UNIVERSITY of NEW HAMPSHIRE

Tamworth Community Nurse Association Fiscal Impact Study

FINAL REPORT

August 29, 2012

TAMWORTH

COMMUNITY NURSE ASSOCIATION

Caring for Tamworth since 1921

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Tamworth Community Nurse Association Overview

Tamworth Community Nurse Association (TCNA) was founded in Tamworth, New Hampshire in 1921 to sustain the health and vitality of the community and its residents. It was designed to ensure no one in the town of Tamworth would go without healthcare due to financial difficulties or the lack of access to the medical system. TCNA offers support for the physical, social and mental health of every citizen by providing free skilled nursing care and coordination of available services to all ages.

TCNA also participates in town health and welfare activities, has a durable medical equipment loan program, and offers educational workshops and programming. The organization receives fiscal support from its endowment, the town budget, private donors, and foundations. TCNA is seen by the community as a unique and strategic asset, and is a 501(c)(3) non-profit organization.

NHIHPP Overview

The NHIHPP is an applied research institute located within the College of Health and Human Services (CHHS) at UNH. In FY 2012, the Institute managed $4.7 million in state, federal, and private foundation grants and contracts. The NHIHPP has a full time staff of 25 project directors, researchers, data analysts, and support staff, the majority of whom are trained at the graduate level. The NHIHPP staff has broad core competencies and professional training that include data analysis, statistics, epidemiology, public health, mental health, aging and disability, social science, and program evaluation.

NHIHPP was created in 2001 as a partnership with the NH Department of Health and Human Services (NH DHHS) to provide additional expertise and resources to the NH DHHS. Since that time, NHIHPP has maintained that relationship with the NH DHHS, but has also greatly expanded its own portfolio to include a number of projects related to health analytics, health policy, and health system reform, with federal, state, foundation, and fee-for-service income streams.

Acknowledgements

This report was produced with funding assistance provided by The Tamworth Foundation (www.tamworthfoundation.org), and support from TCNA. The author of this report wishes to thank the staff and board of the TCNA for their enthusiasm and support during the project, with special thanks to Jo Anne Rainville, Dave Deveau, and the entire TCNA staff. Finally, UNH NHIPP staff members Ashley

Peters and Marc Flore, along with student Timothy Mallard, were instrumental in the data entry, quality assurance, and data linkage aspects of this project.

Executive Summary

This report is the follow up to an interim report release in June 2012, which was based upon seven months of data. This final report is based upon twelve months of data (August 2011-July 2012). The report examines services directly provided by TCNA, as well as services avoided due to TCNA intervention, and assigns a monetary amount to both types of services. The underlying data collection regarding performed services was conducted by TCNA staff, whereas UNH NHIHPP staff conducted the data entry, data linkage to the NH Comprehensive Health Information System (NHCHIS) and Medicare fee schedules, and completed the data analysis.

TCNA provides a wide array of services from direct medical services to public health, advocacy, durable medical equipment loans, and education. *This report focused solely on the direct medical services offered both in the TCNA office and within the community/home setting.*

In summary, the services provided by TCNA during the twelve-month period had a direct financial value of $204,975, and the services avoided due to TCNA's intervention had a value of $350,450. These figures are not "additive", due to the fact that they are the result of two different study methodologies. As discussed in more detail within the report, these figures are based upon provider allowed amounts versus provider charges, and are considered to be conservative.

This study has many numbers in it. The figures clearly demonstrate the pure fiscal value that TCNA brings to the community. However, what numbers cannot denote is the value to the residents of Tamworth when a nurse comes to someone's home to treat them, or when a patient can drop into the offices versus driving dozens of miles for care, or when someone needs a loan of medical equipment, or when someone just needs someone who cares to talk to. This is what makes TCNA unique, and an integral part of the fabric of Tamworth.

Project Methodology Summary

The detailed methodology may be found in Appendix A. The high-level project steps are depicted in the following graphic.

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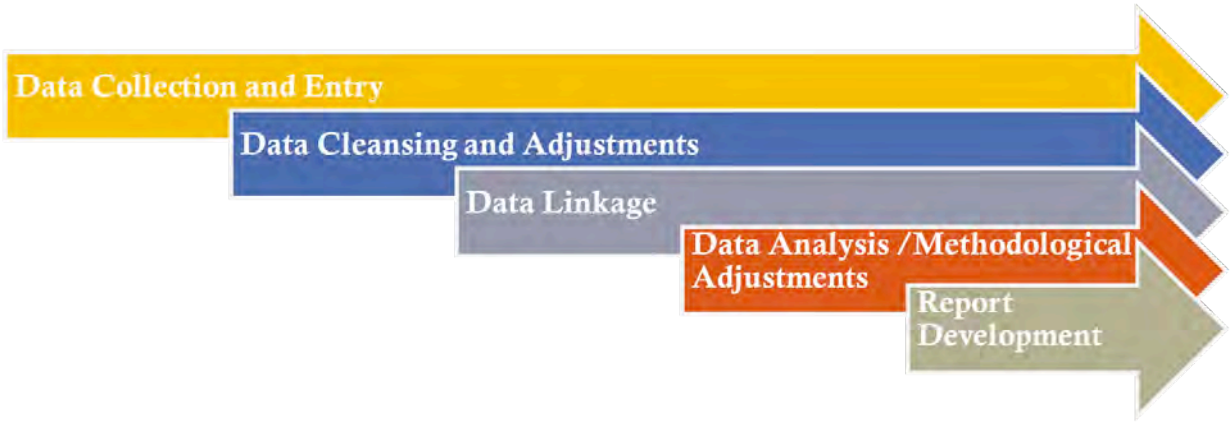

Findings: Introduction

It is important to understand that these findings are based upon a single year of data, and that no statistical projections based upon historical trends were calculated. With additional data collected in future years, this would likely be possible. This report should be viewed as a snapshot of a particular population during a particular time period (August 2011 to July 2012).

Findings: Monthly Visit Distribution

Figure 1 shows the total patient visits by month between August 2011 and July 2012. The variation in visits ranges from a low of 90 in December to a high of 245 in August, with a mean of 159. The visits include both office visits at the TCNA facility, as well as non-office (primarily home) visits. The numbers do not reflect telephonic visits.

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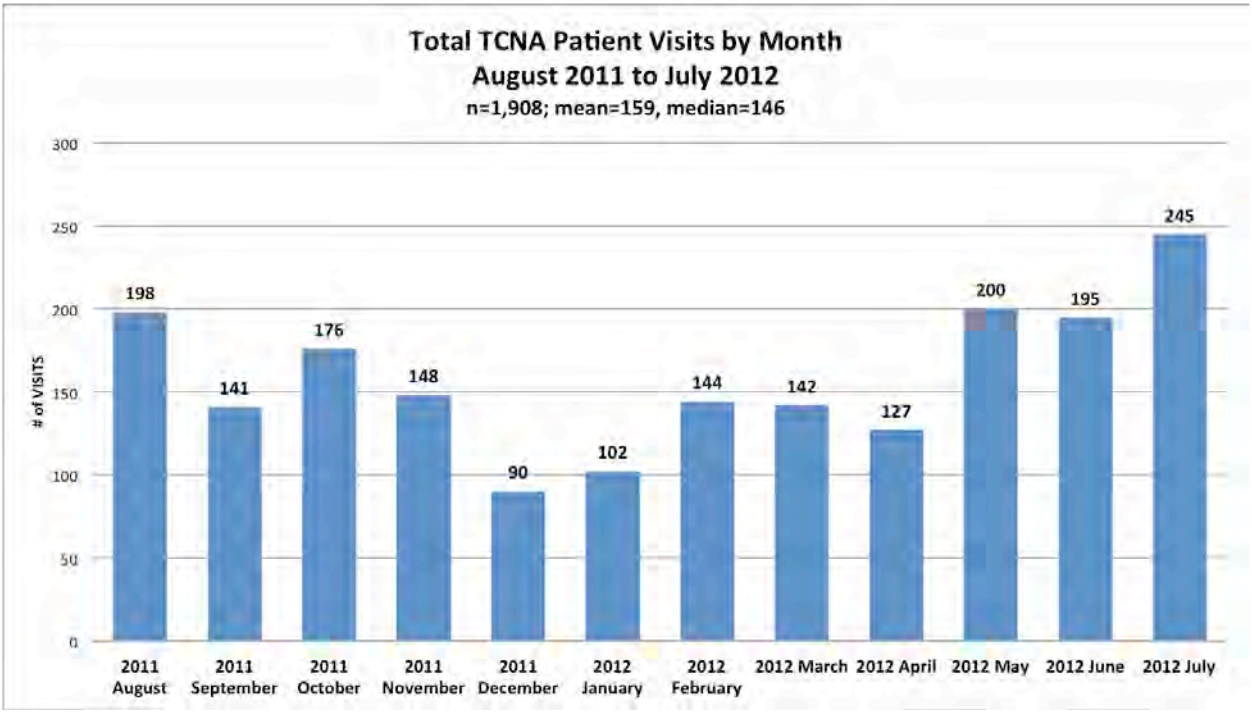
Figure 1: Total Patient Visits by Month



Findings: Patient and Visit Types

Figure 2 indicates the total number of patient visits (1,908) occurring during the study period, broken out between new and established patients. If the patient had been seen prior by TCNA, the visit was considered to be for an established patient. If the patient had either a date prior to an established visit or no other date, then the visit was considered to be for a new patient. 94% of the patients during the study period were considered established. With only 6% of the patient visits being classified as new, it would support the data in the study demonstrating the large Medicare population served by TCNA, and would suggest that TCNA primarily serves an established base of patients.

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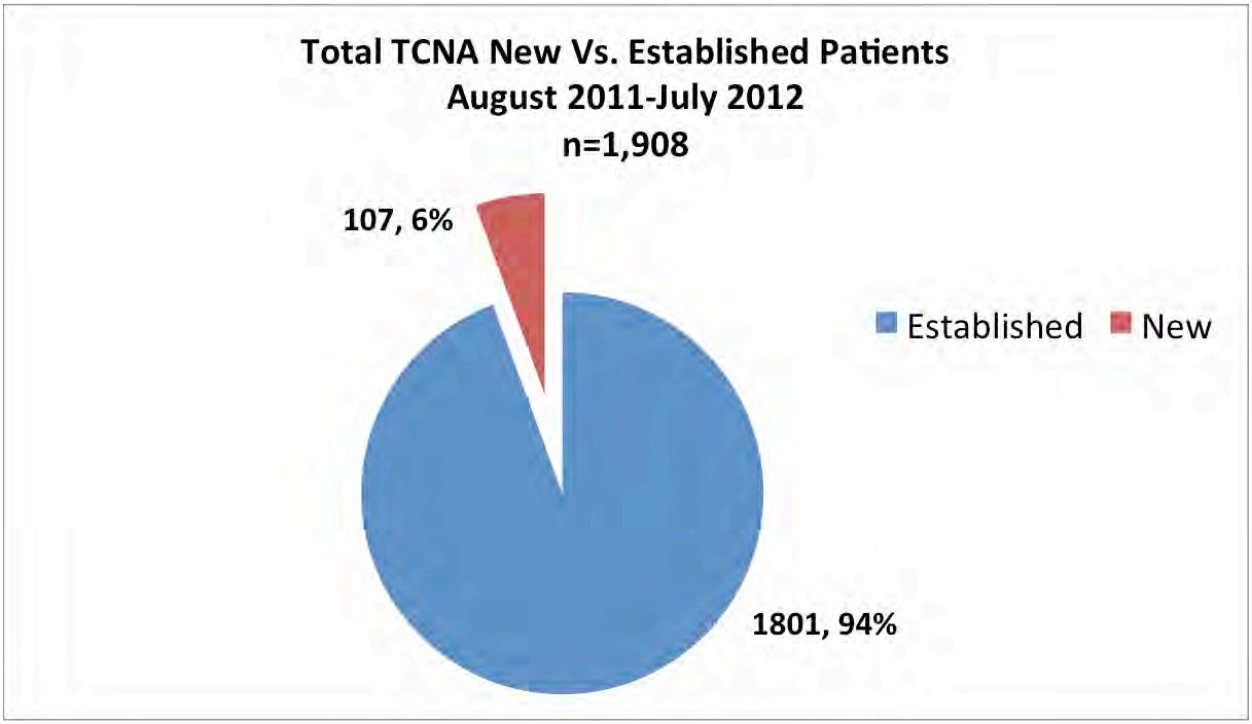
Figure 2: Established vs. New Patient Visits



TCNA sees patients both in their main office location as well as in the community. Figure 3 shows the total number of home and office visits. Of the total 1,908 visits, 1,116 (58%) were office visits and 792 (42%) were home visits.

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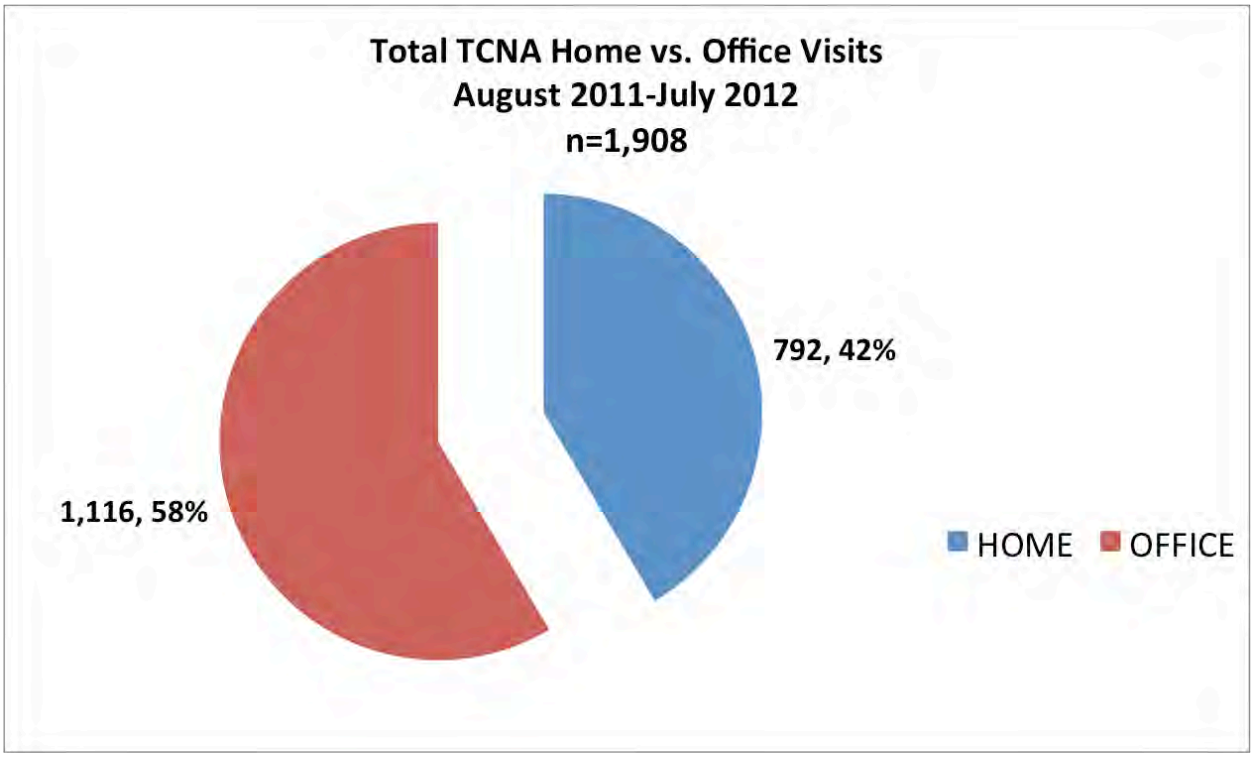
Figure 3: Office vs. Home Visits



Findings: Insurance Types, Demographics, and Diagnostic Categories

For privacy reasons, no patient demographic information (such as gender or date of birth) was collected in this study that could identify a patient directly, thus detailed demographic information about the population served is not available. However, based upon procedure codes recorded that reference age bands (not specific ages), and a TCNA indicator referencing the type of insurance held by the patient, some descriptive information about the population served is available. Additionally, TCNA created a blinded, unique patient identifier which allows for reporting on the number of visits per patient, and will allow for the possibility of future analysis that is more detailed regarding the number of repeat visits and for what services.

In summary, TCNA saw a total of 441 patients via 1,908 patient visits from August 2011-July 2012. That is the equivalent of 4.3 visits per patient. In Figure 4, 78% of the patient visits were for

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Medicare recipients, 12% were for those with commercial insurance, 3% had Medicaid[1] coverage, and 7% had no insurance or were self-pay. Additionally, 929 (63) % of the Medicare patient visits had a secondary insurance payer. Of these secondary payers, Anthem, United, and AARP were the three largest.

The total population in 2010[2] in Tamworth was 2,856 comprised of 49% males and 51% females. This number does not reflect the seasonal increase in population seen in the summer, nor any "snow birds" that might leave Tamworth in the winter months. The census population in Tamworth of those residents over age 65 comprised 521 people or 18% of the total population in 2010. During the study period, there were a total of 441 unique patients seen, and while only 216 (49%) unique patients were Medicare, 78% of the total visits were for those over age 65.

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[1] (The Medicaid category also includes for purposes of this analysis the VA and TRICARE insurance types).

[2] 2010 U.S. Census Bureau Figures

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Figure 4: Unique Patient Visits by Insurance Type

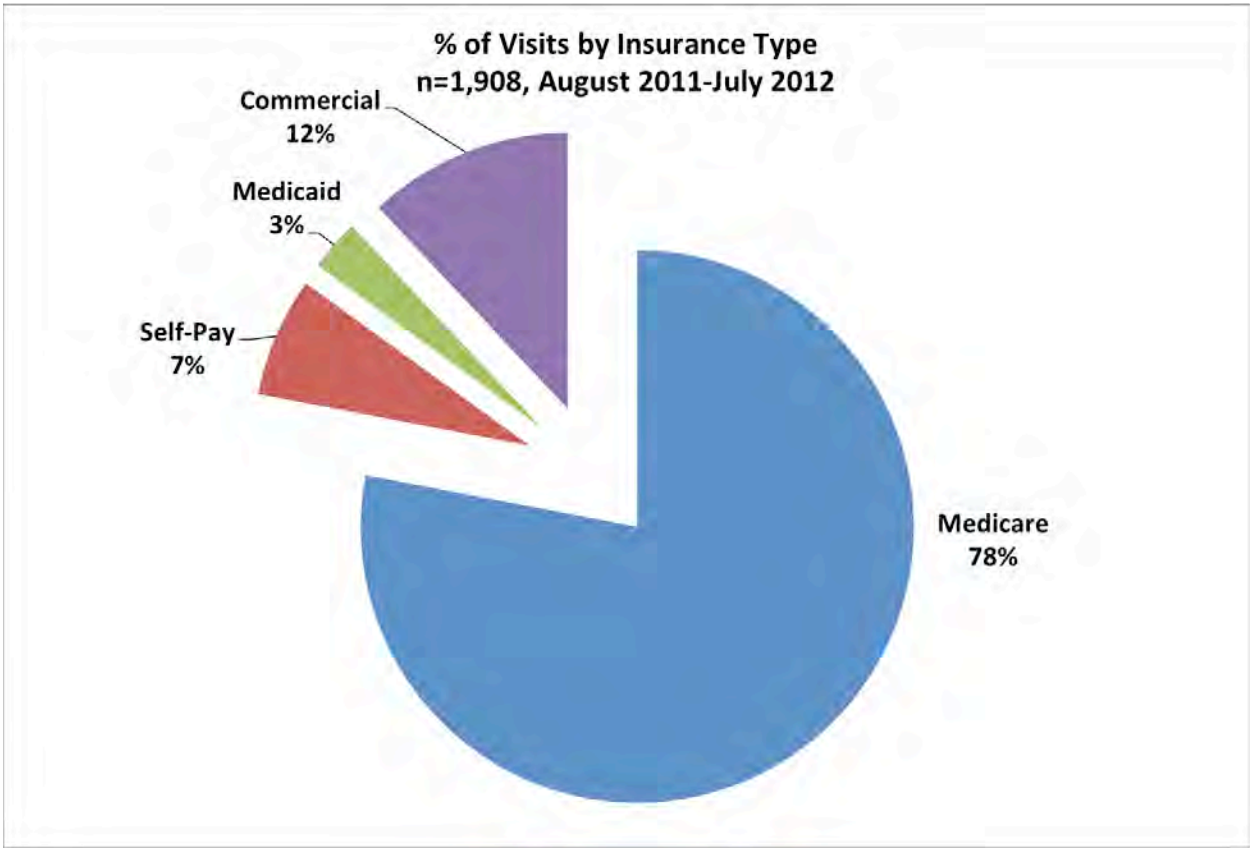

Figure 5 shows the age bands of the population served by TCNA. 75% were 65 or older, 18% were 40-64, 4% were 18-39, and 3% were under age 18.

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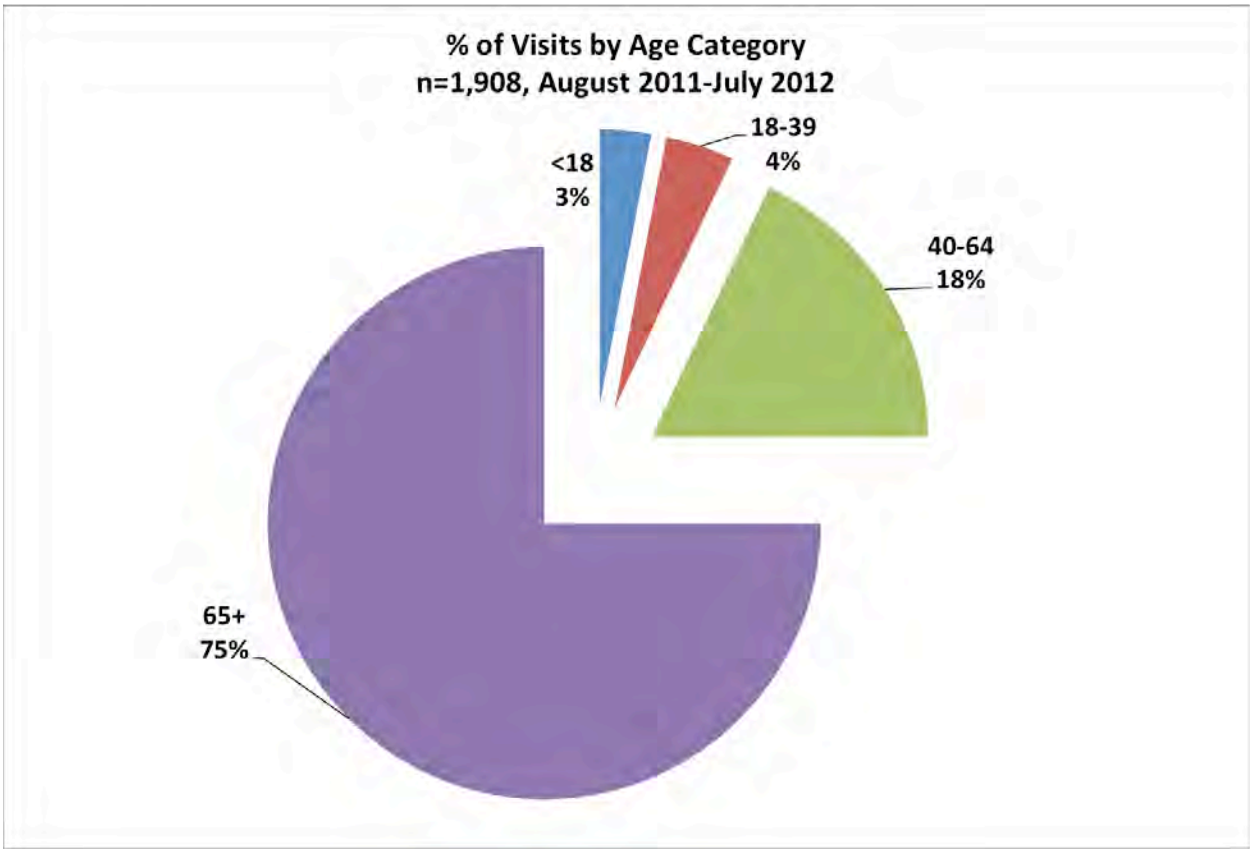
Figure 5: Unique Patient Visits by Age Band



TCNA sees many patients for a multitude of procedures and diagnoses. This report provides summary information on the medical conditions of the patients seen by using the associated procedure and diagnosis codes to describe the patient population.

7,527 diagnosis codes (ICD-9 codes) were recorded on the total 1,908 patient visits. This is an average of 3.9 diagnosis codes per patient visit. Of the 7,527 total codes reported, there were 397 unique diagnosis codes that had a matching description. The table below provides the percentage of total diagnosis codes by major diagnostic category.

Consistent with a primarily over 65 population, the major diagnostic categories include diseases of the circulatory system, general health conditions (signs and symptoms category), behavioral,

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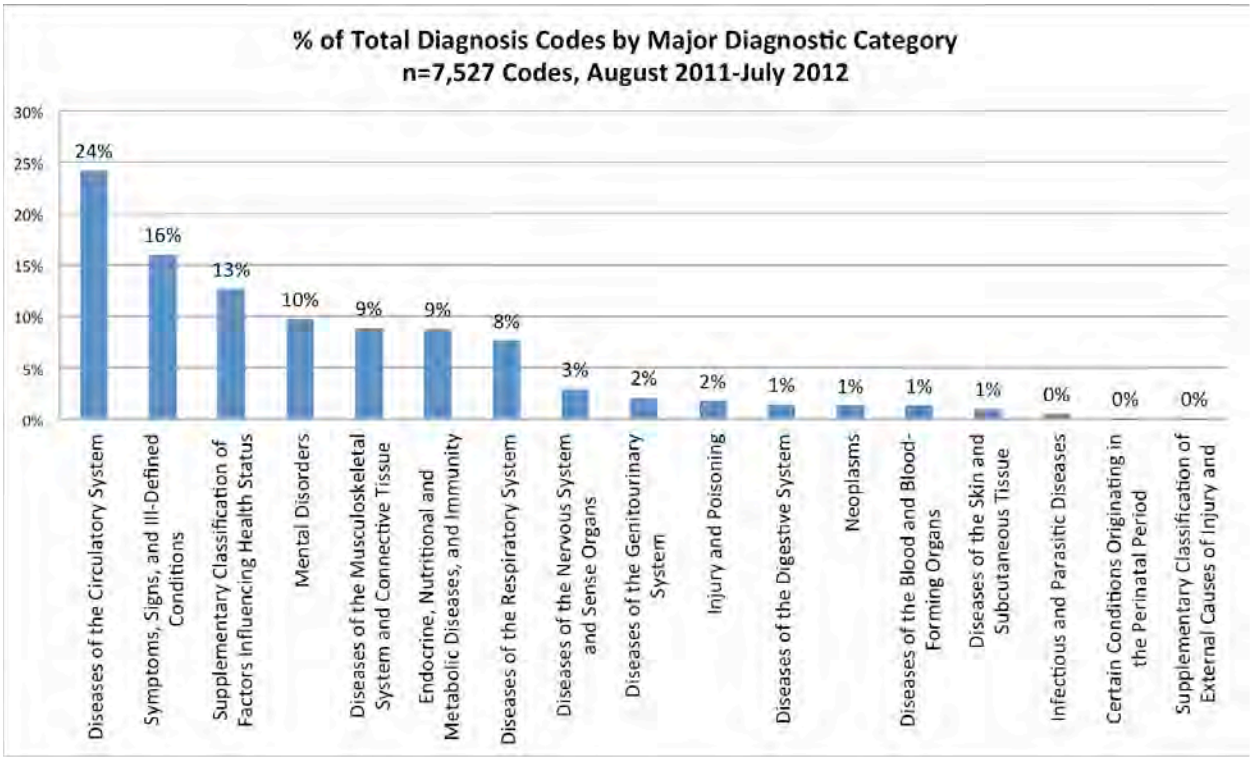
musculoskeletal, and endocrine and metabolic disorders. The majority of these indicate a population with chronic conditions.

Figure 6: Percentage of Total Diagnosis Codes by Major Diagnostic Category



In order to better classify diagnosis codes in the future, the TCNA data collection system should be designed to record the primary, secondary, and tertiary diagnosis codes. There is currently no way to discern the primary diagnosis.

Findings: Office Visit Code Summary

Evaluation and management (office visit) codes were collected on all of the data collection forms. Visits that occurred in the main office location as well as in the home were included. For purposes of this study, the assumption was made that all evaluation and management (E&M) codes

would be paid by the given payer. Figure 7 summarizes the frequency of the E&M visit codes by payer type.

Figure 7: Office Visit Code Summary by Payer Type

Office Visit Code Frequency by Payer Type, August 2011-July 2012						
Office Visit Code	**Code Description**	**Commercial**	**Medicaid**	**Medicare**	**Self-Pay**	**TOTAL**
99201	Office Outpatient New 10 Min	3	1	3	2	**9**
99202	Office Outpatient New 20 Min	5	3	4	2	**14**
99203	Office Outpatient New 30 Min	18	8	8	6	**40**
99204	Office Outpatient New 45 Min	13	2	8	10	**33**
99205	Office Outpatient New 60 Min	2		8	1	**11**
99211	Office Outpatient Established 5 Min	9	5	49	8	**71**
99212	Office Outpatient Established 10 Min	63	12	308	29	**412**
99213	Office Outpatient Established 15 Min	82	29	688	60	**859**
99214	Office Outpatient Established 25 Min	25	5	361	16	**407**
99215	Office Outpatient Established 40 Min	2	2	42	6	**52**
TOTAL		**222**	**67**	**1,479**	**140**	**1,908**

In addition to E&M office visit procedure codes, 1,959 non-E&M procedure codes were collected on the data collection forms as visits were performed. If submitted to an insurance carrier, it is unclear whether or not all codes would necessarily be reimbursed depending on their payment rules, provider contracts, meeting deductibles, etc. For purposes of this study, the assumption was made that all codes *would* be paid, in addition to the E&M codes indicated in the prior table. These additional procedure codes included such items as injections, dressing changes, lab work, suture removal, abscess drainages, and vaccines.

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Findings: Insurance Payment Background

Figure 8 provides an example of the way payments are made within the health care system. A bill from a physician would have a charge associated with a particular office visit code or procedure. In this case, a 15 minute office visit code for an established patient has a charge of $125.37 (statewide mean using the commercial insurance database). The statewide mean for a commercial insurance allowed amount would be $84.48 – a difference of $40.49 or 48% less than the charge amount. The New Hampshire 2012 Medicare Part B allowed amount would be $71.67 – a difference of $53.70 or 75% less than the charge amount. Finally, the New Hampshire Medicaid allowed amount would be $45.05 – a difference of $80.32 or 178% less than the charge amount. This is important because the total value of the services provided and avoided by TCNA will vary depending on the types of patients TCNA is seeing.

There is a significant difference between the charges and the allowed amounts. Charges in healthcare have become nearly irrelevant due to the fact that hardly any payer (Medicare, Medicaid, Commercial, etc.), actually pays the charge, or list price. Each payer negotiates a discount with each medical provider, with Medicaid typically receiving the steepest discount, followed by Medicare, and then Commercial payers. The uninsured and self-pay populations typically either pay the charge amount, negotiate their own discount, or the charges become non-collectable bad debt.

Figure 8: Payment Example

Payment Example 99213 Office Visit Code – 15 Minutes				
CHARGES	**COMMERCIAL ALLLOWED**	**MEDICARE ALLOWED**	**MEDICAID ALLOWED**	**UNINSURED "ALLOWED"**
$125.37*	**$84.48***	**$71.67**	**$45.05****	**Charges**
	$40.49 or 48% less than charge	**$53.70 or 75% less than charge**	**$80.32 or 178% less than charge**	
* Statewide Mean ** Statewide Mean less Federally Qualified Health Center claims				

Findings: Direct Services Value

Figure 9 is a summary of the services provided by TCNA during the study period, and the associated fiscal value, for both office and non-office visit codes. A total of 3,867 office visit and non-

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office visit procedure codes were performed by TCNA. Using the Medicare, Medicaid, and Commercial payer reimbursement rates[3], the total value of these services during the study period was $190,572.96.

The office visit total amount is equal to $145,949.89 or 77% of the total $190,572.96. This is because every service had an office visit, and also because these codes are typically reimbursed at a higher rate than some of the ancillary services such as suture removal, injections, dressing changes, etc.

In addition to the office and non-office visits services indicated in Figure 9, at attempt was made to quantify the value of secondary payers to Medicare policies. The interim report did not attempt to assign a fiscal value to the patients with Medicare that have a supplemental insurance carrier. The secondary insurer for Medicare is often a New Hampshire based carrier, with the largest being Anthem. In this report, $14,402.43 is the estimated Medigap Part B Excess Charge payments that would have been paid. This number cannot account for deductibles, bundled services, or the large variety of "Medigap" policies sold covering various services.

Figure 9: Service Count Summary and Reimbursement by Payer

Summary of All Service Counts and Associated Reimbursement by Payer August 2011-July 2012					
	Medicare	**Medicaid**	**Commercial**	**Self-Pay**	**Total**
Total Office Visits	1,479	67	222	149	**1,908**
Total Non-Office Visit Services	1,571	52	221	115	**1,959**
Total	3,050	119	443	255	**3,867**
Total Office Visit Reimbursement	$112,064.56	$2,967.39	$18,624.02	$12,293.92	**$145,949.89**
Total Non-Office Visit Reimbursement	$28,553.81	$990.68	$6,182.54	$8,896.04	**$44,623.07**
Medigap Part B Estimate	$14,402.43				**$14,402.43**
Total	**$155,020.80**	**$3,958.07**	**$24,806.56**	**$21,189.96**	**$204,975.39**

Findings: Avoided Services Value

In addition to the services rendered directly by TCNA and quantified fiscally in Figure 9, TCNA staff indicated for each visit whether or not certain services were avoided due to TCNA providing

[3] See Appendix A for payment calculation methodology.

another service. As shown in Figure 10, a total of 1,518 patient visits (79.6%) were identified as visits that would have required a primary care physician (PCP) visit if TCNA staff had not seen the patient. Not all direct care visits in Figure 9 (1,908) indicate that there was an avoided PCP visit for several reasons. First, the patient might have had a minor issue that did not require a PCP visit. Second, the patient might have been seen by TCNA as a follow up visit to another appointment, and no further visits were warranted. Finally, many patients go to TCNA due to chronic conditions and TCNA is managing their blood pressure, weight, glucose, or other biometric measurements without the need of a physician.

Likewise, 151 (7.9%) patient visits would have required a trip to an emergency room (ER) for treatment had TCNA staff not seen the patient. Both PCP and ER visits require the patient to travel, and would have cost more money than if TCNA had treated the patients within the Tamworth community. Additionally, 13 (0.7%) of the patient visits had an avoided ambulance transport reported. The total amount of these avoided services (PCP, ER, and ambulance) totaled $295,363.

Figure 10: PCP, ER, and Ambulance Service Avoidance Counts and Costs

Service Avoidance Counts and Costs for PCP Visits, ER Visits, and Ambulance Transports August 2011-July 2012, n=1,908 Total Visits				
Measure	**Avoided PCP Visits**	**Avoided ER Visits**	**Avoided Ambulance Transports**	**Total Avoided Costs**
Count	1,518	151	13	
Percent Total	79.6%	7.9%	0.7%	
Allowed/Visit	$115.31	$703.12	$1,088.51	
Total Avoided Allowed Amounts	**$175,041**	**$106,171**	**$14,151**	**$295,363**

To understand the calculation of the cost per visit for each of the three categories in Figure 10, see Appendix A for the methodology.

What is difficult to quantify in this current study is what would have happened to a patient if TCNA had not been there at all. Would the patient have waited longer to seek treatment? Would this treatment have been more expensive due to the delay in being seen? There are many examples of how TCNA treats patients early or proactively. Examples range from treating infections early, thus preventing an emergency room visit to drain an abscess, followed by antibiotics. Cost of such treatment in the hospital could equate to several thousand dollars. Another example is the monitoring of medication adherence thus preventing hospitalization for congestive heart failure or hypoglycemia. Finally, by attending to a patient on a snowy day and simply shoveling their steps, TCNA has likely avoided falls that

could require an ambulance ride and hospitalization. All of these examples are items that show the value of TCNA.

One of the primary takeaways from the avoided services analysis should be an understanding that TCNA's services are directly avoiding more complicated and expensive services delivered in other health care settings. Given the geographic isolation of Tamworth, the overwhelming proportion of people over the age of 65 that TCNA sees, and the numbers of people with chronic health care needs, TCNA's services provide high value. The NH Hospital Association's PricePoint website[4] was used to create the following table of a sample of hospital services that TCNA has successfully helped to avoid.

Examples of Hospital Services That TCNA Helped Avoid
Average Charge, Average Length of Stay, Median Age (2009)
(Source: NH Hospital Association PricePoint Website)

Hospital Service	2009 Average Charge	Average Length of Stay	Median Age
Simple Pneumonia	$14,538	4 Days	70 Years
Diabetes with Complications and Comorbidities	$12,774	3.3 Days	54 Years
Hypertension Without Major Complications	$11,881	2.5 Days	62 Years
Fracture of the Hip Without Major Complications	$9,953	3.1 Days	81 Years

An additional component of the service avoidance analysis is the cost related to "avoided miles". Avoided miles are estimates of travel not required due to the fact that TCNA was able to treat a patient in their home or in the TCNA offices versus sending the patient elsewhere for services. An Internal Revenue Service mileage rate of $.555 was use for this analysis. TCNA staff recorded a total of 46,552 avoided miles. Figure 11 shows the findings in more detail, by carrier classification.

[4] http://www.nhpricepoint.org

Figure 11: Avoided Miles and Costs by Carrier

TCNA Travel Miles Avoided by Carrier and Associated Costs August 2011-July 2012						
Carrier	**Total Miles**	**Min**	**Max**	**Average**	**Standard Deviation**	**Total Avoided Travel Costs @ $.555/Mile**
Medicare	77,772	8	240	57	44	$ 43,163
Commercial	11,274	5	240	54	35	$ 6,257
Self-Pay	5,755	10	200	48	28	$ 3,194
Medicaid	4,454	10	500	78	80	$ 2,472
Total	**99,255**					**$ 55,087**

The $55,087 described in the table above could be considered "hard costs" associated with the miles averted. There are also additional costs associated with travel beyond mileage including ambulance transport, family member time, etc.

Other avoided costs included reducing the amount of carbon dioxide (CO_2) released into the atmosphere. A basic calculation of CO_2 savings was performed due to Tamworth's focus on environmental sustainability. There are 19.643 pounds of CO_2 per gallon of gasoline according to the US Department of Energy. Assuming that the average personal vehicle (cars, trucks, SUVs) in Tamworth achieves 24 miles per gallon (MPG), with 99,255 miles avoided, TCNA saved 40.6 tons of CO_2 released into the atmosphere during the yearlong study period.

Findings: Study Financial Summary

In summary, Figure 12 outlines the breakdown of the components of both the direct services and avoided services figures.

Figure 12: Financial Summary of Direct and Avoided Services

Financial Summary of Direct and Avoided Services, August 2011-July 2012				
Direct Services	**Amount**		**Avoided Services**	**Amount**
Total Office Visit Reimbursement	$145,950		**Avoided PCP Visits**	$175,041
Total Non-Office Visit Reimbursement	$ 44,623		**Avoided ER Visits**	$106,171
Medigap Part B Estimate	$14,402		**Avoided Ambulance Transports**	$ 14,151
			Avoided Travel Miles	$ 55,087
Total	**$204,975**			**$350,450**

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Findings: Benefits of TCNA to Health Care "System"

In summary, there are multiple benefits that TCNA provides to the overall health care "system":

- TCNA eliminates administrative fees related to billing insurance companies
- TCNA eliminates payer expenses
- TCNA services help avoid physician visits, ER visits, and ambulance trips
- TCNA saves residents the travel costs to out-of-town providers
- TCNA saves residents the payment of co-payments to out-of-town providers.

Recommendations

1. One of the original hypotheses for conducting this project was that there would likely be a significant number of patients who had commercial insurance. If this had proven true, then the expectation was that those commercial carriers could be directly approached regarding TCNA's fund development strategy. This did not prove to be the case, with the majority of the patient visits having Medicare as the insurance of record. However, the secondary insurer for Medicare is often a New Hampshire based carrier, with the largest being Anthem. It is recommended that the major New Hampshire carriers (Anthem, Harvard Pilgrim, Cigna, and MVP Health) be approached, via their foundations, to support TCNA.

2. Because it does not bill insurers, TCNA does not have automated patient medical record software, or billing software. For this project, a paper-based form (Appendix C) was used for data collection, and then converted into a standalone data entry database. Two of the primary limitations of this approach included a lack of automated data quality edits during data entry, as well as an understanding of each carrier's billing practices based upon diagnoses and procedure codes billed. In order to better classify diagnosis codes in the future, the TCNA data collection system should be designed to record the primary, secondary, and tertiary diagnosis codes at a minimum. It is recommended that TCNA explore options for ongoing data collection once the study period ends. The existing database will be modified for TCNA's use in the fall of 2012.

3. This phase of the project identified additional fields that need to be recorded (i.e., telephonic visits, durable medical equipment loans, etc.) which would enable further analysis of TCNA services and benefits in future studies. This could be done by modifying both the current data collection forms, as well as developing additional data collection. It is recommended that TCNA update this fiscal analysis in future years to establish trend-base information.

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4. Multiple communities surrounding Tamworth have expressed an interest in replicating the TCNA model. There is an opportunity for TCNA to use its experience to help other communities launch similar programs. To do this, TCNA could consider working with the UNH Cooperative Extension, or developing a replication model based upon other successful programs such as the Frontier Nursing Service or the New Hampshire Public Health Network. There may also be programs, outside of healthcare, such as the Plymouth (NH) Renewable Energy Initiative that could provide opportunities to learn how communities can transfer knowledge to other communities.

5. Finally, the Patient Protection and Affordable Care Act (PPACA) has many programs for reducing costs and improving both public health and patient quality. One of which is the concept of an accountable care organization (ACO). ACOs are employed by Medicare within or across communities to lower the cost of healthcare and improve quality through considerable re-design of the healthcare delivery system under a patient-focused, population health-based model. The TCNA model of care delivery could potentially serve as a key component of an ACO delivery system. To date, the federal Centers for Medicare and Medicaid Services (CMS) has approved one "Advanced Payment ACO Model"[5] in New Hampshire: the North Country ACO comprised of Ammonoosuc Community Health Services, Coos County Family Health Services, Indian Stream Health Center and Mid-State Health Center. Discussions with this group of providers regarding the TCNA model of care are recommended.

[5] http://innovations.cms.gov/initiatives/aco/advance-payment/index.html

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Appendix A: Methodology

The project had five primary components to its methodology as summarized below:

1. Data Collection. Between August 2011 and July 2012, the TCNA nursing staff completed a form (Appendix B) for each patient visit, indicating place of service, procedure codes, diagnosis codes, and additional information regarding avoided services. Patients were de-identified on the forms sent to UNH, in order to protect the patient identities. A waiver from the UNH Institutional Review Board was received January 3, 2012, due to the fact that this research is generalizable and not considered human subjects research.

2. Data Entry. The forms were transferred to UNH for data entry into a database. There were a total of 1,908 visit forms analyzed. They represented a total of 441 unique patients.

3. Data Cleansing. Once the forms were entered, quality assurance checks were performed. These procedures ensured that the data were complete, and the TCNA nursing and administrative staff played a key role in assisting UNH in this process. Additionally, the database was augmented with additional fields that allowed for summary analyses to be performed.

4. Fiscal Linkage. Each of the procedure codes recorded was linked to an allowed amount (price) from the carrier (i.e., Medicare, Anthem, Medicaid, etc.). Given the small number of services attributed to some of the carriers, proxies for those carriers were used as described below. Overall, the most conservative fiscal approach was taken in each of these calculations.
    a. Medicare. The allowed amount was calculated using the Centers for Medicare and Medicaid Services (CMS) website's March 2012 fee schedule information. The non-facility allowed amount under the physician fee scheduled with a geographic locality equal to New Hampshire was used. http://www.cms.hhs.gov/apps/physician-fee-schedule/license-agreement.aspx
    b. Medicaid. The allowed amount was acquired from the NH Comprehensive Health Information System 2010 data set. http://www.nhchis.org/ The Federally Qualified Health Centers (FQHCs) were excluded from this analysis as they have higher reimbursement rates than fee for service providers.
    c. Commercial. For *all* commercial insurance carriers, the allowed amount was acquired from the NH Comprehensive Health Information System 2011 data set. http://www.nhchis.org/ A *blended* allowed amount was calculated using the four carriers with the largest number of patient visits statewide: Anthem, Cigna, Harvard Pilgrim, and MVP Healthcare.
    d. Other. For Veterans Administration, Workers Comp, and TRICARE military benefits programs, the New Hampshire Medicaid rates were used.
    e. Self-pay/uninsured. For self-pay/uninsured, the same blended allow amount using Anthem, Cigna, Harvard Pilgrim, and MVP Healthcare was calculated. Typically, self-pay/uninsured

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patients often pay charges, but there are also discount programs offered on a sliding scale by many providers.

5. Data Analysis. The data analysis was conducted after the linkage was created. Descriptive statistics regarding the demographics were performed first. The current service analysis was then completed. Finally, the avoided services analysis was completed.
    a. Commercial and Self-Pay Notes. 2,966,086 claim lines were examined for the procedure codes using four payers: Anthem, Cigna, Harvard Pilgrim, and MVP. Statewide-allowed mean rates used. The Commercial allowed means were calculated by first removing any claims lines with negative amounts (indicating a claim reversal), as well as any claim lines with a $0.00 allowed amount (indicating capitation).
    b. Medicaid Notes. 573,293 claim lines were examined for the procedure codes for Medicaid. Statewide-allowed mean rates used. The Medicaid allowed means were calculated by first removing any claims lines with negative amounts (indicating a claim reversal), as well as any claim lines with a $0.00 allowed amount (indicating capitation).
    c. Medicare Notes.
        i. Medicare does not reimburse for all services rendered. Examples include: glucose monitoring, routine venipunctures, urinalysis, flu vaccines, and colorectal screenings. For services where Medicare did not provide reimbursement, the Commercial mean allowed was used.
        ii. 1,479 visits indicated Medicare as the primary insurance. Of these, 929 (63%) had a secondary insurance payer.
    d. Avoided PCP Visit Notes. As the majority of the office visits were for Medicare patients, therefore the average Medicare office visit rate of $115.31 (versus Commercial or Medicaid) was used for this analysis. The rate is comprised of office visit codes 99201-99205 and 99211-999215. A weighted average based upon TCNA actual services during the study period was used to calculate the $115.31.
    e. Avoided ER Visit Notes. All emergency room visits provided in Carroll and Belknap counties were examined for Tamworth residents. The cost information was broken into quartiles and deciles to examine the range of services. For the 151 avoided ER visits, the conditions listed by TCNA were primarily for less complex, and thus lower cost, ER visits. Wounds, burns, pulmonary, and fractures made up the majority of these visits. The $703.12 is the statewide, commercially insured mean of the allowed amount.
    f. Avoided Ambulance Transport Notes. All ambulance transports provided in Carroll and Belknap counties were examined for Tamworth residents. The cost information was broken into quartiles and deciles to examine the range of services.

6. Report Development. UNH created a draft report of findings that was initially shared with the TCNA Board of Directors on May 16, 2012. This interim report was published for the TCNA Board of Directors and their project funder on June 4, 2012, along with an accompanying PowerPoint

presentation. The final report was published on August 22, 2012, in concert with a PowerPoint presentation and report summary in concert with the TCNA Annual meeting.

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Appendix B: Patrick Miller Biographical Sketch

Patrick Miller, MPH serves as a Research Associate Professor at the New Hampshire Institute for Health Policy and Practice and as Senior Staff for the NH Citizens Health Initiative. He joined UNH in September 2006. He has worked on information technology projects for the NH Citizens Health Initiative, including the statewide NH ePrescribing project and the development of a statewide strategic plan for health information technology and exchange to support Governor Lynch's Executive Order. He has led the Initiative's transparency reporting efforts focused on cost, quality, and patient safety. He founded the national All-Payer Claims Database Council (APCD Council) as well as an employer coalition, the NH Purchasers Group on Health (NHPGH). Additionally he supports health policy initiatives for the NH Department of Health and Human Services, and teaches in the UNH Master of Public Health program. He served as a member of the National Governor's Association's State Alliance for e-Health Privacy and Security Task Force in 2008, and served in 2008 and 2009 as New Hampshire's Project Director for the Federally funded Healthcare Information Security and Privacy Collaborative (HISPC). He has delivered conference presentations on e-Health issues to the National Governors Association, Centers for Medicaid and Medicare Services, National Association for Health Data Organizations, EuroREACH, provider groups, states, and other organizations.

Patrick has spent the past twenty-one years working primarily in the fields of health care operations, technology, public health, and policy. Prior to UNH, he was most recently the Executive Director of The Jordan Institute where he was responsible for program development and operational oversight. Patrick started his own healthcare consulting company in 1999, and previously held positions as Chief Information Officer and co-founder for the technology company Choicelinx Corporation, as well as senior management positions with Healthsource/CIGNA.

Patrick has a Master of Public Health with a focus on ecology and a B.S. in Health Management and Policy, both from the University of New Hampshire. He currently serves on the boards of the NH Fiscal Policy Institute and the National Association for Health Data Organizations. He volunteers as a speaker for The Climate Reality Project. He is a past board member of the NH Public Health Association, the United Way of Merrimack County, the Chocorua Lake Conservation Foundation, the Chocorua Lake Association, and a steering committee member of the NH Carbon Challenge program.

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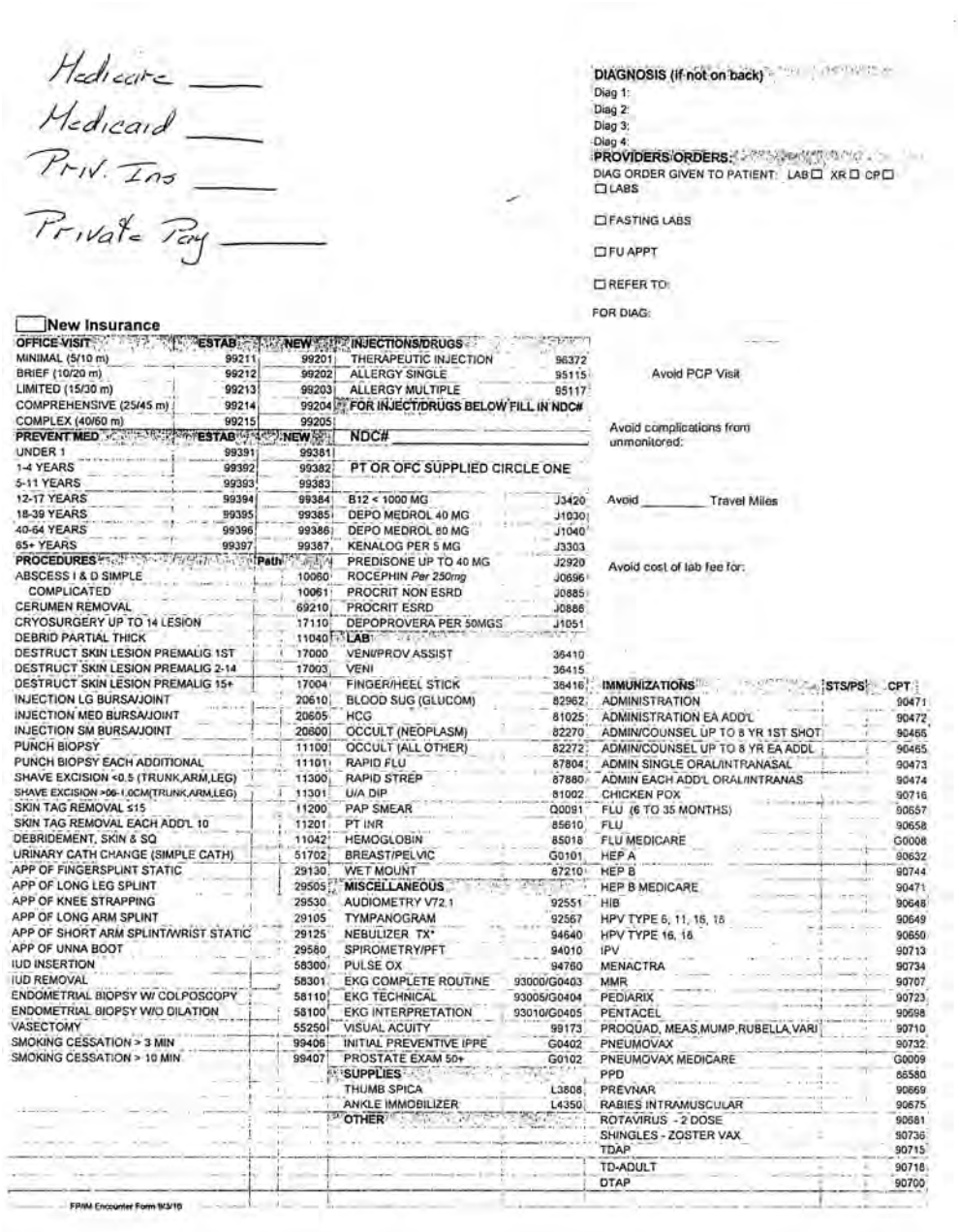
Appendix C: Blank Data Collection Form



Medicare ____
Medicaid ____
Priv. Ins ____
Private Pay ____

DIAGNOSIS (if not on back)
Diag 1:
Diag 2:
Diag 3:
Diag 4:
PROVIDERS ORDERS:
DIAG ORDER GIVEN TO PATIENT: LAB☐ XR☐ CP☐
☐ LABS
☐ FASTING LABS
☐ FU APPT
☐ REFER TO:
FOR DIAG:

☐ New Insurance

OFFICE VISIT	ESTAB	NEW
MINIMAL (5/10 m)	99211	99201
BRIEF (10/20 m)	99212	99202
LIMITED (15/30 m)	99213	99203
COMPREHENSIVE (25/45 m)	99214	99204
COMPLEX (40/60 m)	99215	99205
PREVENT MED	**ESTAB**	**NEW**
UNDER 1	99391	99381
1-4 YEARS	99392	99382
5-11 YEARS	99393	99383
12-17 YEARS	99394	99384
18-39 YEARS	99395	99385
40-64 YEARS	99396	99386
65+ YEARS	99397	99387
PROCEDURES		**Path**
ABSCESS I & D SIMPLE		10060
COMPLICATED		10061
CERUMEN REMOVAL		69210
CRYOSURGERY UP TO 14 LESION		17110
DEBRID PARTIAL THICK		11040
DESTRUCT SKIN LESION PREMALIG 1ST		17000
DESTRUCT SKIN LESION PREMALIG 2-14		17003
DESTRUCT SKIN LESION PREMALIG 15+		17004
INJECTION LG BURSA/JOINT		20610
INJECTION MED BURSA/JOINT		20605
INJECTION SM BURSA/JOINT		20600
PUNCH BIOPSY		11100
PUNCH BIOPSY EACH ADDITIONAL		11101
SHAVE EXCISION <0.5 (TRUNK,ARM,LEG)		11300
SHAVE EXCISION >06-1.0CM(TRUNK,ARM,LEG)		11301
SKIN TAG REMOVAL ≤15		11200
SKIN TAG REMOVAL EACH ADD'L 10		11201
DEBRIDEMENT, SKIN & SQ		11042
URINARY CATH CHANGE (SIMPLE CATH)		51702
APP OF FINGERSPLINT STATIC		29130
APP OF LONG LEG SPLINT		29505
APP OF KNEE STRAPPING		29530
APP OF LONG ARM SPLINT		29105
APP OF SHORT ARM SPLINT/WRIST STATIC		29125
APP OF UNNA BOOT		29580
IUD INSERTION		58300
IUD REMOVAL		58301
ENDOMETRIAL BIOPSY W/ COLPOSCOPY		58110
ENDOMETRIAL BIOPSY W/O DILATION		58100
VASECTOMY		55250
SMOKING CESSATION > 3 MIN		99406
SMOKING CESSATION > 10 MIN		99407

INJECTIONS/DRUGS		
THERAPEUTIC INJECTION		96372
ALLERGY SINGLE		95115
ALLERGY MULTIPLE		95117
FOR INJECT/DRUGS BELOW FILL IN NDC#		
NDC# _____		
PT OR OFC SUPPLIED CIRCLE ONE		
B12 < 1000 MG		J3420
DEPO MEDROL 40 MG		J1030
DEPO MEDROL 80 MG		J1040
KENALOG PER 5 MG		J3303
PREDISONE UP TO 40 MG		J2920
ROCEPHIN *Per 250mg*		J0696
PROCRIT NON ESRD		J0885
PROCRIT ESRD		J0888
DEPOPROVERA PER 50MGS		J1051
LAB		
VEN/PROV ASSIST		36410
VENI		36415
FINGER/HEEL STICK		36416
BLOOD SUG (GLUCOM)		82962
HCG		81025
OCCULT (NEOPLASM)		82270
OCCULT (ALL OTHER)		82272
RAPID FLU		87804
RAPID STREP		87880
U/A DIP		81002
PAP SMEAR		Q0091
PT INR		85610
HEMOGLOBIN		85018
BREAST/PELVIC		G0101
WET MOUNT		87210
MISCELLANEOUS		
AUDIOMETRY V72.1		92551
TYMPANOGRAM		92567
NEBULIZER TX*		94640
SPIROMETRY/PFT		94010
PULSE OX		94760
EKG COMPLETE ROUTINE		93000/G0403
EKG TECHNICAL		93005/G0404
EKG INTERPRETATION		93010/G0405
VISUAL ACUITY		99173
INITIAL PREVENTIVE IPPE		G0402
PROSTATE EXAM 50+		G0102
SUPPLIES		
THUMB SPICA		L3808
ANKLE IMMOBILIZER		L4350
OTHER		

Avoid PCP Visit

Avoid complications from unmonitored:

Avoid _____ Travel Miles

Avoid cost of lab fee for:

IMMUNIZATIONS	STS/PS	CPT
ADMINISTRATION		90471
ADMINISTRATION EA ADD'L		90472
ADMIN/COUNSEL UP TO 8 YR 1ST SHOT		90465
ADMIN/COUNSEL UP TO 8 YR EA ADDL		90465
ADMIN SINGLE ORAL/INTRANASAL		90473
ADMIN EACH ADD'L ORAL/INTRANAS		90474
CHICKEN POX		90716
FLU (6 TO 35 MONTHS)		90657
FLU		90658
FLU MEDICARE		G0008
HEP A		90632
HEP B		90744
HEP B MEDICARE		90471
HIB		90648
HPV TYPE 6, 11, 16, 18		90649
HPV TYPE 16, 18		90650
IPV		90713
MENACTRA		90734
MMR		90707
PEDIARIX		90723
PENTACEL		90698
PROQUAD, MEAS,MUMP,RUBELLA,VARI		90710
PNEUMOVAX		90732
PNEUMOVAX MEDICARE		G0009
PPD		86580
PREVNAR		90669
RABIES INTRAMUSCULAR		90675
ROTAVIRUS - 2 DOSE		90681
SHINGLES - ZOSTER VAX		90736
TDAP		90715
TD-ADULT		90718
DTAP		90700

FPHM Encounter Form 9/3/10

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DIAGNOSIS	CODE
ABDOMINAL PAIN; NOS	789.00
RUQUADRANT	789.01
LUQUADRANT	789.02
RLQUADRANT	789.03
LLQUADRANT	789.04
ABNORMAL PAP CERVIX	795.00
ACTINIC KERATOSIS	702.0
ACUTE STRESS REACTION	308.9
ADD WITH HYPERACTIVITY	314.01
ADHD W/O HYPERACTIVITY	314.00
ALCOHOLISM; CHRONIC	303.91
EPISODIC	303.02
ALLERGIC REACTION;NOS	995.3
ALZHEIMERS	331.0
ANEMIA; NOS	285.9
ANEMIA;CHRONIC DISEASE	285.29
ANGINA; NOS	413.9
ANKLE PAIN & FOOT	719.47
ANXIETY	300.00
ARRHYTHMIAS; NOS	427.9
ARTHRALGIA UNSP. JT D.O.	719.4
ASCVD	429.2
ASTHMA	493.90
ATRIAL FIBRILLATION	427.31
ATRIAL FLUTTER	427.32
BASAL CELL CARCINOMA	173.9
BIPOLAR DISORDER	296.80
BLOOD IN STOOL	578.1
BREAST MASS	611.72
BRONCHITIS; ACUTE	466.0
CHRONIC	491.0
BURSITIS - SHOULDER	726.10
B12 DEFICIENCY	266.2
CAD	414.00
CARPAL TUNNEL SYND.	354.0
CELLULITIS:	682
CHEST PAIN	786.50
CHF	428.0
CHOLECYSTITIS; ACUTE	575.0
CIRRHOSIS LIVER W/O ALCOH	571.5
COLON CA; NOS	153.9
CONJUNCTIVITIS; ACUTE	372.00
CONSTIPATION	564.00
COPD	496
COPD; EXACERBATION	491.21
COUGH	786.2
CVA	436
DEMENTIA	294.8
DEMENTIA W/O BEHAV DIST	294.11
DEPRESSION; NOS	311
DEPRESSION; ADJ. REACT	309.0
DEQUERVAINS/ TENOSYNOVITIS	727.04
DIABETES	
TYPE II CONTROLLED	250.00
TYPE I CONTROLLED	250.01
TYPE II UNCONTROLLED	250.02
TYPE I UNCONTROLLED	250.03
DIARRHEA	787.91
DIVERTICULITIS; COLON	562.11
DIVERTICULOSIS	562.10
DVT LOWER EXREMITY	453.40
DVT UPPER EXTREMITY	453.83
DYSLIPIDEMIA	272.4
DYSMENORRHEA	625.3
DYSPEPSIA	536.8
DYSPNEA	786.09
DYSURIA	788.1

DIAGNOSIS	CODE
EAR ACHE/OTALGIA	388.70
ECZEMA; NOS	692.9
EDEMA LOCALIZED	782.3
EPICONDYLITIS - LATERAL	726.32
MEDIAL	726.31
EPISTAXIS	784.7
EUSTACHIAN TUBE DYSF.	381.81
FATIGUE	780.79
FEVER; NOS	780.60
FIBROCYSTIC BREAST DIS.	610.1
FIBROMYALGIA	729.1
PAIN IN LIMB	729.5
GASTRITIS W/O HEMORRHAGE	535.50
GASTROENTERITIS; NOS	558.9
GERD	530.81
GOUT	274.9
GUAIC POSITIVE STOOL W/	792.1
ABN FINDINGS	
HEADACHES	784.0
CLUSTER	339.00
DAILY-NEW PERSISTENT	339.42
MENSTRUAL	346.40
MIGRAINE W/AUR	346.00
MIGRAINE W/O AURA	346.10
TENSION	307.81
EPISODIC	339.11
CHR TENSION	339.12
PN IN HEAD	784.0
HEART MURMUR; NOS	785.2
HEMATURA GROSS	599.71
HEMATURIA UNSP.	599.70
HEMORRHOIDS	455.6
HEPATITIS; UNSPEC.	571.40
PERSISTANT	571.41
AUTO IMMUNE	571.42
HIATAL HERNIA	553.3
HIP PAIN	719.45
HORMONE	
REPLACEMENT THERAPY	V07.4
HYPERCHOLESTEROLEMIA	272.0
HYPERTENSION	401.9
HYPERTHYROIDISM; NOS	242.90
HYPOKALEMIA	276.8
HYPONATREMIA	276.1
HYPOTHYROIDISM; NOS	244.9
IMPACTED CERUMEN	380.4
INSECT BITE	919.4
INSOMNIA	780.52
IRON DEFICIENCY	280.9
JOINT PAIN ; MULTIPLE SITES	719.49
KIDNEY CHRONIC DZ	
STAGE 1	585.1
STAGE II - MILD	585.2
STAGE III - MODERATE	585.3
STAGE IV - SEVERE	585.4
STAGE V	585.9
END STAGE	585.6
KIDNEY STONE	592.0
GENERAL PAIN	780.96
LABYRINTHITIS; NOS	386.3
LOW BACK PAIN	724.2
LUNG CA; NOS	162.9
MENSTRUATION; ABSENCE	626.0
IRREGULAR	626.4
METABOLIC SYNDROME	277.7
MITRAL VALVE PROLAPSE	424.0
MYALGIA	729.1

DESCRIPTION	CODE
MYOCARDIAL INFARCTION/INITIAL	410
NASAL RHINITIS CHRONIC	472.0
NAUSEA ONLY	787.02
WITH VOMITING	787.01
NECK PAIN	723.1
NEWBORN CHECK < 8 DAYS	V20.31
NEWBORN CHECK 8 - 28 DAYS	V20.32
OBESITY	278.00
OBESITY MORBID	278.01
OSTEOARTHRITIS	715.9
OSTEOPOROSIS; NOS	733.00
OSTEOPOROSIS; SENILE	733.01
OTITIS EXTERNA INFECTIVE	380.10
OTITIS EXTERNA ACUTE	380.22
OTITIS MEDIA; NOS	382.9
PALPITATIONS	785.1
PARKINSONS DISEASE	332.0
PATELLA FEMORAL SYNDROME	719.46
PELVIC PAIN-FEMALE GEN. SX	625.9
PEPTIC ULCER DISEASE;NOS	533.90
PERIPHERAL NEUROPATHY	356.9
PHARYNGITIS	462
PHYSICAL EXAM; ANNUAL ADULT	V70.0
WELL CHILD	V20.2
PNEUMONIA; NOS	486
PROSTATIC HYPERTROPHY; BENIGN (BPH)	600.00
PROSTATITIS; ACUTE	601.0
RADICULOPATHY	729.2
RASH	782.1
RENAL FAILURE	586
RHEUMATOID ARTHRITIS	714.0
RHINITIS, ALLERGIC	477.9
ROTATOR CUFF STRAIN-TEAR	840.4
SCIATICA	724.3
SEASONAL AFFECTIVE DO (SAD)	296.99
SEBORRHEIC KERATOSIS	702.19
SEIZURE DISORDER; NOS	345.90
SHINGLES	053.9
SHORTNESS OF BREATH	786.05
SINUSITIS; ACUTE	461.9
CHRONIC	473.9
SLEEP APNEA - UNSPEC.	780.57
SPRAINS: ANKLE	845.00
ARM	840.9
KNEE	844.9
WRIST	842.00
STREP	034.0
SYNCOPE	780.2
TIA	435.9
THORACIC PAIN	724.1
URI, ACUTE	465.9
UTI	599.0
VAGINITIS	616.10
VARICOSE VEINS-ASYMPTOMAT.	454.9
VENOUS INSUFFICIENCY	459.81
VERTIGO; NOS	780.4
VIRAL INFECTION;NOS	079.99
VITAMIN D DEFICIENCY	268.9
WART, VIRAL NOS	078.10
WEIGHT GAIN, ABN	783.1
WEIGHT LOSS, ABN	783.21
WRIST PAIN	719.43

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