalls in primary care range between 7,300 to 43,100 physicians by 2030, as the population growth (12%) and aging (55%) continue to be primary driver of increasing demands in same timeframe. More than a 1/3 of all currently active physicians will be 65 or older within the next decade. Report reflects higher projections for the in supply of advanced practice registered nurses. ***Growth in demand for HC services is projected to exceed the growth of physician supply*** (AAMC, 2017).

2017 Missouri Hospital Association Health Institute 2017 Workforce Report is released. APRN Scope of Practice and laws limiting APRN practice is discussed. *"Allowing these professionals to expand the scope of practice to the extent of their training could help mitigate the physician shortage, while limiting the advanced-practice physician extender brain drain from Missouri to other states."*

2017 Rules are finally written for the new category of "assistant physician" in Missouri. State started accepting applications on 1/31/2017 for US residents who graduated from medical school within last 3 years, and passed first 2 rounds of medical licensing exam within last 2 years. People can work as an "assistant physician" indefinitely, essentially sidestepping traditional residency requirements. As of 2017, 127 people had applied, 23 were issued license while 55 were deemed ineligible and 44 remain under review. **Supporters of program state "assistant physicians" will work under supervision of a physician and is an incentive program to place providers in underserved areas.**

2017 Study examined whether and to what extent, there was a connection between scope of practice (SOP) laws, malpractice reforms and physician malpractice rates. 50 states and DC were categorized in one of three types of physician supervision laws from 1999 to 2012. 12 states changed their physician supervision requirements during the timeframe. *Physician malpractice rate in states allowing NPs to practice independently were 31% lower than rate in states that required complete physician supervision. Physician malpractice rate in states requiring only that physician supervise NPs when they prescribe medication was 26% lower relative to states that require complete physician supervision. The reductions is more than double the reduction associated with*

enacting a cap on noneconomic damages (11%) which is considered the most effective state reform in reducing malpractice liability risk **Relaxing SOP laws could mitigate the adverse extraregulatory effect on physicians and could lead to improvements in access to care** (McMichael, Safriet & Buerhaus).

2017 **Author analyzes data set of state political campaign contributions to determine the degree to which political spending by different heathcare interest groups affects physician supervision laws for NPs and PAs.** 4 groups (physician, nurse, non-physician and hospital) were ranked by the amount of political spending per 1000 state residents in 2013 dollars. Hospital and physician spending outpaced spending by the nurse and non-physician groups*. The results demonstrate that political spending by healthcare interest groups affect whether states adopt different licensing laws.* **Evidence consistent with investment theory of political spending, as groups invest political dollars and receive benefits in the form of their preferred laws in return** (McMichael, 2017).

2017 **Research findings of 3 years where advanced practice registered nurses (APRNs) were placed in 16 Missouri nursing homes with the goal to reduce avoidable hospital transfers from homes and reduce overall healthcare spending for Medicaid and Medicare residents.** *The Missouri Quality Initiative (MOQI) achieved 30% reduction in all-cause hospitalizations and statistically significant reductions in 4 quarters of the 2.75 years of full implementation for long-stay residents*. **APRNs, working with a multidisciplinary support team, are a solution to improving care and reducing costs in nursing homes** (Rantz, Popejoy, Vogelsmeier, Galambos, Alexander, Flesner, Crecelius, Bin & Petroski, 2017).

2017 **Qualitative study of the advanced practice registered nurse (APRN) role in changing nursing home quality**. APRNs embedded in 16 Missouri nursing homes, recorded 1,500 entries for 1 year period (3/2014 to 3/2015) to identify how they influenced improvement in the nursing home system. **The health systems influenced by the APRNs included taking care of the basics, improving discussions about improving care and limiting treatment and improving health care team communication about treatment** (Popejoy, Vogelsmeier, Galambos, Flesner, Alexander, Lueckenotte & Lyons, 2017).

2017 **Authors share positive outcomes in reducing hospitalizations from Midwest nursing homes, emergency room visits and Medicare expenditures of federally funded 4 year research grant called MOQI**. Employment of APRNs in long term care in US is reviewed, with recommendations on revisions to four US Medicare regulations, which would enable APRNs, whether employed by facility or not to conduct required and other visits, handle admissions, write admission orders and write treatment orders. *Revising CFR 483.40 would expedite and improve resident's access to care while enhancing physician productivity* (Rantz, Birtley, Flesner, Crecelius & Murray, 2017).

TIMELINE OF SIGNIFICANT EVENTS IN APRN PRACTICE
Document prepared by Marcia Flesner of University of Missouri Sinclair School of Nursing
Updated 5/24/2018

2017 **The American Academy of Nursing Primary Care Expert Panel publishes policy paper on Full Practice Authority (FPA) for APRNs is necessary to transform primary care.** *The benefits of FPA to patients, the health care system and payers are fewer emergency room visits, lower hospitalization rates, expanded health care utilization, care provided at lower cost than physicians, fewer prescriptions for drugs commonly linked to overdose deaths and increased teamwork between NPs and physicians in primary car organizations.* Recommendations are offered to remove regulatory barriers to NP practice, and to develop messages targeting consumers that aim to improve public's understanding of role of APRNs (Bosse, Simmonds, Hanson, Pulcini, Dunphy, Vanhook & Poghosyan, 2017).

2017 **Impact of APRNs on Quality Measures from MOQI team for 3 year period reported on.** Quality Measures (QMs) are clinical scores calculated from data collected on Medicare recipients in skilled nursing beds. 16 Missouri nursing homes has FT APRNs embedded in the homes over a 4 year period. A 2 group comparison analysis was conducted using statewide QMs; a matched comparison group in the state was used. Composite QM scores of the APRN intervention group were significantly better (P = .025) than the comparison group over a 36 month timeframe. ***APRNs working FT in nursing homes can positively influence quality of care and their impact can be measured by improved QM scores*** (Rantz, Popejoy, Vogelsmeier, Galambos, Alexander, Flesner, Murray, Crecelius, Ge & Petroski, 2017).

2017 **HB 330 passed into law in Missouri to ease the qualifications for medical school graduates unable to obtain a residency to become licensed in Missouri as an 'assistant physician'.** The bill changed the timeline that medical graduates have to apply for the AP licensure. The Board of healing Arts had received 133 applications and issue 34 licensures as of May 30, 2017. (Section 334.036 1. To 6. RSMO)

2018 **Researchers analyzed 2 years (2012 & 2013) of all aged, disabled and dually eligible Medicaid and Medicare beneficiaries, including claims submitted by inpatient and outpatient institutional providers and individual clinicians (MDs and NPs).** Purpose of study was to compare quality indicators among the 3 groups managed by MDs and NPs. The study found evidence that quality of primary care among the 3 groups differed according to whether they were attributed to NP or MD. Beneficiaries attributed to NP care had a lower risk of preventable hospitalizations and emergency department use. These beneficiaries had lower use of other health care resources such as low-value imaging and were no less likely to receive health care services consistent with established guidelines. Findings add to growing body of literature the NPs provide high quality care and manage complex patients in a manner consistent with practice guidelines and less intensive use of health care resources (DesRoches, Clarke, Perloff, O'Reilly-Jacob & Buerhaus, 2018).

TIMELINE OF SIGNIFICANT EVENTS IN APRN PRACTICE
Document prepared by Marcia Flesner of University of Missouri Sinclair School of Nursing
Updated 5/24/2018

2018 **HB 2127 submitted in Missouri to expand the role of Assistant Physician (AP).** Bill would allow AP to practice in all areas of medicine, instead of just family practice. Would remove the collaborative practice agreement, reduce CEU hours and registration fee and bill for AP services under PA category. Sponsor claims bill is just a clean-up bill. Opponents view it as an expansion bill. MSMA lobbyist reports 173 Aps are licensed in MO and 79 have collaborative practice agreements.

2018 **Research to examine relationship of per capita supply of providers with county socioeconomic and health status level.** Identified 272,105 primary care physicians, 63,615 nurse practitioners, 47,006 physician assistants and 43,278 chiropractors providing care in 2014Across all provider groups except for nurse practitioners found a higher supply of providers in areas of higher income and better health status. **Study shows that nurse practitioners are more likely to be located in lower socioeconomic and health status than other providers.** (Davis, Anthopos, Tootoo, Titler, Bynum & Shipman, 2018).

2018 **Effective 4/26/2018, the mileage limits of APRNs was increased from 30/50 miles to 75 miles via an Emergency Rule.** The change was agreed upon by the Physician and Nursing Licensing Boards after discussions during bill hearings during 2018 legislative session. (220. CSR 2200-4.200 (2) (B) Collaborative Practice)

REFERENCES: Available by contacting flesnerm@missouri.edu