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### Title

Clinical Nurse Leader Integrated Care Delivery to Improve Care Quality: Factors Influencing Perceived Success

### Permalink

<https://escholarship.org/uc/item/1p71m35r>

### Journal

Journal of Nursing Scholarship, 48(4)

### ISSN

1527-6546

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### Publication Date

2016-07-01

### DOI

10.1111/jnu.12217

Peer reviewed

## PROFESSION AND SOCIETY

## Clinical Nurse Leader Integrated Care Delivery to Improve Care Quality: Factors Influencing Perceived Success

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### Key words

Care delivery model, clinical nurse leader, effectiveness, implementation, nursing care delivery

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Accepted March 28, 2016

doi: 10.1111/jnu.12217

### Abstract

**Purpose:** Clinical nurse leader™ (CNL)-integrated care delivery is a new model for organizing master's-level nursing clinical leadership at the microsystem level. While there is growing evidence of improved patient care quality and safety outcomes associated with CNL practice, organizational and implementation characteristics that influence CNL success are not well characterized. The purpose of this study was to identify organization and implementation factors associated with perceived success of CNL integration into microsystem care delivery models.

**Methods:** A survey was developed and administered to a nationwide sample of certified CNLs and managers, leaders, educators, clinicians, and change agents involved in planning or integrating CNLs into a health system's nursing care delivery model. Items addressed organizational and implementation characteristics and perceived level of CNL initiative success. Generalized linear modeling was used to analyze data.

**Results:** The final sample included 585 respondents. The final model accounted for 35% of variance in perceived CNL initiative success, and included five variables: phase of CNL initiative, CNL practice consistency, CNL instructor or preceptor involvement, CNL reporting structure, and CNL setting ownership status.

**Conclusions:** CNL initiative success is associated with modifiable organizational and implementation factors.

**Clinical Relevance:** Study findings can be used to inform the development of successful implementation strategies for CNL practice integration into care delivery models to improve care quality outcomes.

The Institute of Medicine's (IOM) report *The Future of Nursing: Leading Change, Advancing Health* challenged the nursing profession to become full partners in redesigning healthcare delivery (IOM, 2011). Nurses comprise the largest sector of the healthcare workforce and are leading innovations in the reorganization of nursing knowledge and practice at the front lines of care to consistently achieve safe and high-quality patient

care (Dubois et al., 2013; McSherry & Douglas, 2011; Naylor, 2012). One innovative nursing care delivery model (CDM) spreading across America (Williams & Bender, 2015) and abroad (Dermody, 2015) integrates certified clinical nurse leaders (CNLs) into microsystem, or point-of-care, delivery with the goal of changing practice dynamics to improve care quality and safety.

## Study Purpose

Despite growing evidence of improved care environment and quality outcomes associated with the redesign of microsystem care delivery to incorporate CNL practice, there is limited knowledge about organization and implementation factors that influence successful CNL practice and outcomes. As part of a larger research effort validating an explanatory model of CNL-integrated care delivery, the purpose of this study was to examine the relationship between CNL organization, implementation, and CNL practice success as perceived by diverse stakeholders involved in a CNL initiative. Specific aims were to identify relevant CNL organization and implementation factors and measure the influence of operationalized factors on perceived CNL success.

## Literature Review

### Nursing Care Delivery

Nursing CDMs delineate the organization and implementation of nursing services, including specific nursing roles, such as nurse practitioner, staff nurse, and charge nurse, and the deployment of these roles into daily practice, such as staffing patterns and skill mix (Minnick et al., 2007; Shirey, 2008). The specific ways nursing roles and practices are organized and deployed within practice environments is becoming increasingly recognized as an important determinant of overall nursing effectiveness (Djukic et al., 2013; Duffield, Roche, Dimitrelis, Homer, & Buchan, 2014; Yakusheva, Stevens, Wholey, & Frick, 2014). Current efforts are focused on how nursing knowledge and practice can best be leveraged to produce effective care delivery and consistently achieve care quality and improved patient outcomes (Joynt & Kimball, 2008; Tran, Johnson, Fernandez, & Jones, 2010). A recent Cochrane review concluded there is no strong evidence favoring traditional CDMs such as team or primary nursing, yet highlighted the fact that specialized nursing roles integrated into care delivery may improve patient outcomes (Butler et al., 2011).

### CNL-Integrated Nursing Care Delivery

The CNL initiative was launched in 2003 by the American Association of Colleges of Nursing (AACN) to promote an innovative new model for nursing care delivery (AACN, 2007). Original CNL initiative stakeholders included health system and policy organization leaders along with education faculty, who worked together to develop a master's-level CNL nursing curriculum advancing end competencies in clinical leadership, care environment management, and clinical outcomes man-

agement (Stanley, Hoiting, Burton, Harris, & Norman, 2007). A subsequent task force facilitated the development of practice-education partnerships across the country to pilot the education of CNLs and their integration into health system's CDMs (Begun, Tornabeni, & White, 2006). Recent studies have advanced understanding of CNL practice, which is not about placing an "extra set of hands" into existing models of care, but a highly systematic process of microsystem care delivery redesign to structure CNL competencies (clinical leadership, care environment management, and clinical outcomes management) into a workflow that establishes and maintains multimodal communication channels, multiprofessional relationship building, teamwork, and staff engagement, which together improve microsystem care dynamics to achieve consistent quality and safety outcomes (Bender, 2015, 2016). Improved outcomes have been documented in numerous CNL case study reports (Bender, 2014; Stanley et al., 2008); correlation studies (Guillory, 2011; Kohler, 2011); and time series studies (Bender, Connelly, Glaser, & Brown, 2012; Bender, Murphy, Thomas, Kaminski, & Smith, 2015). However, diversity in organizations with CNL initiatives, and variations in CNL implementation across these organizations has been noted, and it is currently unclear how this diversity influences CNL initiative success (Bender, 2014).

## Methods

We conducted a cross-sectional, nonexperimental study surveying a diverse sample of administrators, leaders, educators, clinicians, and change agents involved in a CNL initiative. All necessary internal review board approvals were obtained before commencing study procedures.

### Survey Development

The survey (**Table S1**, available with the online version of this article) used in this study was constructed as part of an ongoing larger research effort to validate an explanatory model of CNL practice that was developed in a previous grounded theory study (Bender, 2015, 2016). Study investigators worked in collaboration with a CNL expert advisory panel comprising a balanced multiprofessional team with expertise in CNL policy, education, executive leadership, and practice (see Acknowledgments for details) to develop survey items. A Delphi process was used to create and obtain full consensus on survey item content and validity (Hasson et al., 2000). As factors were defined and operationalized into survey items, their level of understanding and adequacy was analyzed using descriptive statistics of study team and expert panel

responses to closed-end probing questions administered via anonymous electronic survey procedures. Operationalized factors were considered credible when the inter-rater response (IRR) was .80 or greater for each probing item (Rubio et al., 2003). Items with less than .8 IRR were discussed to determine if they should be reconceptualized, rewritten, or removed. Survey items were revised as needed based on feedback. The final product of this iterative Delphi approach was a survey that had undergone multiple validation steps, including carefully constructed definitions of the factors of interest; item development in collaboration with experts that included the target population; and a multilevel approach to content validation including quantitative evaluation from experts and the population of interest (Topper, Emmelkamp, Watkins, & Ehring, 1995). This consensus-based research approach has been shown to increase construct validity of survey items that are based on an area of uncertainty or which lack empirical evidence, such as potentially significant CNL organization or implementation factors influencing perceived success (Okoli & Pawlowski, 2004; Powell, 2003). The survey was pretested with a convenience sample of CNL students ( $n = 36$ ). The pretest included respondent debriefing items to ascertain the level of understanding of survey item terms and ability to respond to the survey item appropriately (i.e., the scale is appropriate to the item; DeMaio, Rothgeb, & Hess, 1998). Items were revised as indicated by pretest findings, and survey content was finalized through consensus obtained using a repeated Delphi process.

### Operational Definitions

A CNL initiative is defined as the purposeful planning and integration of CNLs into a health system's nursing CDM, and was operationalized as one survey item (no. 15) asking about type of CNL initiative involvement. The study excluded respondents who chose item no. 15 response "Not involved with a CNL effort, program, or initiative."

A CNL is defined as a master's-prepared nurse with CNL certification who is practicing in a role formally designated by his or her health system site as a clinical nurse leadership role.

Phase of CNL initiative is defined as the stage of planning and implementation of CNL integration into a CDM, and was operationalized as one survey item (no. 21) with seven response options, ranging from planning to spread across the majority of a system's microsystems.

A person involved in a CNL initiative is defined as anyone involved in the purposeful planning and integration of CNLs into a CDM (item no. 15) and included information about what phase of the CNL initiative the person

was involved with (item no. 19), how long they were involved in the initiative (no. 20), and what their defined primary role in the health system or educational institution was (item no. 8). Basic demographic information such as age, education, and licensure were also obtained. The study excluded CNL students, which was identified in survey item no. 16.

Organization factors are defined as attributes of health systems with CNL initiatives (item nos. 9–14, 18). This includes system setting (acute, ambulatory, etc.); designations; academic teaching status; geography; location (i.e., urban, rural); ownership status; and patient population.

Implementation factors are defined as attributes of care delivery redesign to integrate CNLs (item nos. 24–36). This included the explicit title of the CNL role; CNL educational requirement; CNL certification requirement; CNL scheduling (i.e., 8- or 12-hr shifts, part- or full-time); CNL practice location (i.e., one microsystem, many microsystems, etc.); patient cohort CNL responsible for; consistency of CNL activities; CNL reimbursement (i.e., hourly or salary wages); CNL role union status; and CNL reporting hierarchy.

Perceived CNL success was deliberately not defined for this study, as the research team and expert panel were concerned that a prescriptive definition of success would limit identification of important relationships between key variables that arise in the reality of practice. Perception-based survey items are commonly utilized by the healthcare industry, as they map differences as well as similarities around a common reference point, which facilitates learning about these multiple perspectives in relation to other known entities, such as objective metrics of organization and implementation factors (Tornow, 1993). Perceived success was operationalized in survey item no. 22 as "In your opinion, how successful was the CNL effort, program, or initiative?" Participants were able to indicate perceived degree of success using a slider bar labeled from 0 to 100%.

### Sampling Strategy

Recruitment information was distributed to the known certified CNL population by the Commission on Nurse Certification (CNC), which oversees the CNL certification process and manages the certified CNL database, which included a population of 3,375 CNLs at the time of this study. The total population of people involved in a CNL initiative is unknown. Therefore, a multimodal snowball sampling strategy was devised to recruit this population. Publicly available emails of eligible participants were obtained through literature review, and poster and presentation abstracts from 2010 to 2014 national AACN CNL summits were reviewed to identify authors of

published CNL reports. The survey was also introduced to the CNL community by flyer and announcement at the 2015 CNL summit in Orlando, Florida. Finally, a statement was included in the recruitment email inviting recipients to forward study information to anyone who might be interested.

### Survey Administration

The survey was formatted for electronic administration using the Qualtrics platform (Provo, UT, USA). An email that contained information about the study and the survey URL link was sent to the identified target population on February 9, 2015. URL was also listed on the flyer. Email reminders were sent every 3 weeks, and the survey closed on May 8, 2015. All responses were voluntary and confidential, and could not be linked back to email or IP addresses.

### Analysis

Survey data were exported from Qualtrics into SPSS format (SPSS Inc., Armonk, NY, USA), and all analyses were conducted in SPSS 22 and SAS 9.4 (SAS Institute, Cary, NC, USA). Frequencies and percentages were calculated for all survey items. Generalized linear modeling was used, as independent variables included continuous as well as categorical variables with more than two levels. The GLMSELECT procedure in SAS was used to identify significant factors among candidate variables in a stepwise manner. For selected variables hypothesized to influence perceived success, the stepwise modeling procedure used an entry significance level and a stay significance level of 0.10.

## Results

### Response Rate

Of the 3,375 emails delivered to CNLs, 249 were returned as undeliverable, leaving a potential participant population of 3,126 certified CNLs. The survey was also emailed to 498 people known to be involved in a CNL initiative. A total of 921 participants entered the online survey; the two screening items removed 299 participants; and 37 returned blank surveys. The final study sample included 585 valid surveys (**Figure S1**, available with the online version of this article). Because snowball techniques were used, calculation of the sample denominator, and thus response rate, is not possible.

### Survey Participant Demographics

**Table S2** (available with the online version of this article) includes participant demographic data. Most respon-

dents have a master's degree (90%), CNL certification (82%), and additional specialty certification (76%), and have been involved in a CNL initiative for 1 to 4 years (73%). Sixty-three percent of respondents are practicing in a designated CNL role; 15% are managers or leaders with formal accountability for CNLs; 14% are instructors in a CNL educational program; and 41% are CNL preceptors or mentors in a clinical setting. Fifty-three percent of respondents were involved in the initial implementation of a CNL initiative, and 36% became involved after CNL practice was established.

### Organizational Factors

**Table S3** (available with the online version of this article) includes organizational data. Most CNL initiatives are in acute care hospital settings (76%). Thirty-four percent of respondent organizations have Magnet designation, and 67% are affiliated with an academic institution. Twenty-seven percent of respondents are from federal government settings and 55% are from not-for-profit settings. Forty-one percent of respondent settings are in the South, 26% in the Midwest, 14% in the Northeast, and 16% in the West. CNL initiatives spread to the majority of clinical settings in the facilities of 32% of respondents; spread in some but not all settings in facilities of 28% of respondents; and spread limited to only one setting in facilities of 12% of respondents.

### Implementation Factors

**Table S4** (available with the online version of this article) includes CNL implementation data. Thirty-seven percent of respondents indicated that certification was required before starting in a designated CNL role, 37% responded it was required at some point after starting in the role, and 17% responded no certification was required. Seventy-seven percent responded that the CNL role was consistently scheduled for 8- to 12-hr shifts, with 10% responding there was inconsistent scheduling. Only 48% responded that CNL role activities were continuously and consistently performed, while 21% responded that CNL activities were intermittently performed (i.e., CNLs were frequently "taken out of the role" to do other activities, such as charge or staff nursing).

### Associated With Perceived CNL Initiative Success

The study sample's overall perception of CNL initiative success was 64% (*SD* 28%). Investigators and members of the CNL expert advisory panel identified, through consensus, candidate variables from the full survey for

**Table 1.** Association Between Clinical Nurse Leader (CNL) Organization and/or Implementation Variables and Perceived Level of CNL Success

Variables	Estimate effect	<i>p</i>
Intercept	37.57	< .001
Phase CNL initiative is in (reference category Piloted only)		
Spread to majority of microsystems	28.92	< .001
Initiated but not spread across setting(s)	15.29	< .001
CNL role consistency (reference category Inconsistency)		
Consistency every day/week	17.72	< .001
Consistency portion of every day/week	12.26	< .001
Initiative involvement: CNL instructor/preceptor	6.24	.002
CNL role reporting structure: Reports to front line manager	-6.13	.005
CNL setting ownership status (reference category Not-for-profit)		
Government	-5.58	.018
For profit	0.57	.878

$R^2 = 35\%$ .

inclusion in the analysis, after reviewing descriptive analyses. Consensus was reached on 20 candidate variables (starred [\*] in online tables). As a rule of thumb, researchers suggest a minimum subject-to-variable ratio of 10 for multiple regressions when having six or more independent variables. An optimal ratio of 30 is recommended when circumstances allow (VanVoorhis & Morgan, 2007). The sample size of 585 provided adequate power for a generalized regression with 20 independent variables. The final five-variable model accounted for 35% of variance in perceived CNL success and included phase of CNL initiative; CNL role consistency; CNL instructor or preceptor involvement; CNL reporting structure; and CNL setting ownership status (Table 1).

## Discussion

This study determined that for participants involved in CNL initiatives, perceived CNL initiative success is associated with the phase of the CNL initiative, and both modifiable (CNL practice consistency, CNL instructor or preceptor involvement, CNL reporting structure) and nonmodifiable (setting ownership status) factors.

### Phase of CNL Initiative

Respondents who indicated involvement in CNL initiatives that did not expand beyond pilot phase reported significantly lower perception of success than those involved in initiatives that had spread to some or all settings within their health system. Although success was not specifically defined in this survey, it is not unexpected that an effort that does not progress beyond the pilot phase implies a less successful attempt to integrate CNL practice into care delivery than the other response options. If sustainment and expansion are in fact representations of CNL success,

the purposeful intent to respond to challenges or barriers revealed during a CNL pilot may play an essential role in success. Recent articles defining the science of improvement identify such an approach as essential for successful change (Perla & Parry, 2011; Perla, Provost, & Parry, 2013). As Perla et al. (2013) explicitly stated, “all meaningful solutions must pass through a testing and learning phase” (p. 172). Testing and learning lead to better understanding of the improvement process, how it works, and what steps are needed to take it to the next level. The nature of CNL pilot efforts and commitments to learn from them may be critical pathways to CNL initiative success, and should be explored in more depth.

### CNL Role Consistency

Role consistency significantly influenced perceived success. Respondents who noted inconsistent and intermittent CNL practice (i.e., CNLs being taken out of the role to do other activities) scored significantly lower success than those who reported more consistent practice. Other CNL studies have also documented inconsistent CNL practice and have specifically related this inconsistency to a lack of role clarity. Moore and Leahy (2012) surveyed CNLs in a formally designated role and found that more than 50% reported a lack of role clarity, with 39% responding that a more structured CNL role description and implementation was essential for sustained success. In this study, one CNL stated that the unit manager “... had expectations to take patients [i.e., shift to a staff nurse role] in a ‘911 situation.’ Unfortunately, these 911 situations happened far too regularly” (Moore & Leahy, 2012, p. 142). Issues with role clarity were also reported by a CNL in another study:

The biggest barrier [is that] my organization blocks the resources to have other people do these things.

Right now I am starting a joint replacement center, I'm starting a stroke center, I am starting a peer review council, the other CNL and I are starting a patient satisfaction council, and these are things that are not the way the role of the CNL was defined. I have multiple roles at once. (Sorbello, 2010, p. 104)

This and other CNL study findings suggest that health systems continue to struggle to define the "role of the CNL." This role was initially described in the AACN White Paper, and many CNL reports identify the White Paper as a primary source for developing their CNL role and functions (see for example Spiva et al., 2014; Tachibana & Nelson-Peterson, 2007; Wesolowski, Casey, Berry, & Gannon, 2014). The White Paper's articulation of the CNL role includes (a) assumptions of CNL practice (e.g., practice is at the microsystem level); (b) competencies for practice (e.g., translating evidence into practice); and (c) fundamental aspects of the role (e.g., participation in identification and collection of care outcomes; AACN, 2007, 2013). However, other CNL reports stress that additional inputs were needed to clearly define their health system's CNL role, such as input from staff about care support needs (Sherman, 2008) and "design teams" to identify microsystem practice needs (Drenkard, 2004).

This suggests the White Paper alone may not provide the level of detail and specificity to guide the development of consistent and well-articulated CNL roles. It is reasonable to conclude that without role clarity, inconsistency is likely, and as this study determined, inconsistency is associated with lower perceived success. Additional research is needed to address this important knowledge gap, and must adequately delineate the conceptual distinctions between (a) CNL competencies for practice, (b) "fundamental aspects" of CNL practice, and (c) the actual practice patterns and activities that comprise the core of CNL practice across the healthcare spectrum to better understand and specify the role of the CNL.

### Other Factors

Other variables significantly associated with perceived CNL success were type of involvement in a CNL initiative, reporting structure, and setting ownership status. CNL preceptors or instructors represented 41% of respondents, and they reported higher perceptions of success than participants with other types of CNL initiative involvement. CNL preceptors or instructors have already been identified as a successful strategy to integrate CNLs into practice (Lammon et al., 2010; McKeon et al., 2009; Moore, Schmidt, & Howington, 2014), as they work closely with students or novice CNLs to ensure they are appropriately trained and integrated into practice. It is possible that CNL initiatives that incorporate experienced

preceptors or mentors result in practice integration that better aligns with respondent definitions, and therefore perceptions, of success.

There were lower perceived success scores for a CNL–manager reporting structure compared to other reporting structures. While there is no direct evidence of effective CNL reporting structures, there is a commonly expressed view that effective manager and CNL partnerships influence success. For example, in a 2010 qualitative CNL study, a good relationship with the frontline manager was seen as critical to CNL success (Sherman, 2010). Competing priorities in the reality of the practice setting between administratively oriented nurse managers and clinically oriented CNLs may negatively impact relationships, and thus perceived CNL success. While alternate reporting structures may obviate these challenges to a degree, strategic attention to the potential interaction of the functionality of the reporting relationship and CNL integration may be more critical to success than the actual structural alignment of the reporting relationship. Findings from this study highlight the need for further research on reporting relationships and how they influence CNL practice integration.

Finally, study findings suggest CNL initiatives achieved similar levels of success in for-profit and nonprofit settings, with slightly, yet significantly, reduced perceived success in government settings. The specific influence of context on perceptions of success both across and within practice settings was beyond the scope of this study, but warrants further exploration.

### Limitations

Inferences to CNL initiatives across the nation and abroad based on this study should be made with caution. The unknown size of the target population prohibits calculation of a response rate for this study and therefore conclusions regarding the representativeness of the study sample. Heterogeneity of health systems represented by the sample introduces the potential for different interpretations of survey items, including the outcome of interest, perceived success, based on the nature of each CNL initiative and the context within which the initiative was implemented. However, study findings align well with other CNL research findings and have identified important areas for more in-depth exploration and validation of factors associated with successful CNL practice integration.

### Conclusions

CNL practice is an approach to integrating continuous clinical leadership into nursing care delivery with the potential to improve interprofessional care processes

and quality and safety outcomes (Bender, 2015, 2016; Bender, Connelly, & Brown, 2013; Williams & Bender, 2015). This study produced actionable information for health system leaders and managers considering CNL practice or enhancing existing CNL initiatives. The findings suggest CNL practice can succeed in diverse organization settings with differing ownership, designation, union, and academic affiliation characteristics. Modifiable implementation factors can be targeted to promote CNL initiative success. Areas for further research were identified to advance understanding of factors that promote CNL implementation success and how these factors influence CNL effectiveness in improving quality and patient outcomes. As noted previously in this report, there is startlingly little evidence for models of nursing care that consistently achieve care quality outcomes. Continued research on CNL-integrated care delivery provides an opportunity to address this important gap and produce knowledge that meaningfully contributes to evidence-driven healthcare delivery.

## Acknowledgments

This study was funded by the Commission on Nurse Certification, Washington DC and the University of California, Irvine Center for Organizational Research. This work was completed with support from the Central Texas Veterans Health Care System. The views are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs. The authors have no other disclosures.

The authors would also like to acknowledge the CNL Expert Advisory Panel who provided stakeholder-engaged contributions to every phase of the study. Panel members included (in alphabetical order) Alice Avolio, DNP, RN, Portland VA, Portland, OR; Patricia Baker, MS, RN, CNL, Methodist HealthCare System, San Antonio, TX; James Harris, PhD, RN, MBA, CNL, FAAN, University of South Alabama, Mobile, AL; Nancy Hilton, MN, RN, NEA-BC, St. Lucie Medical Center, Port St. Lucie, FL; Linda Roussel, PhD, RN, NEA-BC, CNL, University of Alabama, Birmingham, AL; Bobbie Shirley, MS, RN, CNL, Maine Medical Center, Portland, ME; Joan Stanley, PhD, FAAN, American Association of Colleges of Nursing, Washington, DC; and Tricia Thomas, PhD, RN, Trinity Health, Livonia, MI.

## Clinical Resources

- American Association of Colleges of Nursing clinical nurse leader initiative web pages: <http://www.aacn.nche.edu/cnl>

- Clinical Microsystems webpages: <https://clinicalmicrosystem.org/>
- Clinical Nurse Leader Practice Research Collaborative website: <http://faculty.sites.uci.edu/ncrc/>
- IOM Future of Nursing Report: <https://iom.nationalacademies.org/Reports/2010/The-Future-of-Nursing-Leading-Change-Advancing-Health.aspx>

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## Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

**Table S1.** CNL Demographic, Organization and Implementation Survey Items.

**Table S2.** Demographics of Survey Participants Involved in a CNL Initiative.

**Table S3.** CNL Initiative Organization Components.

**Table S4.** CNL Initiative Implementation Components.

**Figure S1.** Study sample flowchart.