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2007 Costs and Coverage of Antiretrovirals Under Medicare Part D for People With HIV/AIDS Living in North Carolina

Sohini Sengupta, PhD, MPH

Abstract

Background: Effective January 1, 2006 Medicare Part D became a new source of prescription drug coverage for people with HIV/AIDS in the United States. The implementation of Part D has affected access to antiretrovirals for people with HIV/AIDS. In North Carolina, access can be difficult because of the state's struggling safety net programs and the growing HIV-infected populations among Blacks and in poor rural counties. This analysis examines Medicare Part D antiretroviral coverage in 2007 for beneficiaries with HIV/AIDS in North Carolina, particularly those who did not qualify as dual eligibles or for a full low-income subsidy.

Methods: Data describing program coverage were obtained from the Web site www.medicare.gov and descriptive analyses were performed to assess changes in antiretroviral coverage in Part D prescription drug plans in North Carolina.

Results: Most of the 26 antiretrovirals are covered in some way by 76 North Carolina prescription drug plans. There may be variability in coverage however associated with (a) antiretroviral classification within formularies; (b) drug premiums; (c) whether premiums can be waived; (d) annual deductibles; and (e) whether coverage is provided in the "doughnut hole."

Limitations: The data may not reflect actual patterns of drug use and realized access to the drugs. The findings are limited to antiretroviral coverage in North Carolina's Part D offerings but could be generalized to other states with similar prescription drug plan costs and coverage.

Conclusion: These concerns continue to pose significant challenges to accessing antiretrovirals for Part D beneficiaries with HIV/AIDS in North Carolina. Variability demonstrated within prescription drug plans will continue, and beneficiaries with HIV/AIDS who do not qualify as dual eligibles or for low-income subsidies will need to evaluate these issues when selecting a prescription drug plan in future enrollment periods.

Key Words: HIV, AIDS, Medicare, antiretrovirals, health services accessibility

In many states, the implementation of Medicare Part D in 2006—a new source of prescription drug coverage for eligible beneficiaries—had the potential to improve access to care for people with human immunodeficiency virus (HIV) or acquired immune deficiency syndrome (AIDS) given the critical role of antiretroviral treatment in their care. Along with state-sponsored AIDS Drug Assistance Programs (ADAPs), Medicaid, and industry-sponsored Patient Assistance Programs, Part D could strengthen the tenuous health care safety net¹ by providing drug coverage for people with HIV/AIDS who are under the age of 65 years and who qualify for Social Security Disability Insurance payments (and thus Medicare) as a consequence of HIV-related disabilities.²

Concerns persist, however, that Medicare Part D jeopardizes access to AIDS care for some patients because Medicaid, as of 2006, no longer provided drug coverage for dual eligibles (persons on both Medicare and Medicaid);³ some states require all of their ADAP clients to enroll in Part D;⁴ and a new kickback statute may make companies sponsoring Patient Assistance Programs criminally liable if they compete with the Part D program.⁵

North Carolina is an example of a state where Medicare Part D could have important consequences for the safety net as Part D becomes a source to cover AIDS-related treatment for the poor with HIV/AIDS. In North Carolina access to antiretrovirals is an ever-increasing problem because of increases in the number of people infected by HIV and the state's struggling ADAP and

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Patient Assistance Programs. HIV-infection growth rates are growing rapidly among Blacks and those living in poor rural counties. As of December 31, 2006 North Carolina reported 15 746 AIDS cases with 67% of those cases among Blacks (well above the national average of 40%) at an annual rate of 36.6 per 100 000.⁶ In the same surveillance report, two rural counties in North Carolina—Wilson and Edgecombe counties—had 3-year average incidence rates from 2004-2006 of greater than 30 per 100 000.⁶ As the number of AIDS cases continues to increase, the role of Part D will grow over time. Indeed, the proportion of those required to use Part D in North Carolina will expand for 3 major reasons: (a) ADAP clients may have no other choice but to enroll in a prescription drug plan (PDP) under Part D;⁴ (b) the roughly 18% who are dual eligibles⁷ are automatically enrolled into prescription drug plans; and (c) the future of company-sponsored Patient Assistance Programs remains uncertain.⁵ This article will describe the 2007 landscape of prescription drug plans covering antiretrovirals in North Carolina with a focus on the coverage and cost implications for HIV-positive beneficiaries, particularly for those who do not qualify as dual eligibles or those who may not qualify for a full low-income subsidy to help with paying the out-of-pocket costs for their antiretrovirals.

Medicare Part D Vernacular

Medicare Part D has its own nomenclature. Table 1 presents terms and definitions that will be used throughout this article.⁸

Methods

Data were obtained from the Web site www.medicare.gov in the period May 16-18, 2007. The number of PDPs offered in North Carolina and their general out-of-pocket costs were identified under “Learn More About Health Plans In Your Area” for North Carolina.⁹ The result was a list of the number of stand-alone PDPs and Medicare Advantage-Prescription Drug (MA-PD) plans, their monthly premiums, annual deductibles, and whether or not they cover any classifications of medication in the “doughnut hole.” The doughnut hole refers to the gap in coverage when no prescription drug benefit is available; an enrollee must pay a designated amount of out-of-pocket drug expenses before coverage continues.⁸ Stratifying

these PDPs by type, descriptive statistics were calculated that included median and ranges for monthly premiums and frequencies for annual deductible categories, number of PDPs covering generics in the doughnut hole, and number of PDPs offering \$0 monthly premiums to beneficiaries who qualify for a full low-income subsidy.

Next, 26 antiretrovirals approved by the US Federal Drug Administration were selected under “Formulary Finder” for North Carolina within www.medicare.gov.¹⁰ The result is a list of the PDPs that cover all or a majority of the 26 antiretrovirals. In accessing each PDP, additional information is provided about each antiretroviral’s formulary status classification and whether or not there are any restrictions set by the PDP for each antiretroviral. Two analyses were conducted describing

Table 1.
Medicare Part D Glossary

Coverage gap (or “doughnut hole”)	The coverage gap is the period when beneficiaries pay 100% of their Part D medication expenditures. In 2007, the coverage gap begins when the total spending for drugs reaches \$2400, exclusive of the beneficiary’s monthly premium, and ends when the beneficiary has reached \$3850 in true out-of-pocket costs (TrOOP). Afterwards, beneficiaries pay 5% of their costs as coinsurance or copayments.
Dual eligible	An individual who is eligible for both Medicare and Medicaid coverage. In the past, Medicaid paid for drugs for this population. Dual eligibles will now receive most of their prescriptions from a Part D plan. Their premiums and deductibles will be fully subsidized and their copayments will be zero or nominal (approximately \$3 for brand/\$1 for generics).
Formulary	A list of specific drugs covered by a Part D prescription drug plan (PDP).
Stand-alone prescription drug plan	The most common PDP that Medicare beneficiaries could enroll in if they wish to stay in traditional Medicare and receive drug coverage.
Low-income subsidy (or extra help)	Financial assistance that lowers the premiums and copayments for beneficiaries with income limits defined as a percentage of the federal poverty guidelines (FPG). To qualify for a full low-income subsidy, beneficiaries need to be below 135% FPG, or \$13 784 for an individual and \$17 820 for a couple in 2007. Full subsidy pays for the entire premium and deductible for recipients and nearly all of the cost-sharing below the out-of-pocket threshold.
Medicare Advantage Prescription Drug Plan (MA-PD)	A private managed care plan established under Medicare Part C (formerly known as Medicare + Choice) that also provides standard Part D drug coverage.
Prescription drug plan (PDP)	Also known as “Part D plans,” can be either stand-alone or MA-PD.
True out-of-pocket spending (TrOOP)	The amount a beneficiary must pay on covered drugs to reach catastrophic coverage. An individual’s payment of the deductible, coinsurance, and/or copayments and drug costs in the doughnut hole count towards TrOOP. For 2007 the TrOOP limit is \$3850. Currently, the Part D premium and ADAP subsidies do not count towards TrOOP.

Source: A Medicare drug benefit glossary. MedicareRxMatters Web site. http://www.medicarerxmatters.org/People/Glossary/index.asp#partial_subsidy. Accessed May 27, 2007.

antiretroviral coverage and cost-sharing responsibility within North Carolina PDPs. The first analysis focused on the number of PDPs classified by formulary status and restrictions (prior authorization and quantity limits) set by PDPs for each of the 26 antiretrovirals. Analysis involved producing a summary table that was a total count of the number of PDPs (a) in each tier of the formulary status and (b) that had quantity limits or prior authorization for each of the 26 antiretrovirals. The second analysis looked at antiretroviral coverage classified by formulary status for each North Carolina PDP. The first step of this analysis involved calculating a total count of the number of antiretrovirals covered in each tier for each PDP. The second step involved stratifying the PDPs by type (stand-alone or MA-PD) and by the number of antiretrovirals they covered within each tier. These data were presented in bar graphs to demonstrate clustering patterns of the number of antiretrovirals covered by the PDPs.

Results

Overview of North Carolina Prescription Drug Plans

A total of 51 stand-alone prescription drug plans and 41 MA-PD plans are offered in North Carolina. Fifty of the stand-alone PDPs cover all or a majority of the antiretrovirals; only 26 of the MA-PD plans offer this extent of coverage. (See Table 2.)

In 2006, only one of the stand-alone PDPs—Humana PDP Complete—offered coverage of brand-name drugs for participants caught in the doughnut hole. The plan, however, converted to only covering generics and increased the monthly premium from \$50 to \$85 in 2007 as a way to reduce costs.¹¹ Variability also is demonstrated both within and across insurance companies (data not shown). For example, Humana offers Humana PDP Complete and Humana PDP Standard. Humana PDP Complete has a no annual deductible and generics are covered in the doughnut hole, but it does not offer \$0 monthly drug premiums for beneficiaries who qualify for a full-low-income subsidy. In contrast, Humana PDP Standard has a \$265 annual deductible and does not cover generics in the doughnut hole, but it offers \$0 monthly drug premiums for beneficiaries who qualify for a full-low-income subsidy. Variability is quite significant across insurance companies. For example, Partners Medicare Options Enhanced has a \$0 annual deductible and generics are covered in the doughnut hole, whereas Security Horizons Medicare Complete Choice also has a \$0 annual deductible but does not cover generics in the doughnut hole.

Analysis 1 evaluates the number of PDPs classified by formulary status, prior authorization, and quantity limits for each antiretroviral. A total of 26 antiretrovirals were selected that are considered standard of care to treat HIV-infected

Table 2.
Summary of North Carolina's Prescription Drug Plans Covering All or the Majority of Antiretrovirals

PDP Type	N	Monthly Premium Median (Range)	Doughnut Hole Coverage Generics	\$0 Premium For Low Income Subsidy	Annual Deductible		
					\$0	\$1 to \$264	\$265
Stand Alone	50	\$36.05 (\$17.80 - \$85.90)	30%	42%	62%	6%	32%
Medicare Advantage (MA-PD)	26	\$21.80 (\$0.00 - \$44.90)	19%	0%	81%	8%	12%

Source: Medicare Prescription Drug Plan Finder: Plans in Your Area.

<http://www.medicare.gov/MPDPF/Public/Include/DataSection/Results/ListPlanByState.asp>. Accessed May 16, 2007.

Monthly drug premiums for the 50 stand-alone PDPs range from \$17.80 (Humana PDP Standard) to \$85.90 (Humana PDP Complete). For the MA-PD plans, monthly drug premiums could be \$0, but the drug benefit premium is usually incorporated into the overall health care premium.⁹ Medicare Advantage Prescription Drug plans with monthly drug premiums range from \$5.70 (Security Horizons Medicare Complete Choice) to \$44.90 (Partners Medicare Options Enhanced).⁹ Annual deductibles range from \$0 to \$265. Forty-two percent of the stand-alone plans and none of the MA-PD plans allow for beneficiaries to pay a \$0 monthly drug premium if the participant qualifies for a full low-income subsidy. Thirty percent of the stand-alone and 19% of the MA-PD plans offer coverage of generics in the doughnut hole which means that beneficiaries with these plans only would need to pay copays for Tier 1 drugs.

Out-of-pocket costs have changed since Part D's inception.

patients; 24 are brand-name drugs and 2 are approved generics. (See Table 3.)

As mentioned, 50 stand-alone PDPs and 26 MA-PD plans cover all or the majority of the 26 antiretrovirals; 6 PDPs (3 stand-alone and 3 MA-PDs) do not cover Videx (Didanosine) and 2 MA-PD plans do not cover Reyataz (atazanavir sulfate). Both of these antiretrovirals are used to treat naïve patients, and Reyataz (atazanavir sulfate) is one of the preferred protease inhibitors.¹²

Within each PDP, the antiretroviral formulary's cost-sharing is classified into tiers. Tier 1 represents the lowest cost-sharing responsibility, and Tier 4 represents the highest cost-sharing responsibility. Tier 1 drugs are usually generics with copays anywhere from \$0 to \$10, or 25% of the drug's cost. Tier 2 drugs are delineated as "Preferred Brand" or "Formulary Brand" with copays ranging from \$17 to \$66, or 25% of the

Table 3.
Approved Antiretrovirals Covered by North Carolina's Prescription Drug Plans

<p>Protease inhibitors</p> <p>Agenerase (amprenavir, APV) Aptivus (tipranavir, TPV) Crixivan (indinavir, IDV) Invirase (saquinavir mesylate, SQV) Kaletra (lopinavir and ritonavir, LPV/RTV) Lexiva (Fosamprenavir Calcium, FOS-APV) Norvir (ritonavir, RTV) Reyataz (atazanavir sulfate, ATV) Viracept (nelfinavir mesylate, NFV)</p> <p>Nonnucleoside reverse transcriptase inhibitors</p> <p>Rescriptor (delavirdine, DLV) Sustiva (efavirenz, EFV) Viramune (nevirapine, NVP) Viread (tenovir disoproxil fumarate, TDF)</p>	<p>Nucleoside reverse transcriptase inhibitors</p> <p>Combivir (lamivudine and zidovudine) Emtriva (emtricitabine, FTC) EpiVir (lamivudine, 3TC) *Retrovir (zidovudine, AZT) Trizivir (abacavir, zidovudine, and lamivudine) *Videx (didanosine, DDI) Zerit (stavudine, d4T) Ziagen (abacavir sulfate, ABC) Epzicom (abacavir and lamivudine) Truvada (tenovir disoproxil fumarate and emtricitabine) Retrovir IV (zidovudine IV)</p> <p>Fusion inhibitors</p> <p>Fuzeon (enfuvirtide, T-20)</p> <p>Single tablet regimen</p> <p>Atripla (efavirenz, emtricitabine and tenovir disoproxil fumarate)</p>
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Source: United States Department of Health and Human Services Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents. Washington, DC: Department of Health and Human Services; 2006.

Note: Brand name of antiretrovirals followed by their generic names in ().

* Indicates antiretrovirals that have generic versions approved by the Federal Drug Administration.

drug's cost. Tier 3 drugs are delineated as "Non-Preferred Brand" or "Brand" with copays anywhere from \$40 to \$60, or as high as 75% of the drug's cost. Tier 4 drugs also are called "Specialty" with copays anywhere from 25% to 33% of the drug's cost.¹³ Each PDP also indicated whether or not any restrictions were imposed on the antiretrovirals in the form of quantity limits or prior authorization, factors that may further affect access to specific drugs.

In Table 4 the data are organized to demonstrate the variability in which antiretrovirals are classified into the formulary status of the 76 North Carolina PDPs, beginning with the 2 generic antiretrovirals—Retrovir (zidovudine) and Videx (didanosine)—that have been classified into Tier 1 by the highest number of PDPs.

Retrovir (zidovudine) is classified in Tier 1 for all 76 PDPs, but Videx (didanosine) is not covered by 6 PDPs; it is classified as Tier 3 for 5 of the PDPs. The majority of the PDPs cover the Brand antiretrovirals at Tier 2. The cost-sharing for Atripla, Aptivus, Retrovir IV, and Fuzeon will be the highest since they are classified more often in Tier 3 and Specialty; Fuzeon is

classified as Specialty in 64 of the PDPs. Only 4 of the antiretrovirals—Aptivus, Emtriva, Reyataz, and Fuzeon—are subject to quantity limits. Some PDPs use quantity limits to restrict how much of a drug they will dispense at one time. Plans commonly limit dispensing to a one month supply or 90 to 100 days for so-called "maintenance drugs" for persons with chronic conditions such as HIV/AIDS.¹⁴ Only Fuzeon is subject to prior authorization which is a process whereby plans require clinical justification before dispensing a drug.¹⁴

Analysis 2 evaluated antiretroviral coverage classified by formulary status for North Carolina PDPs. Figure 1 illustrates antiretroviral coverage within the 76 PDPs' formulary status by presenting a summary of PDPs (stratified by type) by the number of antiretrovirals they cover in Tier 1 through Tier 4.

What is evident when looking at the 4 graphs is that all 50 stand-alone PDPs and 26 MA-PD plans cover one or more antiretrovirals in Tier 1 or Tier 2. For the Tier 1 graph, most of the PDPs cover 1-2 drugs (generics); only one MA-PD plan covers 24 of the antiretrovirals at Tier 1. In the Tier 2 graph, most of the PDPs cover between 19 and 23 of the antiretrovirals; one MA-PD plan covers 24 antiretrovirals at Tier 2. The Tier 3 and Tier 4 graphs show that very few of the antiretrovirals

covered are categorized in these Tiers by the PDPs. Twenty stand-alone PDPs and 9 MA-PD plans cover no antiretrovirals in Tier 3 and the same is true for Tier 4 antiretroviral coverage among 9 stand-alone PDPs and 4 MA-PD plans. Although 2 of the stand-alone PDPs cover 17 antiretrovirals in Tier 3, and 5 stand-alone PDP and 5 MA-PD plans cover 15 of the antiretrovirals at Tier 4, the largest clustering of PDPs illustrated have only between 1 and 3 antiretrovirals in both Tier 3 and Tier 4.

Discussion

Similar to another study of prescription drug plans conducted in 2006,¹³ the 2007 landscape of Medicare Part D PDPs covering antiretrovirals in North Carolina continues to demonstrate several barriers for beneficiaries with HIV/AIDS living in the state and particularly for those who are not dual eligibles or who may not qualify for a full low-income subsidy. The barriers relate to changes and variability within and across Part D prescription drug plans that affect affordability, access, and

Table 4.
Number of Prescription Drug Plans Classified by Formulary Status, Prior Authorization, and Quantity Limits for Each Antiretroviral

Name of Antiretroviral	Formulary Status				Quantity Limits	Prior Authorization
	Tier 1	Tier 2	Tier 3	Specialty		
Retrovir (Zidovudine)	76	0	0	0	0	0
Videx (Didanosine) ^a	65	0	5	0	0	0
Crixivan	1	73	2	1	0	0
EpiVir	1	73	2	0	0	0
Viramune	1	73	2	0	0	0
Zerit	1	70	5	0	0	0
Rescriptor	1	70	5	0	0	0
Emtriva	1	68	7	0	9	0
Sustiva	1	68	7	0	0	0
Ziagen	1	68	7	0	0	0
Viread	1	63	2	10	0	0
Lexiva	1	59	3	13	0	0
Agenerase	1	57	5	13	0	0
Combivir	1	57	5	13	0	0
Epzicom	1	57	5	13	0	0
InVirase	0	57	4	15	0	0
Norvir	1	57	5	13	0	0
Trizivir	1	57	5	13	0	0
Viracept	1	57	3	15	0	0
Reyataza	1	57	3	13	9	0
Kaletra	1	55	5	15	0	0
Truvada	1	51	11	13	0	0
Aptivus	1	41	13	21	6	0
Retrovir IV	1	40	32	3	0	0
Atripla	1	33	14	28	0	0
Fuzeon	0	5	7	64	17	10

Source: Formulary finder for prescription drug plans. <http://formularyfinder.medicare.gov/formularyfinder/>. Accessed May 16, 2007.

Note: Most antiretrovirals are covered by 76 PDPs; n = 76 when totaling number in each column under "formulary status."

^a Videx (didanosine) is not covered by 6 PDPs (n = 70), and Reyataz is not covered by 2 PDPs (n = 74).

utilization. Because of these barriers, state-sponsored ADAPs and industry-sponsored Patient Assistance Programs must continue to assist HIV-positive individuals for whom Part D is unaffordable. According to James Coburn, JD, a senior policy analyst with Health & Disability Advocates, the good news is that ADAP in North Carolina has recognized this problem and is allowing enrollees who were required to sign up for Part D to obtain their HIV-related medications from ADAP while in the doughnut hole.¹⁵ These costs covered by ADAP, however, do

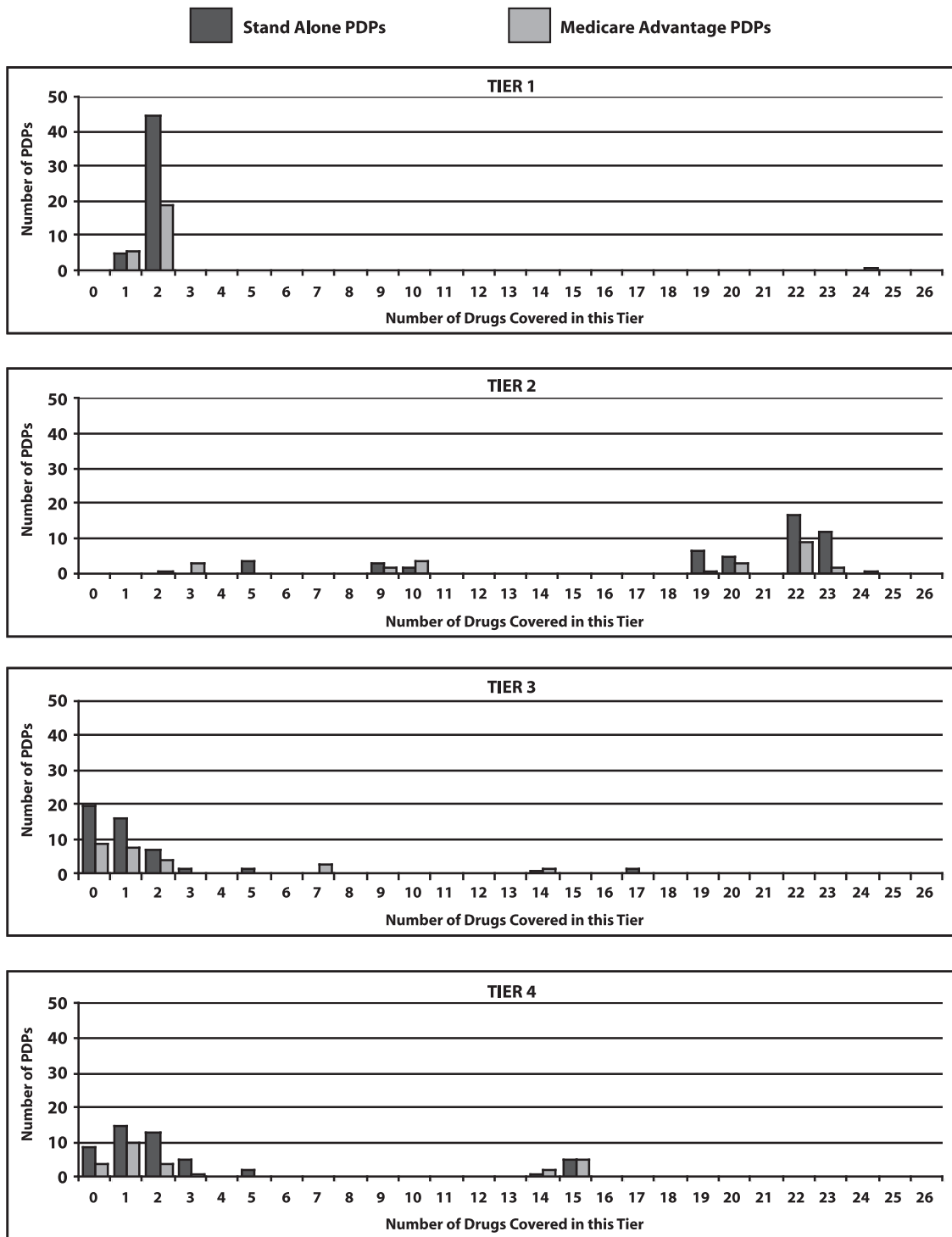
not count toward true out-of-pocket expenses—the amount a beneficiary must pay on covered drugs to reach catastrophic coverage—although recent Congressional hearings have been held that may change this current rule.¹⁶ Another disadvantage with using North Carolina ADAP is that the program requires prior authorization of Fuzeon,¹⁷ which in comparison is required by only 10 of the 76 PDPs covering antiretrovirals. Moreover, we do not know for how long ADAPs and Patient Assistance Programs will be able to bridge the safety net gap at the state

and national levels.

The descriptive analyses presented in this paper focus on antiretroviral coverage and costs in Medicare Part D after 2007 enrollment. On a positive note, the majority of the 26

FDA-approved antiretrovirals are covered by 76 North Carolina PDPs in Tiers 1 and 2, and most of these PDPs do not require quantity limits and prior authorization for these antiretrovirals. Challenges remain, however, relating to the

Figure 1. Number of Prescription Drug Plans (PDPs) by Number of Antiretrovirals Covered in Each Tier^{9,10}



persistent and changing variability within these PDPs. The analysis demonstrated significant variability in antiretroviral classification in the formulary; only one MA-PD plan covered 24 antiretrovirals in Tier 1 whereas the majority of PDPs covered most antiretrovirals at Tier 2, and nearly 25% of the PDPs covered most antiretrovirals in Tiers 3 and 4. Furthermore, the one MA-PD plan covering 24 antiretrovirals in Tier 1—AETNA Medicare Open Plan—was not available to the 3 urban and rural counties in North Carolina with the highest cumulative AIDS cases (urban Mecklenburg and Wake counties and rural Pitt County) (data not shown). It is unclear how insurance companies make decisions about antiretroviral placement within the formulary status of PDPs since there is no correlation between antiretroviral placement and drug manufacturer (data not shown). Indeed, classifying most of the antiretrovirals at Tier 2 or greater makes the cost-sharing responsibility unaffordable for people with HIV/AIDS with incomes more than 150% of federal poverty guidelines. A second concern relates to the variability of other out-of-pocket costs when comparing PDPs. The analysis demonstrated that even within an insurance company there is variability pertaining to monthly drug premiums, annual deductibles, generic coverage in the doughnut hole, and availability of \$0 monthly premiums for beneficiaries qualifying for a low-income subsidy.

The implications of these out-of-pocket costs can be demonstrated in a case example of a North Carolina beneficiary with HIV/AIDS whose income is \$1700/month (200% federal poverty guideline) and who is enrolled in AARP MedicareRX (one of the top PDPs nationally in 2006¹⁸). This person would not be eligible for Extra Help, the low-income subsidy. The out-of-pocket costs would include a \$30 monthly premium that cannot be waived, no annual deductible, no coverage within the doughnut hole, and a cost-sharing responsibility per drug of roughly 25% to 33% (based on Tier 4 estimates). Without knowing this PDP's specific summary plan description, the beneficiary's annual cost-sharing responsibility, assuming the simplest antiretroviral regimen, Atripla (\$1150.88 for a 30-day supply¹⁹), would be \$360 in total monthly PDP premiums which cannot go towards true out-of-pocket expenses, and \$4258.03 in coinsurance. Table 5 roughly estimates this beneficiary's monthly out-of-pocket costs for Atripla in 2007.

Thus, this person would be spending 23% of his or her income to pay for out-of-pocket Part D drug costs (including premiums). Seventy percent of those out-of-pocket costs would be spent during the doughnut hole. In reality, the annual costs would be much

higher if this person was taking a combination of antiretrovirals and other medications to manage his or her disease, given that the 5% copays after the doughnut hole could be significantly higher.

The case example indirectly addresses the relationship between affordability, access, and utilization. As mentioned, people with HIV/AIDS may take a number of HIV and non-HIV-related medications to manage their HIV and comorbid conditions. It is not unusual for people with HIV/AIDS to change their medication regimens one or more times even within a year. A person with HIV/AIDS, however, cannot change to another PDP mid-year. Thus, he or she may discover the new medication is either not offered, offered at a higher tier, or offered with restrictions in his or her current PDP. This situation not only could make a change in regimen financially unaffordable, but also the patient could decide to stop taking an antiretroviral or stretch out the prescription of an antiretroviral to save money, leading to serious consequences of medication noncompliance and HIV resistance.

With so many issues to consider, how does a North Carolina beneficiary with HIV/AIDS choose a PDP from among the 76 with antiretroviral coverage? This paper may be useful in helping consumers and their advocates recognize the numerous factors—plan availability, antiretroviral tier classification, monthly premium costs, annual deductibles, and generic coverage (for HIV or non-HIV medications) offered in the doughnut hole—that need to be taken into consideration before selecting a PDP. The process of selecting a PDP could be very daunting for beneficiaries with HIV/AIDS who, compared to the majority of elderly Medicare beneficiaries, are more likely to be poorer and less well-educated. Indeed, HIV clinicians must continue to assist patients in understanding these issues and facilitate better access to affordable antiretrovirals within the struggling safety net for years to come. **NCMJ**

Table 5.
Estimated Beneficiary Out-of-Pocket Costs for Atripla, by Month, 2007

Month	25% Coinsurance (until \$2400)	100% Pay (doughnut hole until \$3850 TrOOP* limit)	5% Coinsurance (catastrophic limit)	Monthly Payment (excluding premium)
January	\$287.72	\$0.00	\$0.00	\$287.72
February	\$287.72	\$0.00	\$0.00	\$287.72
March	\$24.56	\$1052.64	\$0.00	\$1077.20
April	\$0.00	\$1150.88	\$0.00	\$1150.88
May	\$0.00	\$1046.48	\$5.22	\$1051.70
June- December	\$0.00	\$0.00	\$57.54	\$57.54
Total annual coinsurance				\$4258.03
Total (coinsurance + \$360 premiums)				\$4618.03

* TrOOP - true out-of-pocket expenses

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Tuberculosis Knowledge, Attitudes, and Beliefs Among North Carolinians at Increased Risk of Infection

Elizabeth L. West, PA-C; Lara Beth Gadkowski, MD, MS; Truls Østbye, MD, MPH, PhD; Carla Piedrahita; Jason E. Stout, MD, MHS

Abstract

Objective: The purpose of this study was to capture and describe knowledge, attitudes, and beliefs about tuberculosis (TB) among persons at high risk for TB infection.

Methods: We conducted 11 focus groups in 3 different populations at high risk for TB infection: Spanish-speaking immigrants, homeless shelter residents, and persons attending a drug/alcohol rehabilitation center. A standardized list of open-ended questions was used to guide discussion. Using grounded theory, transcripts of the focus group sessions were reviewed by 4 independent reviewers to identify emergent themes.

Findings: Participants (N=52) generally understood that TB is an infectious disease that frequently affects the lungs and can be fatal if untreated. They also knew that a skin test can be used to diagnose TB. However, participants frequently had incorrect beliefs regarding the cause, transmission, and treatment of TB. Many participants thought that TB is transmitted in the same fashion as other infectious diseases such as human immunodeficiency virus or acquired immune deficiency syndrome (HIV/AIDS). A general sentiment of fear and aversion toward persons ill with TB was expressed.

Limitations: Focus groups were a convenience sample and subjects were not necessarily representative of the underlying populations.

Conclusions: Tuberculosis knowledge among high-risk populations is suboptimal, and false beliefs regarding transmission and treatment were common in this study. Knowledge regarding transmission of other infectious diseases such as HIV/AIDS was frequently translated into incorrect knowledge regarding TB. Stigma continues to be a barrier to TB diagnosis and treatment.

Key words: Health knowledge, attitudes, practice; focus groups; tuberculosis; homeless persons; emigration and immigration; alcoholism; substance-related disorders

Tuberculosis (TB) is a significant cause of morbidity and mortality worldwide. Eight million persons become ill with TB and 2 million die of TB worldwide each year.¹ However, in the United States, TB has become relatively uncommon; 13 779 tuberculosis cases were reported in 2006, representing an incidence rate of 4.6 cases per 100 000 population. However, TB is still a significant problem in certain high-risk groups including the foreign born, persons who abuse alcohol or illicit drugs, and the homeless. In 2006, of persons with active TB in the US, 57%

were foreign born, 14.2% reported abusing alcohol within the previous 12 months, and 6.2% were homeless.²

Tuberculosis remains a problem because infected, asymptomatic persons serve as a reservoir for future disease. When an individual with pulmonary TB coughs, sneezes, or speaks, respiratory droplets containing viable *Mycobacterium tuberculosis* bacteria are aerosolized. A susceptible host can inhale these droplets and become infected. In most cases, the immune response controls this primary infection. As a result of this imperfect immune

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response, the infected individual remains asymptomatic but frequently harbors viable TB bacteria. This individual is then said to have latent tuberculosis infection (LTBI). Persons with LTBI may remain well (and not contagious), but approximately 10% become ill with active TB during their lifetime and may then infect others.³ The detection and treatment of LTBI is thus essential to TB eradication efforts. Latent TB infection is currently diagnosed by tuberculin (purified protein derivative) skin testing, although blood tests to diagnose LTBI are becoming available.⁴ Persons with LTBI, defined as having a positive tuberculin skin test without clinical or radiographic signs of disease, can be treated with isoniazid to reduce the risk of progression to active TB. Treatment of LTBI with 6 to 9 months of daily isoniazid reduces the likelihood of progression to active disease by up to 90%.⁵ Unfortunately, a relatively low proportion of persons with LTBI complete a full course of therapy. In a general public health clinic population, only about 60% of patients prescribed isoniazid completed a full course, and in homeless populations completion rates have been as low as 15-20%.^{6,7}

Understanding TB knowledge and beliefs among high-risk groups may significantly enhance efforts to diagnose and treat both active TB and LTBI in those groups. Several studies have examined TB knowledge and beliefs in selected populations,⁸⁻¹⁵ but data are lacking for some high risk groups in the United States. We conducted 11 focus groups comprised of persons from groups at high risk for TB as part of a larger effort to understand and improve adherence to LTBI therapy.

Methods

Study Design

Eleven focus groups were assembled in order to gather data about TB knowledge, attitudes, and beliefs. Focus groups have been used extensively in primary care settings to explore patients' and practitioners' perceptions and opinions of illness, services, and programs.¹⁶ Participation in the focus groups was voluntary and anonymous. Food was offered at some of the sessions, but participants did not receive any monetary compensation for participation. Both the Duke University Medical Center Institutional Review Board and Wake County Human Services approved the study protocol.

Focus Group Participants, Data Collection, and Analysis

Focus groups were conducted at various sites in Chapel Hill, Durham, and Raleigh, North Carolina. (See Table 1.) The participants in the focus groups were selected from 3 populations with relatively high rates of latent TB infection and active disease: foreign-born Hispanics, homeless persons, and persons with a history of illicit drug or alcohol abuse. Participants represented a convenience sample of persons at the site who were willing to participate at the time the facilitator was present.

Three focus group sessions targeting Hispanic immigrants were conducted at a local church, an elementary school, and a community center. Six sessions targeting homeless persons were conducted at 4 homeless shelters. Two sessions targeting persons with drug/alcohol abuse problems were held at a drug/alcohol rehabilitation facility. Focus groups included a median of 5 participants (range 2-6) with a total of 52 participants in the study. The racial/ethnic composition of participants included

Table 1.
Emergent Themes and Illustrative Focus Group Quotations

Tuberculosis is communicable and serious	"...it is communicable and can be deadly" "It will kill eventually." "It's life-threatening if not treated." "highly infectious" "easily spread"
Tuberculosis can affect anyone	"I think society in general can get it [TB]." "I would say that if you are exposed to anyone in the general public you are at risk, it doesn't discriminate."
Tuberculosis is more likely to affect people who are not like me	"People from other countries [are more likely to get TB]" "Street people [are more likely to get TB]"
Tuberculosis stigma	"People would feel ashamed about TB at a hairdresser, or store."
Health care costs are significant barriers to receiving good health care including tuberculosis care	"I'm supposed to be on all kinds of medications but I can't afford the prescriptions 'cause I don't have insurance." "I feel like the more money or more insurance you have the better doctor care you get."
Perception of responsibility for health affects the likelihood of taking treatment for tuberculosis	"Of course you are going to have people who aren't going to take it [treatment for LTBI] no matter how bad it is, 'cause they are just that way. But people who care about themselves and their health and their family are going to do it. You can't make people care, but they either care or they don't but the ones who do I think if they have the right information, if they were educated, they would."
Incentives (financial or emotional) will increase adherence to latent tuberculosis infection treatment	"Society loves money, pay them [persons who need TB/LTBI treatment]." "Give them encouragement for taking the pills." "Spend time with the person so they don't feel so alone."
Persons who do not have regular, healthy practices will not take tuberculosis / latent tuberculosis infection treatment	"I think the biggest problem is, is that right now a lot of people who would have to take it [the TB treatment], their lifestyle doesn't really coincide with doing things at a normal time, like taking the medicine every day is like taking a bath every day, well a lot of people on the street don't take a bath every day it would be hard to get them to do something on a regular basis all the time."

21 Caucasians, 15 African-Americans, and 16 Hispanics. Five sessions included only males, 2 included only females, and 4 included both males and females (30 male and 22 female participants total). Participants at the homeless shelters and the rehabilitation facility did not provide demographic information. Among the Hispanic participants, 5 persons were under 30 years of age (range 25-52 years), and 6 had been in the United States under 5 years (range 6 months-16 years). Ten were from Mexico, 2 from Colombia, and 1 each from the Dominican Republic, Peru, and Honduras, while the country of origin for 1 subject was unknown. A standardized list of questions was used to guide the discussions. (See Box 1.) All sessions were audio-recorded and transcribed. The Spanish transcripts were translated by one bilingual person, and a second bilingual person reviewed the original transcripts and the translation for accuracy.

Box 1.
Focus Group Questions

- 1 What have you heard about TB?
- 2 Have you heard any other names for TB?
- 3 In your opinion, how serious is TB?
- 4 What is the cause of TB?
- 5 How do you get TB?
- 6 What kinds of people get TB?
- 7 What would you think about a person with TB?
- 8 How can a person find out if they have TB?
- 9 Where would you go to get a TB test?
- 10 Would you like a nurse to knock on the door and offer it to you?
- 11 What are the chances that a person with TB infects others?
- 12 Have you ever known anyone with TB?
- 13 Do you think you are at risk of getting TB?
- 14 If you thought you were at risk for getting TB, would you do what you could to get tested?
- 15 What is the best treatment for TB?
- 16 Can TB be cured?
- 17 Where would you go for treatment if you (or someone you knew) thought they had TB?
- 18 Do you have any concerns about receiving medical treatment in the US?
- 19 Would you take a pill every day for 9 months to prevent a disease (even if you didn't feel sick)?

TB = Tuberculosis

Using grounded theory,¹⁷ the 4 reviewers (LM, LG, JS, and TO) read the English versions of the transcripts independently, initially looking for key words and emerging themes. After half the focus groups had been completed and transcribed, the researchers compared and combined their independent analyses. This procedure permitted exploration, expansion, and testing of themes in subsequent focus groups. An extensive list of key words and themes was maintained and revised throughout the process resulting in a final analysis template which allowed the researchers to organize and code the data. All the transcripts were coded using the analysis template, making it easier to

organize and manage the qualitative data. At this stage of the analysis, all the researchers met several times to examine similarities and differences across and within the identified themes. Several iterations of the findings were circulated among the research team for clarification and consensus before they were considered final.

Results

What Did the Participants Know About Tuberculosis?

Signs, symptoms, and contagiousness. Participants understood that tuberculosis is a disease associated with significant morbidity and mortality. There was also generalized knowledge among the participants in each group about the signs and symptoms of active TB: persistent cough, coughing or spitting up blood, fever, and night sweats were all mentioned. Although most participants did not report having known anyone with TB, they thought a person with TB would look very ill: "I picture them being lethargic, pale, bad cough, dark circles under their eyes" and "Coughing, shortness of breath, run down easy, someone who could only do like four hours of work instead of eight a day, drained and tired." Those who had observed someone with active TB depicted similar images: "She looked like a walking cadaver." Most group participants knew that TB was infectious. Participants most commonly responded that TB was spread by the cough of an infected person: "It's mostly airborne. I mean people cough. Like you could be in a cab with somebody and they cough and you can get it that way."

Skin Testing. Participants knew there was a skin test that could be used to diagnose TB. Participants also knew the test was available at a physician's office, clinic, hospital, or health department. Many of the participants had previously undergone tuberculin skin testing. All participants indicated they would be willing to be tested for TB if they thought they were at risk of having TB.

What Did The Participants Not Know About Tuberculosis?

Cause and Transmission. The most obvious knowledge deficits were in the areas of causation and transmission of TB. At least one person in each group responded that TB was caused by either a bacteria or, even more commonly and erroneously, by a virus. Other suggested causes of TB were smoking, "malnutrition," "sleeping in cold breezy places and wet floors," and "uncleanliness." At least one person in each group knew TB could be transmitted when an infected person coughs. Several participants indicated TB could be transmitted by using the same glass or utensils as the infected person, by holding hands with an infected person, from dirty needles, by blood, and even "like AIDS."

BCG vaccine. The Spanish-speaking groups were asked if they knew about a vaccine for TB. Few participants were aware of the existence of such a vaccine. Confusion between the vaccine and the TB skin test was common.

Treatment. Participants did not have a good understanding of TB treatment. Many were unsure whether there was a treatment for TB; in all groups there was mixed knowledge about whether there was treatment. Of those participants who thought there was a treatment, most simply said it was a medication of some type. A couple of participants mentioned that it required taking antibiotics for 9 months, which is the standard length of therapy for LTBI. One Spanish-speaking participant answered that vitamins were the treatment. Several participants thought treatment was only available if the disease was diagnosed relatively early in its course.

Attitudes and Beliefs About the Diagnosis and Treatment of Tuberculosis

Participants did not verbalize any overt prejudice or negative attitudes about people with TB: "It's not their fault." In addition, the majority of those who responded to the question "Who gets TB?" answered that anyone can get it: "I think society in general can get it," and "I would say that if you are exposed to anyone in the general public you are at risk, it doesn't discriminate." While few participants expressed any negative attitudes towards someone with TB, some participants stated that certain groups of people were more likely to have TB than others. For example, the men in the alcoholic recovery group said that "street people" and the "homeless" are more likely to be infected. Many participants commented that persons with AIDS and depressed immune systems are at increased risk of acquiring TB. Several Spanish-speaking participants said that "people from other countries," and people of other races tend to have it. Other groups more likely to have TB mentioned by the participants were older people, asthmatics, those who smoked or drank alcohol, those who lived in big cities, those with a low income, those who did not receive the vaccine, those who lived in "harsher environments," and those who were malnourished.

Many participants voiced that their first inclination was to "stay away" from someone diagnosed with TB. Few participants acknowledged having known anyone with TB. A few participants had childhood memories of persons with TB:

I remember my momma saying to me not to let certain people cough on me or spit on me 'cause he got TB stuff so we used to stay away from him because he was a cougher and a spitter 'cause he was contagious, so she told us to stay away from him 'cause he was contagious.

Trust of the Health Care System and Health Care Professionals

Participants in all groups stated that in general they trusted medical professionals to provide appropriate care. Furthermore, participants indicated they had greatest trust in physicians who were specialists in treating their specific illness. A few participants expressed negative feelings and distrust toward specific medical

institutions but not toward physicians or other medical providers in general. Despite this trust, participants were not enthusiastic about having a nurse come to their home for TB testing. Several participants were afraid of an unknown person coming to their door, and some participants also voiced fears of being stigmatized by neighbors because a nurse was visiting the house.

Participants in the Spanish-speaking focus groups were asked whether they would seek out a traditional healer ("curandero") for medical care. Participants were skeptical of the ability of *curanderos* to treat medical illness and did not express a great deal of trust for traditional healers. However, several Spanish-speaking participants stated they would go to a "naturalist" to supplement traditional medical care.

The cost of health care was an important issue for participants and was mentioned in all 11 focus groups. In all focus groups, health care costs were felt to be too high and represented a significant barrier to seeking care. However, Spanish-speaking participants also stated they knew they would receive health care in the United States regardless of their ability to pay for it, which was not true in some of their countries of origin.

Prejudice and Stigma

While most participants explicitly stated that TB could affect anyone and did not discriminate on the basis of race or socioeconomic factors, TB was usually described as a disease that affected persons belonging to a social group different from that occupied by the speaker. For example, members of the men's alcoholic recovery group stated they were at risk of being infected with TB because they were regularly in contact with "street people" and unknown people in Alcoholics Anonymous meetings. The homeless women said that people of "low income" and "low social status" were more susceptible to being infected with TB. One nonimmigrant participant said the incidence of TB has increased because immigration has increased. A Hispanic immigrant described a Chinese acquaintance being ill with TB. This projection of disease onto other social groups, particularly groups perceived as less desirable in the eyes of the participant, is evidence for the persistent stigma associated with TB:

There was a drunk in my town that died and he was lying on the corner coughing. That is, but he wasn't anyone I knew... we just knew he had TB, but... Oh, he was so skinny, you could see his skeleton. He didn't... he just had his skin hanging off, but I don't remember... I was little. I remember that we weren't to go near him. He was always on the corner.

Participants also expressed a strong aversion to persons with TB. Many participants responded "Stay away" to the question "What would be your reaction to someone who you found out has TB?"

Willingness to Take Medication

Most participants responded when asked that they would be willing to take 9 months of oral medication to prevent TB (LTBI treatment). However, when the question was rephrased,

emphasizing that LTBI treatment would consist of taking medication when one did not feel sick, the responses changed. For example, when subjects at one of the homeless shelters were asked “Would you be willing to take a drug every day for 9 months to prevent TB?” they answered unanimously in the affirmative. However, when asked, “Would you be willing to take a drug every day for 9 months if a doctor told you that you had TB even though you felt well and not sick?” they answered “it depends” or “not without a lot of tests.”

Participants had various suggestions to improve patient adherence to LTBI therapy. Suggestions ranged from showing graphic pictures of people dying with TB to offering education about TB. One participant suggested that bringing LTBI therapy to the patient, rather than making the patient pick it up at the health department, would improve adherence. Many participants stated that incentives, including food and money, would be effective for increasing rates of LTBI treatment adherence. Emotional support by health care providers also was mentioned: “Give them encouragement for taking the pills” and “Spend time with the person so they don’t feel so alone.”

Several participants felt that persons who were in the habit of taking medications or vitamins every day would be more able to remember to take LTBI therapy. Conversely, participants were skeptical that persons who do not have regular, healthy practices could be expected to take medication every day:

I think the biggest problem is, is that right now a lot of people who would have to take it [the TB treatment], their lifestyle doesn't really coincide with doing things at a normal time, like taking the medicine every day is like taking a bath every day, well a lot of people on the street don't take a bath every day it would be hard to get them to do something on a regular basis all the time.

Locus of Responsibility for Health

Participants’ perceptions of who is primarily responsible for their health had important effects on attitudes toward TB prevention and treatment. Many participants felt responsibility for health care rests primarily with the individual:

Of course you are going to have people who aren't going to take it [treatment for LTBI] no matter how bad it is, 'cause they are just that way. But people who care about themselves and their health and their family are going to do it. You can't make people care, but they either care or they don't but the ones who do I think if they have the right information, if they were educated, they would.

However, other participants placed the responsibility for TB prevention with health care providers and the health care system. For example, one participant said that she distrusted a local hospital, and when she was asked if this could ever affect her seeking out treatment there if necessary for TB, she responded “No, I would still go, but it would be up to them to do it all.” Several participants believed that it is the health care professional’s job to convince, coax, and bribe persons with

LTBI or active TB into making healthful choices: “Society loves money, pay them.” A summary of emergent themes with illustrative quotations is provided in Table 1.

Discussion

Misconceptions About Tuberculosis

As in reported studies,^{8,11,15,18,18} we found participants had many inaccurate perceptions of TB cause and transmission. They frequently believed TB was transmitted by fomites, direct contact with another person’s skin, and sharing eating utensils. These beliefs have been reported in a number of different populations including migrant farm workers¹⁴ and Vietnamese refugees.⁹ Participants inappropriately applied what they knew about other common diseases to TB. In particular, participants often applied what they knew about the spread of HIV to TB, and several participants said TB was transmitted “like AIDS.” Like the present study, homeless persons surveyed in San Francisco similarly applied HIV concepts to TB transmission.¹³ Participants appeared to apply knowledge of other diseases to TB; for example, “TB is only curable if caught early” may reflect knowledge about cancer. Although these statements attest to the efficacy of public health education efforts for other diseases, the resultant misinformation may have unintended deleterious consequences for TB control efforts. If TB is perceived (as it was by at least one participant) as an incurable disease (like HIV at present), patients will be discouraged from seeking care, thus delaying diagnosis with resultant increased transmission and morbidity.¹² Furthermore, perceptions that hand washing or other general hygienic measures prevent TB infection may give persons a false sense of security that they are protected from TB disease.⁹ Tuberculosis education should stress the distinctions between TB and other diseases and must include information about cause, transmission, and treatment of LTBI and active TB.

Stigma

Stigma may have a significant impact on a person’s willingness to be tested and treated for TB.^{14,19} In a Chicago survey of African Americans with TB, study participants overwhelming reported feelings of embarrassment and isolation among their community, family, friends, and coworkers.²⁰ In another survey of Latinos receiving LTBI treatment, 17% of participants reported having TB was an embarrassment in their country of origin.⁸ Stigma may result in severe social consequences; in one study in Mexico City 50% of hospitalized TB patients were not received back into their homes after hospital discharge.²¹ Fear of being stigmatized by family, friends, coworkers, and community may be an important potential predictor for whether the patient initiates and completes therapy for LTBI.

Participants’ Ideas on Adherence to Latent Tuberculosis Infection Therapy

Participants’ ideas of what would affect an individual’s likelihood to complete LTBI therapy can be divided into 3 groups: habits, social factors, and motivation. Health care-related

habits may play a significant role in LTBI treatment adherence. A recent study of adherence to LTBI noted a positive univariate association between having a primary care physician and completion of LTBI treatment, and the belief that seeing a health care worker regularly keeps one healthy was also associated with treatment completion.²² Social factors, including availability of stable housing, have been associated with likelihood to complete LTBI treatment.²³ Motivation is also clearly important when considering likelihood to complete LTBI treatment. Patients who feel they are at risk to develop active TB are more likely to complete LTBI treatment whereas those who expressed aversion to venipuncture (used in some patients for liver function monitoring) were less likely to complete treatment.²² Understanding where different patient groups place responsibility for their health may be a key factor in designing strategies to improve adherence to LTBI treatment in these groups. The emotional dynamics between a particular health care provider and patient play an important role in patients' perceptions of responsibility for their health and resultant motivation to adhere to a treatment plan.²⁴ A study of Haitian immigrants demonstrated the importance of emotional needs related to the treatment of LTBI, and the authors concluded that a "personal approach" was an important aspect of treatment.¹⁰ Some studies suggest that directly observed therapy, which provides for frequent one-on-one encounters between patients and health care workers, increases completion rates for LTBI treatment.²⁵ At least one study demonstrated that monetary incentives improve adherence to LTBI therapy among homeless persons.²³ The current study suggests the hypothesis that patients' attitudes toward emotional or financial incentives could predict initiation and completion of LTBI treatment.

Strengths and Limitations

The findings of this study are strengthened by the fact that our focus groups were assembled from 3 different high-risk populations and conducted in diverse settings. The demographic mix was also diverse with a balance of gender and ethnic groups.

A standardized set of questions was used to guide the groups. In addition, the focus group transcripts were reviewed independently by 4 persons to identify recurring themes.

There were several limitations of this study. The subjects represented a convenience sample and may not be representative of their respective populations. The number of participants in each focus group was relatively small, with a small number of total participants from the drug/alcohol treatment centers, which may result in suboptimal theme saturation and reduced generalizability of the results. Furthermore, persons participating at the homeless shelters and drug rehabilitation facilities refused to provide demographic data. The 8 English-speaking focus groups were conducted by a white female, which may have affected the group dynamics. A focus group facilitator of a different sex, race, or age might possibly have provided a more conducive environment to talking about such a sensitive subject. Obviously, there are many high-risk populations that were not represented in this study (eg, non-Hispanic foreign-born persons, prisoners), but the 3 populations chosen are frequently targeted by TB control programs in the United States.

Implications

The information presented here regarding TB knowledge, attitudes, and behaviors in 3 key high-risk populations is a first step in understanding how to reduce the burden of TB in these populations. This study of 3 populations at relatively high risk for LTBI has identified several possible predictors of initiation and completion of LTBI therapy: (1) knowledge of cause, transmission, and treatment of LTBI; (2) stigma associated with TB; (3) health maintenance practices; and (4) financial and emotional needs. We intend to use these potential predictors to develop a survey that will be administered to persons with LTBI prior to initiation of LTBI treatment. Survey responses can then be correlated with adherence to LTBI treatment, and specific interventions can be developed to improve LTBI adherence when specific knowledge deficits, attitudes, or beliefs are expressed. **NCMJ**

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Call for Papers

John W. Williams Jr, MD, MHS
Scientific Editor, *North Carolina Medical Journal*

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**North Carolina
MEDICAL JOURNAL**

POLICY FORUM

Taking Care of Those Who Serve

Introduction

Thomas C. Ricketts III, PhD, MPH; Kristen L. Dubay, MPP

Issue Brief: Serving the Health Needs of Our
Military and Veterans

John W. Williams Jr, MD, MHS

*“Through carefully
crafted policies,
education of
our clinical
workforce, and
intelligent research
investments,
North Carolina can
excel in meeting
its obligation to
support the health
needs of its citizen
soldiers.”*

COMMENTARIES

The Veterans Affairs Health Care System in
North Carolina

Sara Haigh

The Epidemiology of Health Problems in
Returning Operation Iraqi Freedom and
Operation Enduring Freedom Veterans

Kenneth C. Goldberg, MD

Veterans Affairs Research and Development:
Using Science to Improve Health Care for
Veterans

Eugene Z. Oddone, MD, MHSc; Seth Eisen, MD, MSc

Identifying and Treating Post Deployment
Mental Health Problems Among New Combat
Veterans

Harold Kudler, MD; Kristy Straits-Tröster, PhD

Detecting Traumatic Brain Injury Among
Veterans of Operations Enduring and Iraqi
Freedom

*George L. Jackson, PhD, MHA; Natia S. Hamilton;
Larry A. Tupler, PhD*

Veterans Health Administration Primary
Care-Mental Health Integration Initiative

Edward P. Post, MD, PhD; William W. Van Stone, MD

Integrating Primary Care and Mental Health
in the Army

Michael T. Latzka, MD, LTC, MC

The Citizen Soldier Support Program:
Building Bridges Between Communities and
Military Families

Steven R. Moore, RPh, MPH, FRSH, FASHP, CPHP

Military Families: Opportunities and
Challenges

Denisse Marion-Landais Ambler, MD

INTRODUCTION

Policy Forum: *Taking Care of Those Who Serve*

There has been a steady flow of information from the War on Terrorism since Operation Enduring Freedom began in October of 2003. As the war expanded into Iraq and continues today, more American families and communities are feeling its impact. Children, spouses, parents, friends, and neighbors are regularly leaving for war and returning from combat. Safety and health in the war zone are the greatest concerns of those seeing loved ones leave. They hope their soldiers will never need medical care during their service but are comforted to know that, if needed, the military will provide them with immediate and necessary care.

Once our soldiers return home, those with serious physical injuries will need ongoing care. In addition, those who served without obvious physical harm may also need assessment and attention. As noted in this issue of the *Journal*, as many as 20% of active and 40% of reserve soldiers returning from a combat theater may have a mental illness and should have mental health services available to them. Fortunately, the Veterans Health Administration (VHA) is prepared to address both the physical injuries and mental illnesses of our soldiers.

This issue of the *Journal* describes how VHA has identified the mental health and physical needs of our returning soldiers and is responding to these needs by modifying both its assessments of soldiers and services for soldiers. The Veterans Health Administration also has developed new mental health screenings, instituted a second mental health screening, and is strongly encouraging military personnel to seek care for more than just bodily injuries. It is doing more to reach out to families of deployed service members to be sure they have access to community supports while their loved ones are abroad.

Despite the presence of multiple VHA facilities in North Carolina, many servicemen and women are accessing care outside of VHA. For example, National Guard and Reserve personnel frequently live in communities away from a base or a VHA facility and are more likely to access care in a private practitioner's office. This pattern of care seeking is particularly relevant for our readers practicing medicine across North Carolina. Included in the commentaries in this issue of the *Journal* are resources and recommendations for providers serving returned soldiers: Recognize your patients' connections to the military. If possible, identify returning soldiers and ask questions of them and their families to assess how reintegration or reunification may be affecting their health and well-being. When concerned about a patient, access resources such as those outlined in these commentaries that may help in determining the need for referrals or additional care.

Our military forces and their families have made and continue to make great sacrifices for our state and nation. We hope this issue of the *Journal* offers examples and information that can help providers across the state offer the best care to these brave and much valued members of our communities.

Thomas C. Ricketts III, PhD, MPH
Editor-in-Chief

Kristen L. Dubay, MPP
Managing Editor

Serving the Health Needs of Our Military and Veterans

John W. Williams Jr, MD, MHS

“...to care for him who shall have borne the battle, and for his widow and his orphan.”

— Abraham Lincoln, Second Inaugural Address

War has a profound adverse affect on public health.¹ In times of war rates of infectious diseases, malnutrition, mental illness, and mortality increase for both combatants and civilian noncombatants. Weapons of war are associated with increased malignancies (eg, Agent Orange, atomic weapons), chronic illnesses such as Diabetes mellitus (eg, Agent Orange), sensory impairment (eg, decreased hearing in artillery gunners), and of course, traumatic injuries. In the past 100 years, the US has been directly involved in 6 major wars (World War I, World War II, Korea, Vietnam, the Persian Gulf, Iraq) and fielded active combatants in other conflicts (Grenada, Panama, Somalia, Bosnia and Herzegovina, Afghanistan). We have been at war in Iraq since March 19, 2003 where over 1 500 000 Americans have been deployed.² Thankfully, most of these troops will return home unscathed, but for those who are injured the nature of the injuries are presenting new challenges for the health care system.

North Carolinians play an important role in supporting our military forces, hosting major military bases at Fort Bragg, Pope Air Force Base, Seymour Johnson Air Force Base, and Camp Lejeune. Many of our citizen soldiers from the ranks of the active reserve and the National Guard have been called up. In the health care sector, North Carolina clinicians care for our troops, their families,

and our veterans. Given the major presence of the military in North Carolina, we are devoting this issue of the *North Carolina Medical Journal* to the health and health care of our active duty and retired military forces. We hope that by shining a spotlight on the health effects of war we will help North Carolinians better serve our military personnel and veterans, encourage the private sector and military medicine to share best practices, and stimulate policy makers to proactively plan for the effects of war on our communities and health care system.

“...by shining a spotlight on the health effects of war we will help North Carolinians better serve our military personnel and veterans, encourage the private sector and military medicine to share best practices, and stimulate policy makers to proactively plan for the effects of war on our communities and health care system.”

Who Are Our Military Personnel and Veterans?

America's fighting forces number 1.4 million men and women from all across the nation with the largest proportion, over 40%, coming from the southern United States. Of these,

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106 838 are based in North Carolina, the fourth largest concentration of active duty members in the continental US (Department of Defense Public Affairs Office, oral communication, November 2007). During the Vietnam War, the average soldier in a combat unit was 19 or 20 years old, male, and unmarried. Less than 0.5% of the 2 594 000 who served in Vietnam were women; most of these were nurses.³ Since the advent of the all-volunteer military in 1973, its composition has changed substantially. Today, our active duty military are older (median age 39.5 years), more educated, more female (14.6%), more likely to be married (50%), and more ethnically diverse (35% minorities). Both the wealthy and the most socioeconomically disadvantaged members of society are underrepresented.⁴

When active duty military exit the service they become veterans. For some, the word veteran evokes unfortunate images of “down and out” individuals, images that are reinforced by movies such as *Born on the Fourth of July*. Data from the US Census Bureau paint a sharply different picture.⁵ Just over 10% (23 425 051) of American adults and 11.4% of North Carolina adult civilians are veterans of the armed services. Approximately one-third are Vietnam veterans; the next largest group (18.7%) are veterans of the Gulf War. Veterans are disproportionately male (93%) and younger than the civilian population. Compared to the entire American adult population, veterans are more likely to be White (84.7% vs 75.0%), have some college education (58.3% vs 53.8%), and live above the poverty level (94.1% vs 88.3%) despite having higher rates of disability (26.8% vs 17.3%). Among individuals age 18 to 64 years, employment rates are almost identical to the civilian population. Given the changing demographics of our active duty forces, we can expect the future composition of our veteran population to be more ethnically diverse and more female.

These changing demographics have important implications for our communities. In past wars, we agonized as our sons marched off to war. Now it is increasingly likely that our spouses and daughters will be marching beside them. Consequently, the disruptive effects of war may be magnified for families and communities. From a public health perspective, we need to consider how best to meet the needs of families who keep the home fires burning and be prepared to care for wounded warriors and facilitate reintegration into civilian life. In this issue of the *Journal*, Denisse Ambler describes the effect of war on military families, and Steven Moore describes the Citizen Soldier Project, a federally-funded program to build bridges between community resources and families in North Carolina.

The Price of War: Effects on Health

As of late 2007, over 28 000 service members had been wounded in Iraq.⁶ Most were treated and returned to duty within 72 hours, but over 3000 had serious injuries requiring intensive, long-term care including severe traumatic brain injuries, amputations, burns, blindness, or polytrauma. Traumatic brain injury (TBI), a signature injury because of its higher incidence in this war is estimated to affect about 50% of

soldiers injured in combat; most TBI is classified as mild. Traumatic brain injury may cause headaches, sleep disturbances, and sensitivity to light and noise. Adverse effects on cognition include disturbances in attention, memory, or language as well as delayed reaction time during problem solving. Depressed mood, anxiety, impulsiveness, and emotional outbursts are particularly troubling symptoms and may overlap with the symptoms of posttraumatic stress disorder (PTSD).⁷ The long-term consequences of mild to moderate TBI are not fully known but current estimates are that one-third of TBI affected individuals will develop chronic symptoms. Compared to other major medical problems, we know relatively little about effective care for these individuals. George Jackson, Natia Hamilton, and Larry Tupler describe TBI in greater detail in this issue of the *Journal* and give recommendations for a brief screen and regional treatment resources. Kenneth Goldberg describes the epidemiology of health problems in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans seeking care at the Veterans Health Administration (VHA).

Mental illnesses, the so-called “hidden injuries,” are much more prevalent than major physical injuries, but like physical injuries, they are associated with combat exposure.^{8,9} In a study of 88 235 Army soldiers and Marines returning from Iraq, clinicians identified 20.3% of active and 42.4% of reserve component soldiers as requiring mental health treatment.¹⁰ Our citizen soldiers are reporting extraordinarily high rates of psychic trauma. Importantly, longitudinal studies are showing high rates of emergent PTSD symptoms that are manifest 3 or more months after return and perhaps after returning to civilian life.^{10,11} In addition, the proportion of soldiers reporting interpersonal conflict (14% active and 21% reserve components) increased from time of return to follow-up assessment. Despite the high levels of morbidity, relatively few soldiers seek mental health treatment, and there is a substantial time gap between when a returning soldier perceives the need for mental health services and the time the soldier receives them. In particular, soldiers report an unmet need for greater therapy/counseling, skills training, and information about mental health problems.^{8,12} In this issue, Captain Michael Latzka describes an innovative Army program to bolster mental health services at 15 bases for active duty military seen in primary care settings.

The high rates of psychiatric symptoms in active duty military are supported by early data on OEF/OIF veterans who seek care in the VHA health care system. Through September 2005, 25% of the 103 788 OEF/OIF veterans seen at VHA received a mental health diagnosis.¹³ Most initial diagnoses (60%) were made in nonmental health settings. Posttraumatic stress disorder was the single most common mental health diagnosis, but over one-half of patients had more than one mental health diagnosis. Neither the military nor VHA were fully prepared to cope with these extraordinary rates of mental illness. In response to the epidemiological data, VHA is attempting to expand its capacity and resources in mental health services. In this issue, Harold Kudler and Kristy Straits-Tröster present a practical clinical summary on the recognition and management of PTSD.

Edward Post and William Van Stone describe a VHA program to expand and better integrate mental health and primary care services. Both VHA and Army efforts to bolster mental health services are based on over a decade of rigorous research showing that care management models improve outcomes for patients with depression, an approach that is also showing promise for other mental health conditions.¹⁴ These data have important implications for the state of North Carolina. Since the minority of veterans access the VHA health system, most veterans will be cared for in the private medical system. Few practices routinely screen for depression, PTSD, or TBI, and current reimbursement policies do not support evidence-based care management programs. Our public mental health services are already stretched thin and are unlikely to readily absorb the influx of new patients. Unmet mental health needs would likely have important negative impacts on our citizen soldiers, their families, and their employers.^{15,16} North Carolina needs to carefully plan for increased mental health needs and monitor the accessibility and quality of services delivered.

Where Do Active Duty Military, Their Dependents, and Veterans Get Health Care?

“It is almost cliché now to find examples of a wounded Marine having initially been treated by a Navy Corpsman find himself medevac’ed by an Army helicopter to undergo emergency surgery at an Air Force Theater Hospital.”² In the Vietnam era, 5 out of every 8 seriously injured service members survived; today, 7 out of 8 survive, many with injuries that in previous wars would have been fatal. In addition to better protective equipment, important operational and medical advances are saving lives and may have applications to civilian medicine. Past wartime medical advances included the rapid expansion in the use of penicillin in World War II and using emergency evacuation by helicopter in Korea and Vietnam. This latter advance was adopted by civilian trauma care with great success. In the current war, Forward Surgical Teams establish a functional hospital and operating team within 60 minutes of the combat zone.¹⁷ For penetrating injuries, these teams have adopted a new approach of “damage control”—just enough surgery to stabilize the patient and then transfer to a higher level of care. In Vietnam, the average time from battlefield to arrival in the United States was 45 days; it is now less than 4 days. This change in management has improved survival rates, and some of the specific surgical approaches are being adopted in US trauma units. The crucible of war often stimulates medical advances that are applicable to civilian medical care.

As with much US medical care, health services for active duty, retired military, and veterans are provided by a complex web of services. The major health care options for nondeployed military and their dependents are the 68 military treatment facilities, the 154 military outpatient clinics, and TRICARE. TRICARE is the civilian care component of the Military Health System. TRICARE is a regionally managed health care program for active duty, activated Guard and Reserves, and retired members of the uniformed services, families, and survivors. In

North Carolina, Womack Army Medical Center and its affiliated primary care clinics serve the greatest numbers of military service members.

The Veterans Administration (VA) was established in 1930 to consolidate and coordinate government activities affecting war veterans. In 1988 President Reagan signed legislation creating a new federal Cabinet-level Department of Veterans Affairs to replace the Veterans Administration. The Veterans Health Administration (VHA) is the component that implements medical programs and draws its mission from Abraham Lincoln’s eloquent Second Inaugural Address. It is a single-payer, government-run health care system operating 153 medical centers, over 200 Vet Centers, and 875 outpatient clinics.² Over 4 million veterans are enrolled in VHA and compared to age-matched Americans, these veterans are more medically complex and poorer. North Carolina has 4 VHA Medical Centers, 2 large outpatient clinics, 6 community-based outpatient clinics, and 5 Vet Centers. Sara Haigh describes the VHA system and resources more fully in her commentary.

For multiple years running, veterans have been more satisfied with their VHA health care than patients in the private sector. Despite caring for medically complex patients, VHA has won accolades for quality of care that meets or exceeds that seen in the private sector.¹⁸ In a Rand Corporation study, VHA matched or exceeded private sector quality scores in virtually every category studied, despite spending substantially less per patient than the national average.¹⁹ For example, the VHA’s prescription accuracy rate is greater than 99.997% compared to 92% to 97% in the private sector. Prescription accuracy has been improved by the intelligent use of technology—barcoding every medication dispensed. Among chronic care patients, VHA patients received about 70% of recommended care compared with about 60% in the private sector. Preventive care is even better with VHA patients receiving about 65% of recommended care compared to 20% in the private sector. The greatest difference between VHA and the national sample were in areas where VHA actively measured performance. While other reasons for the outperformance are not completely known, a sophisticated electronic medical record system, strong leadership with decentralized decision making, and investments in systematic quality improvement and applied research are clearly a large part of the quality gains. As America enters an election year with health care near the top of the voters agenda, VHA successes deserve closer examination for possible applications to the private sector. Eugene Oddone and Seth Eisen describe the national VHA medical research effort and examples of local impact.

Conclusion

The nature of war and the composition of our fighting forces have changed in important ways over the past 100 years. Soldiers are surviving more severe injuries that require longer term rehabilitation. Many of these soldiers will want to complete rehabilitation close to home, and there may be an opportunity for North Carolina treatment facilities to support this need.

Greater capacity for rehabilitation services is consistent with the general need to expand longitudinal care services in the US medical system. The rates of mental illness are higher than reported in previous wars—possibly due to the nature of combat but also likely related to better detection in military and VHA health facilities. Fledgling efforts to improve detection of mental illness and integration of mental health and primary care services in North Carolina need to be supported.²⁰ This is likely to require changes in reimbursement policies to support care management activities. Finally, it's clear that the military and

VHA investment in applied research is yielding actionable data that allows for improved health services. North Carolina has made large private and public investments in medical research. We should ensure that a significant proportion has a high return on investment through better planning of workforce, services, and quality improvement. Through carefully crafted policies, education of our clinical workforce, and intelligent research investments, North Carolina can excel in meeting its obligation to support the health needs of its citizen soldiers. **NCMJ**

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The Veterans Affairs Health Care System in North Carolina

Sara Haigh

The mission of the Veterans Health Administration, one of 3 divisions of the United States Department of Veterans Affairs, is to “honor America’s veterans by delivering exceptional health care that improves their health and well-being.” In North Carolina, that mission is carried out through an integrated network of hospitals and community-based clinics that are designed to maximize coordination and communication between sites of care. This article presents an overview of the Department of Veterans Affairs, followed by a description of services available at VA facilities in North Carolina; a brief explanation of eligibility, enrollment, and benefits; and a description of VA’s integrated health care system. Special emphasis is placed on services available to veterans now returning to North Carolina from participation in Operations Enduring Freedom and Iraqi Freedom.

Department of Veterans Affairs

The Department of Veterans Affairs benefits system traces its roots back to 1636 when the Pilgrims of Plymouth Colony were at war with the Pequot Indians. The Pilgrims passed a law which stated that disabled soldiers would be supported by the colony. Since that time the system has evolved to include disability compensation, insurance, vocational rehabilitation, and education benefits. The establishment of the Veterans Administration came in 1930 when Congress authorized the President to “consolidate and coordinate Government activities affecting war veterans.” World War II

resulted in not only a vast increase in the veteran population but also in a large number of new benefits enacted by the Congress for veterans of the war. The World War II GI Bill, signed into law on June 22, 1944, is said to have had more impact on the American way of life than any law since the Homestead Act more than a century ago. Further educational assistance acts were passed for the benefit of veterans of the Korean Conflict, the Vietnam Era, Persian Gulf War, and the

“In North Carolina, VA has launched special efforts to provide a ‘seamless transition’ for those returning from service in Operations Enduring Freedom and Iraqi Freedom (OEF/OIF). Each VA medical facility has a point of contact to coordinate activities locally to help meet the needs of these returning combat service members and veterans.”

All-Volunteer Force. The Department of Veterans Affairs (VA) was established as a Cabinet-level position on March 15, 1989.¹

The Department of Veterans Affairs is the second largest of 15 Cabinet departments and operates nationwide programs for

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health care, financial assistance, and burial benefits. The Veterans Health Administration, Veterans Benefits Administration, and National Cemetery Administration are the 3 main branches of the department, with the Veterans Health Administration (VHA) handling health care services.

Veterans Health Administration Services

In North Carolina, a system of hospitals, community-based outpatient clinics, and Vet Centers deliver the majority of health services to veterans.

Veterans Affairs Medical Centers

The Charles George VA Medical Center (VAMC)³ in Asheville consists of a 116-bed acute care hospital and a separate 120-bed extended care and rehabilitation center serving western North Carolina as well as portions of South Carolina, Georgia, and Tennessee. The Charles George VAMC is a tertiary care facility providing primary, tertiary, and long-term care in the areas of medicine, surgery, psychiatry, physical medicine and rehabilitation, neurology, oncology, dentistry, geriatrics, and extended care. The Asheville facility also operates a home-based primary care program and a substance abuse rehabilitation treatment program.⁴

The Durham VA Medical Center is a 154-bed tertiary referral hospital with a separate 120-bed extended care and rehabilitation center. The facility serves as a major referral center for North Carolina, southern Virginia, northern South Carolina, and eastern Tennessee for subspecialty treatment, radiation therapy, neurological disorders, therapeutic endoscopy, high-risk open-heart surgery, and other special procedures. Special programs at Durham include the comprehensive Women's Health Center, a home-based primary care program, the Geriatric Research, Education, and Clinical Center (GRECC), the VISN 6 Mental Illness, Research, Education, and Clinical Center (MIRECC), the Center for Health Services Research in Primary Care, and the Epidemiology Research and Information Center (ERIC).⁵

The Fayetteville VA Medical Center is a general medicine and surgery and mental health facility with 90 beds. It also maintains a 69-bed long-term care unit. The medical center serves veterans in 19 counties in southeastern North Carolina and 2 counties in northeastern South Carolina. Comprehensive health care is provided through primary and long-term care in areas of medicine, surgery, psychiatry, posttraumatic stress disorder, ophthalmology, podiatry, physical medicine and rehabilitation, neurology, dentistry, geriatrics, and extended care. Tertiary care is referred to Durham VA Medical Center.⁶

The W G (Bill) Hefner VA Medical Center in Salisbury provides primary and secondary inpatient health care to more than 287 000 veterans living in a 23-county area of the central Piedmont region of North Carolina. This includes the Charlotte area with over 100 000 veterans and the Winston-Salem area with 65 000 veterans. Inpatient services include acute medicine, cardiology, surgery, psychiatry, and physical medicine and rehabilitation, as well as subacute and extended care.⁷

Veterans Affairs Community-Based Outpatient Clinics

Community-based outpatient clinics are located in Charlotte, Winston-Salem, Jacksonville, Wilmington, Raleigh, Greenville, and Morehead City. Additional community-based outpatient clinics are scheduled to open in Hamlet, Hickory, and Franklin by late 2008. Community-based outpatient clinics provide primary care, mental health, and selected specialty services and were established to improve geographic access for veterans. Patients receive prescriptions via a mailout pharmacy. If they need specialty care or testing, such as a CT scan or cardiology consultation, they are referred to a main VA hospital. In some cases, patients are referred to private providers on a fee-for-service basis when VA services are not available or the patient is not able to travel to a facility that provides the needed service.

Veterans Affairs Vet Centers

Vet Centers in Charlotte, Greensboro, Raleigh, Fayetteville, and Greenville are part of VA's Readjustment Counseling Service. Vet Centers provide psychological counseling for war-related trauma, community outreach, case management, and referral activities plus supportive social services to veterans and family members. Vet Centers are open to any veteran who served in the military in a combat theater during wartime or anywhere during a period of armed hostilities. Vet Centers also provide trauma counseling to veterans who were sexually assaulted or harassed while on active duty and bereavement counseling to the families of service members who die on active duty.²

The 4 North Carolina VA Medical Centers and 7 community-based outpatient clinics are components of the VA Mid-Atlantic Health Care Network (VISN 6), headquartered in Durham. VISN 6 includes an additional 3 VA Medical Centers in Virginia and 1 in West Virginia and 5 outpatient clinics. In fiscal year 2007, some 307 959 veterans received care throughout the network service area.

Eligibility, Enrollment, and Benefits

Eligibility for most veterans' health care benefits is based solely on active military service in the Army, Navy, Air Force, Marines, or Coast Guard (or Merchant Marines during WW II), with a discharge under other than dishonorable conditions. Reservists and National Guard members who were called to active duty by a Federal Executive Order may qualify for VA health care benefits as well. Returning service members (including Reservists and National Guard members) who served on active duty in a theater of combat operations have special eligibility for hospital care, medical services, and nursing home care for 2 years following discharge from active duty.

The Department of Veterans Affairs maintains an annual enrollment system to manage the provision of quality hospital and outpatient medical care and treatment to all enrolled veterans. A priority system ensures that veterans with service-connected disabilities and those below the low-income threshold are able to be enrolled in VA's health care system. Some veterans are

exempted from having to enroll. This includes veterans with a service-connected disability of 50% or more, veterans discharged from the military within one year but not yet rated for a VA disability benefit, and veterans seeking care for only a service-connected disability. Veterans with service-connected disabilities receive priority access to care for hospitalization and outpatient care.

The Department of Veteran Affairs' enrollment allows health care benefits to become portable throughout the entire VA system. Enrolled veterans who are traveling or who spend time away from their primary treatment facility may obtain care at any VA health care facility across the country without the worry of having to reapply.

The Department of Veterans Affairs provides a medical benefits package to enrolled veterans which includes the following types of services:

- Hospital, outpatient medical, dental, pharmacy, and prosthetic services
- Domiciliary, nursing home, and community-based residential care
- Sexual trauma counseling
- Specialized health care for women veterans
- Health and rehabilitation programs for homeless veterans
- Readjustment counseling
- Alcohol and drug dependency treatment
- Medical evaluation for disorders associated with military service in the Gulf War or for exposure to Agent Orange, radiation, and other environmental hazards²

Integrated Health Care System

A great strength of the VA health care system is the integrated nature of the clinical care network. All sites use a computerized patient record system to document all aspects of care including office visits, provider orders, diagnostic tests, specialty consultations, prescriptions, procedures, and hospitalizations. Paper documents from non-VA providers are scanned into the electronic record as needed. The system allows a physician in Durham to look up past treatment, medication, and testing information on a patient from Fayetteville with a few clicks of the computer mouse. Since all information is typed, legibility is not an issue. The prescription ordering interface includes a variety of patient safety features such as checks for drug allergies, drug-drug interactions, or inappropriate dosing. For inpatient care, a bar code medication administration system is used to match the computerized drug order, the medication, and the patient to ensure the patient receives the right drug at the right dose at the right time. A special system of clinical reminders is used to facilitate compliance with clinical practice guidelines. For example, the computer will flag a patient who is due for an annual mammogram or depression screening. It alerts providers to patients with out-of-range lab values or abnormal radiology results by sending an electronic notification.

Another way that VA ensures health care delivery is consistent across all sites of care is through an extensive performance

management system. Clinical performance measures are used to assess key aspects of the care process such as diabetes control, management of hypertension or hyperlipidemia, screening for posttraumatic stress disorder or depression, and cancer prevention. Other measures assess the process of care delivery by looking at waiting times for appointments, patient satisfaction, and utilization of hospital beds. Data is collected at all VA sites of care and compared to VA and private sector benchmarks. The performance measure system is woven into performance plans and appraisal systems for VA managers and care providers with physician pay being linked to performance.

Post Conflict Care: The Department of Veterans Affairs Newest Wounded Warriors

In North Carolina, VA has launched special efforts to provide a "seamless transition" for those returning from service in Operations Enduring Freedom and Iraqi Freedom (OEF/OIF). Each VA medical facility has a point of contact to coordinate activities locally to help meet the needs of these returning combat service members and veterans. Special interdisciplinary care teams work with National Guard Units to provide onsite information about VA health care benefits to troops returning from deployment. They also perform health care screenings and enrollment to those wishing to access VA health care. In addition, VA has increased the staffing of benefits counselors at key military hospitals where severely wounded service members from Iraq and Afghanistan are frequently sent. Once home, recent Iraq and Afghan veterans have ready access to VA health care which is free of charge for 2 years following separation for any health problem possibly related to wartime service. According to the VA Mid-Atlantic Health Care Network Data Warehouse, over 14 300 active duty service members and veterans of the Global War on Terror have sought VA health care in North Carolina since September 11, 2001. Special polytrauma care units have been established at VA medical centers, and screenings for the possible presence of traumatic brain injury is provided to every OEF/OIF enrollee. President Bush's Commission on Wounded Warriors and the President's Task Force on Returning War on Terror Heroes have recently generated additional recommendations on how VA can provide speedier, fairer, and more efficient care to returning veterans of the Global War on Terror.⁸

Focus on the Future

This is a time of challenge for VA health care. It must meet the needs of its newest veterans by providing individualized case management services while also maintaining the historic commitment to providing the highest quality care to veterans of all eras. The ability to respond quickly to new needs is sometimes affected by the Congressional budget and capital project approval and funding processes which may create a lag between when new demands for care arise and when the facilities and resources are in place to meet those needs. The Department of Veterans Affairs has successfully responded to past challenges through the dedication of its staff and an ongoing commitment

to its special mission. As the other articles in this issue show, the full attention of VA's clinical and research community is focused on meeting the health care needs of veterans by fulfilling

the charge made by President Abraham Lincoln in his 1862 inaugural address: "To care for him who shall have borne the battle, and for his widow, and his orphan." **NCMJ**

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The Epidemiology of Health Problems in Returning Operation Iraqi Freedom and Operation Enduring Freedom Veterans

A National and North Carolina-Based Summary

Kenneth C. Goldberg, MD

As large numbers of veterans return from military service in Operation Iraqi Freedom and Operation Enduring Freedom (OIF/OEF), policy leaders will need to anticipate their health concerns and align resources to serve those needs. This population of recent veterans is younger, much more likely to be female, and has a unique set of medical and mental health needs that vary significantly from those of the majority of the veterans who obtain health care from the Veterans Health Administration (VHA). Although the care provided to these newest veterans is a small portion of the total care provided to veterans enrolled in VHA facilities, these veterans represent a rapidly growing proportion of the veterans being served.

As this is a diverse and mobile population, it is difficult to obtain definitive information about its health care needs. The following information is synthesized from multiple national, regional, and local data sources. Most data are provided by sources within VHA. This is the single most reliable and available source of information, and returning veterans are actively encouraged to seek assistance for health care needs at VHA facilities.

National Data

As a working definition, we consider service members discharged from the Armed Forces beginning in fiscal year 2002 as returning OIF/OEF veterans. This does not include veterans who served in the first Gulf War, but it may include veterans who served recently and did not see combat. As with any group this large, it is problematic to make generalizations about their experience or health care needs.

With those caveats, there are approximately 4.4 million

veterans of the OIF/OEF conflicts, of whom 720 000 have become eligible to receive health care within VHA since the beginning of fiscal year 2002 after completing their military service.¹ Of these, 47% are former active duty troops, and the remainder served in the Reserve forces and with National Guard units. To date, approximately 252 000 (35%) eligible

“the 3 most common health problems reported [by veterans of the wars in Afghanistan and Iraq] are musculoskeletal ailments (principally joint and back disorders), mental health disorders, and ‘symptoms, signs, and ill-defined conditions.’”

OIF/OEF veterans have sought care through the VHA system. This is a significantly higher percentage than the estimated 20% of the entire veteran population that receives health care through VHA. To place this number in perspective, however, the VHA system currently provides care to a total of approximately 5.5 million veterans. Therefore, although 35% of eligible OIF/OEF veterans have sought care, these newest veterans represent only 5% of the total number of veterans served by VHA.²

Of the care the OIF/OEF veterans have received through

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the VA Medical Centers (VAMC), 94% of the visits have been to outpatient clinics, and 4% of the encounters have occurred in an inpatient setting. When analyzed and grouped by diagnosis codes, the 3 most common health problems reported are musculoskeletal ailments (principally joint and back disorders), mental health disorders, and “symptoms, signs, and ill-defined conditions.”²

Approximately 350 000 (48%) OIF/OEF veterans have been seen at least once at a Vet Center. These centers, of which there are currently 207 throughout the country, focus on issues specific to combat veterans and their families. They are based outside of major medical facilities and deliver counseling and outreach services.¹

Almost 95 000 (38%) OIF/OEF veterans have received care for mental health-related problems through the VHA system. Table 1 lists the coded diagnoses assigned to those visits by

category of mental health problem. Posttraumatic stress, substance abuse (which includes tobacco abuse), and depression are the most frequently coded diagnoses.²

North Carolina Data

There are 4 Veterans Affairs Medical Centers in North Carolina. They are arranged into a larger organizational unit, The VA Mid-Atlantic Health Care Network, which also operates medical centers in Virginia and West Virginia. Together they provide comprehensive, integrated primary, specialty, and inpatient care. The location of these facilities in North Carolina is shown in Figure 1.

Of the 147 000 enrolled North Carolina veterans, approximately 12 000 (8%) are considered OIF/OEF veterans.

This is a slightly higher percentage than that seen in the national veteran population, reflecting the large number of military bases in North Carolina. Table 2 describes the demographic characteristics of this group. Compared to the overall population of veterans served by the VA system, this group is younger and contains more women. Considering this is a group of recently discharged veterans, there is a surprising percentage of older veterans. More than one-third of this group deployed to a combat theater more than once. (M. Gentry, oral communication, November 2007.)

Table 2 also lists the service-connected ratings of current OIF/OEF veterans. A service-connected rating is essentially a disability score awarded by the Veterans Benefits Administration (which is separate from the Veterans Health Administration) for injuries or conditions either caused by or diagnosed during military service. Higher

Table 1.
Coded Mental-Health Diagnoses Attributed to 94 921 OIF/OEF Veterans Who Have Received Health Care Services at Veterans Affairs Medical Centers Nationwide.²

Psychiatric Diagnosis (ICD-9CM code)	Percent (%) of Total
PTSD (309.81)	26
Nondependent abuse of drugs (305)	21
Depressive disorders (311)	17
Neurotic disorders (300)	14
Affective psychoses (296)	9
Alcohol dependence syndrome (303)	4
Sexual deviations and disorders (302)	2
Special symptoms, not elsewhere classified (307)	2
Drug dependence (304)	2
Acute reaction to stress (308)	2

Figure 1.
Locations of the Major Veterans Affairs Medical Centers in North Carolina as Well as Their Affiliated Satellite Facilities³

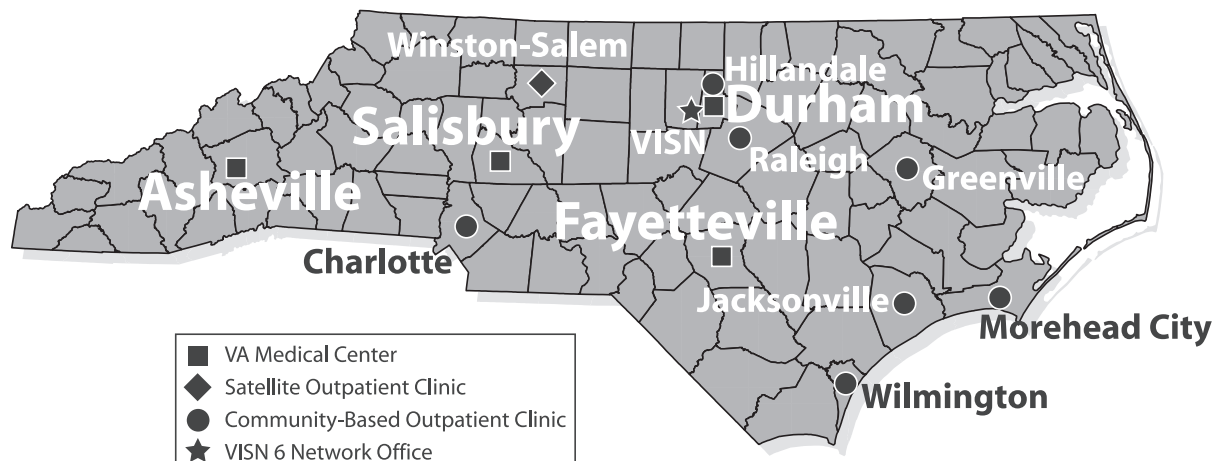


Table 2.
Demographic Breakdown of OIF/OEF Veterans Registered to Receive Care at North Carolina-Based Veterans Affairs Medical Centers

Variable	Category	Percent (%)
Service	Air Force	14
	Army	61
	Coast Guard	0.05
	Marine Corps	21
	Navy	4
Multiple deployments	Yes	37
	No	63
Marital status	Divorced	4
	Married	48
	Never married	46
Age (years)	<25	15
	25-29	32
	30-34	15
	35-39	11
	40-44	14
	>=45	14
Sex	Male	88
	Female	12
Race	Black	23
	White	68
	Hispanic	4
	Other	2
	Unknown	3
Service-connected status	None	64
	0%	25
	1%-49%	8
	>=50%	3

Source: M. Gentry, oral communication, November 2007.

ratings reflect greater disability, and ratings greater than 50% are designed to reflect severely disabling conditions. Compared to the general population of veterans followed by VHA, the OIF/OEF veterans are significantly less likely to have been assigned a service-connected disability. Veterans need to apply specifically to receive this rating, and many do not initially apply upon leaving the service. Once a veteran applies, the application process itself can take months or sometimes years to complete, and the percentage of veterans with a service-connected injury is expected to rise over time. The proportionally smaller number of OIF/OEF veterans with service-connected disabilities may also reflect the change from a prior

policy of not allowing some veterans without service connection to enroll in the VA system and thereby selecting for veterans with service-connected disabilities. This service connection restriction does not apply to OIF/OEF veterans.

One particular disability that is associated with OIF/OEF service is traumatic brain injury. Limitations primarily in medical knowledge about the spectrum of this condition make the collection of data difficult. However, the VA has an aggressive system that attempts to identify veterans who may have suffered traumatic brain injuries. At the Durham VAMC, between April and September 2007, almost 3000 veterans were screened for traumatic brain injury (80% of them OIF/OEF veterans). (B. Capehart, oral communication, October 2007.)

Another high-profile injury from the recent conflict is "polytrauma," or severely injured veterans. These veterans have suffered significant injury that has affected multiple organ systems, often resulting in amputation and cognitive deficits. At this time the North Carolina VAMCs are currently managing fewer than 100 of these veterans (M. Gentry, oral communication, November 2007).

Table 3 summarizes care that OIF/OEF veterans have received through the North Carolina VAMCs in fiscal year 2007. The care provided to these veterans during that year is almost equal to the cumulative number of visits provided in fiscal years 2002 through 2006, showing that as more and more veterans of the recent conflict become eligible for VHA care, their use of the system is growing exponentially. Table 4 lists the most common types of outpatient visits from fiscal year 2007. Compared to veterans from other periods, OIF/OEF veterans are far more likely to be seen in a mental health clinic. Table 5 lists the primary treating specialties of the inpatient care received during the same period. Inpatient stays for

Table 3.
Geographic Breakdown of OIF/OEF Veterans Who Received Care at North Carolina-Based Veterans Affairs Medical Centers in Fiscal Year 2007

Visit Type	Facility	Visits by OIF/OEF Veterans	Percent (%) of Total
Inpatient	Durham	94	1.94
	Fayetteville	69	3.88
	Salisbury	86	3.69
	Asheville	51	1.54
	Total	300	2.45
Outpatient	Durham	1351	1.90
	Fayetteville	1861	2.89
	Salisbury	1652	1.81
	Asheville	405	0.90
	Total	5269	1.86

Source: M. Gentry, oral communication, November 2007.

Table 4.
Outpatient Visit Types by OIF/OEF Veterans,
Fiscal Year 2007, All North Carolina Facilities

Clinic	Visits	Percent (%) of All Visits by OIF/OEF Veterans
Primary care	5589	11.0
Mental health	5062	10.0
Emergency department	1023	2.0
Physical therapy	783	1.5
Dental	624	1.2

Source: M. Gentry, oral communication, November 2007.

Table 5.
Inpatient Admission Types by OIF/OEF
Veterans, Fiscal Year 2007, All North
Carolina Facilities

Ward Type	Visits	Percent (%) of Inpatient Stays
Surgery	50	17
Medicine	71	24
Psychiatry	175	58

Source: M. Gentry, oral communication, November 2007.

recent veterans are far more likely to occur on a psychiatric ward, and somewhat more likely to occur on a surgical ward, than they are for veterans from other periods whose hospitalizations are more likely to occur on a medicine service.

Limitations

The preceding data are the best available to provide a synthesis of the objective health needs of North Carolina OIF/OEF veterans. Unfortunately, the majority (65%) of OIF/OEF veterans have not sought care through the VHA system. It is very possible that veterans who seek VHA care differ from those veterans who do not. At this time there is no systematic and accessible system that tracks the health needs of veterans not served by VHA, so analysis of VHA data remains the best and currently only method to estimate the health needs of the entire group.

It is also likely that the needs of OIF/OEF veterans will change over time. It has already been documented that screening tools used to identify posttraumatic stress among recently returning veterans likely underestimate the prevalence of this disease, and identified cases will increase over time.⁴

Furthermore, much of the data presented here derive from specialized queries performed explicitly for this manuscript and may not be completely reproducible. **NCMJ**

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Veterans Affairs Research and Development: Using Science to Improve Health Care for Veterans

Eugene Z. Oddone, MD, MHSc; Seth Eisen, MD, MSc

The Veterans Affairs Office of Research & Development (ORD) is a congressionally mandated research program established in 1947 whose mission is to study all aspects of health and disease relevant to our nation's veterans. The Office of Research & Development consists of 4 research services including the Biomedical Laboratory, Clinical Science, Rehabilitation, and Health Services. The Biomedical Laboratory Research & Development Service conducts research that explores basic biological or physiological principles in humans or animals. The Clinical Science Research & Development Service (Clinical Science) conducts research that focuses on human subjects including interventional, clinical, epidemiological, and technological studies. Clinical Science houses the VA Cooperative Studies Program which has conducted landmark studies over the last 50 years that have established the effectiveness of new treatments for tuberculosis, hypertension, and coronary artery disease to name only a few. The Rehabilitation Research & Development Service conducts research exploring areas where technology can enhance or sustain veterans' independence. Lastly, the Health Services Research & Development Service pursues research at the interface of health care systems, patients, and health care outcomes. Its researchers examine all aspects of VA health care including access to care, adherence to quality of care standards, methods of improving quality of care and patient outcomes, the impact of health system organization on care, and cost of care. The Veterans Affairs Office of Research & Development is the only national research entity that is tied directly to a fully integrated health care system—the Veterans Health Administration. In fiscal year 2007 Congress appropriated \$480 million in direct funding for ORD. VA Research is an intramural program that funds only eligible VA employees through a rigorous merit review process.

The majority of funded VA researchers are also VA clinicians, and their research is conducted within VA. Veterans Affairs researchers are also very successful in obtaining non-VA, other federal, and foundation funds through competitive extramural grant programs. Veterans Affairs researchers also are faculty members at affiliated academic institutions.

VA's primary research mission is to investigate health issues that are of primary relevance to veterans. However, because the diseases and conditions studied in VA are also prevalent in the general population, VA research is widely relevant to civilian health. As such, Congress requires a continuing review of

“The Veterans Affairs Office of Research & Development is the only national research entity that is tied directly to a fully integrated health care system—the Veterans Health Administration.”

relevance and applicability. The VA research mission has gained importance given the burden of disease and injury in veterans. Research on chronic medical illnesses has dominated the research program for the last two decades reflecting the prevalence and burden of cardiovascular, neurological, and pulmonary diseases as well as cancer in the aging veteran population. With the more recent conflicts in Afghanistan and Iraq, VA has seen an

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influx of younger patients with both physical and mental trauma as well as other complex and chronic conditions. There has been a surge of interest in research designed to diagnose and treat these conditions. Congressional 2007 appropriations included \$32.5 million for research in areas of importance to these veterans including traumatic brain injury, sensory loss, spinal cord injury, and posttraumatic stress disorder.

Quality Enhancement Research Initiative

One unique feature of VA research is its close association with the health system. While most academic research programs are conducted by university-based independent investigators, VA researchers are tied more directly to the health care system and the patients they serve. As an example, in 1998 the VA Health Sciences R&D program launched the VA Quality Enhancement Research Initiative (QUERI).^{1,2} The QUERI mission is to enhance the quality and outcomes of VA health care by systematically implementing clinical research findings and evidence-based recommendations into routine clinical practice. In evaluating quality of care, the QUERI process focuses on 3 elements: structure (provider and organizational characteristics), process (practitioners' clinical actions toward patients), and outcome (health status, economic impact, satisfaction). The Quality Enhancement Research Initiative is founded on the principle that practice needs determine the research agenda, and research results determine interventions that improve the quality of patient care. It is a comprehensive, data-driven, outcomes-based quality improvement program that utilizes a 6-step process to facilitate the implementation of research findings and evidence-based clinical practices to achieve better health care outcomes for veterans. Steps in the QUERI process are:

1. Identify high-risk/high-volume diseases or problems.
2. Identify best practices.
3. Define existing practice patterns and outcomes across VA and current variation from best practices.
4. Identify and implement interventions to promote best practices.
5. Document that best practices improve outcomes.
6. Document that outcomes are associated with improved health-related quality of life.

The Quality Enhancement Research Initiative focuses on 9 diseases and conditions that are prevalent among veterans. These include chronic heart failure, diabetes, HIV/hepatitis, ischemic heart disease, mental health problems, polytrauma and blast related injuries, spinal cord injury, stroke, and substance abuse. Functionally, there is a research coordinator and a clinical coordinator as well as a cadre of experts for each of the 9 QUERI areas. These 9 focused groups of experts develop strategic plans and form collaborations with VA central, regional, and health center-based facilities across the country to develop and conduct projects to improve quality of care to veterans.

Operation Iraqi Freedom/Operation Enduring Freedom

VA Research & Development has made working to address the health care needs of our military returning from conflicts in Iraq and Afghanistan a top research priority. VA investigators are working on developing new knowledge, effective tools, and innovative ways to evaluate and treat polytrauma, mental health issues such as depression and post traumatic stress disorder, spinal cord injury, traumatic brain injury, amputations and prosthetics, and burns.

Veterans Affairs Research in North Carolina

In North Carolina, the Durham VA Medical Center has one of the oldest and largest research programs in all of VA. From its founding date in 1953, all clinical faculty have been recruited to VA with dual academic appointments at Duke University, and key leadership positions in VA have been staffed by clinician scientists. Thus the clinical expertise of VA was tied closely to the research mission. Throughout its history Durham VA has provided significant basic, clinical, and health services research training opportunities for both PhD trained and clinician scientists in the form of fellowships and postdoctoral programs as well as career development and enhancement programs. The VA medical centers in Asheville and Salisbury, North Carolina maintain smaller research programs.

In 1981 the Health Services Research Program at Durham VA was funded as one of the initial national Field Programs in Health Services. It has grown into one of the largest Centers of Excellence in Health Services Research now focusing on issues relevant to access, quality, and outcomes of primary care for veterans. The Durham Epidemiology Research and Information Center was established in 1990 as 1 of 3 national epidemiology centers in VA. Its areas of expertise are in neuroepidemiology and genomics. There are several examples of clinically relevant research in North Carolina including amyotrophic lateral sclerosis, managing hypertension outside a clinic, and posttraumatic stress disorder.

Amyotrophic Lateral Sclerosis

Amyotrophic lateral sclerosis (ALS) is an adult-onset, fatal neuromuscular disease involving progressive degeneration of upper and lower motor neurons with clinical manifestations including muscular weakness, atrophy, and spasticity with exaggeration of tendon reflexes. Concern about potential environmental exposures in the context of military service in the 1990-1991 Gulf War was an important factor in the formulation of the ALS Gulf War study run by investigators at the Durham Veterans Affairs Medical Center (VAMC).^{3,4} In an effort to stimulate both etiologic and therapeutic research on ALS in veterans, the VA Cooperative Studies Program developed a National Registry of Veterans with ALS.⁵ The objectives of the registry are to identify living US military veterans with ALS, track their health status and disease progression over time, collect data (including DNA) that will be available for multiple epidemiologic studies of ALS, and provide a mechanism for

informing veterans with ALS about clinical trials for which they may be eligible. This VA registry is the largest fully specified cohort of patients with ALS worldwide with over 2400 patients now enrolled, 1200 of whom have provided DNA samples for future research. Because ALS is a relatively rare disease, it is often difficult to identify sufficient numbers of patients for important epidemiologic and genetic studies. It is VA's hope that the resource created in the registry will lead to important discoveries for patients with this lethal disease. To date, over 20 different investigators (both VA and non-VA) have received access to this important resource.

Managing Hypertension Outside the Clinic

Hypertension is the most common reason for primary care clinic visits both at VA and nationally. Because a significant proportion of civilian and veteran patients remain above evidence-based targets for blood pressure control, researchers at Durham VA have designed and tested a multicomponent intervention that promotes patient self-management by establishing practices around adherence to best behaviors and medication management.^{6,8} This multicomponent intervention uses a combination of telehealth blood pressure monitoring devices, scripted text delivered by nurses, and medication changes initiated and monitored centrally by physicians. The main goal of this research was to move the management of hypertension outside the context of a clinic visit and into the patient's home. A series of studies have established the safety of this method of care, and ongoing research is addressing its effectiveness. Elements of this system are being tested in a pilot project in North Carolina's Medicaid population.

Posttraumatic Stress Disorder

Posttraumatic stress disorder (PTSD) is a serious and prevalent problem in veterans. While PTSD has clearly been present in all wars and conflicts, our understanding of the long-term

consequences of this illness did not emerge until after the Vietnam War. VA investigators have led the nation by conducting research designed to better understand the etiology, diagnosis, and treatment of PTSD. A recent study established that as many as one-third of veterans returning from conflicts in Iraq and Afghanistan experience some psychological problems, half of whom are diagnosed with PTSD.⁹ While much of current treatment is focused on patients reexperiencing the traumatic event that precipitated the disorder, researchers at Durham VA are examining the potential benefits of a treatment called "guided imagery." In a novel study that compares the effectiveness of soothing music alone to the effectiveness of tailored audio instructions and soothing music treatment delivered in the veteran's home using a dedicated personal digital assistant (PDA), researchers will discover if guided imagery will allow veterans with this debilitating disorder to achieve symptom resolution and enhanced quality of life. If the intervention proves to be successful, it is likely to be a very cost-effective treatment modality for the growing number of veterans with PTSD.

Summary

VA has a rich tradition in supporting research in areas that span basic science to health system implementation. Its unique success is tied to the fact that researchers are focused on issues that arise from a unique population—our nation's veterans. Moreover, because VA is the largest integrated health system in the country and because the health system must manage an annual budget, there is a keen interest among VA health administrators to apply research that enhances quality and efficiency of care. Furthermore, because these findings overlap with the general population, VA Research & Development programs can be applicable on a much broader scale. **NCMJ**

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MEDICAL JOURNAL

Identifying and Treating Post Deployment Mental Health Problems Among New Combat Veterans

Harold Kudler, MD; Kristy Straits-Tröster, PhD

North Carolina is one of the nation's most military friendly states because it is home to more than 101 000 active-duty military personnel at Fort Bragg, Pope Air Force Base, Camp Lejeune Marine Corps Base, Seymour Johnson Air Force Base, the US Coast Guard Air Station at Elizabeth City, and Marine Corps Air Stations at New River and Cherry Point. In addition, North Carolina has 164 Army and Air National Guard units comprised of nearly 12 000 members as well as another 10 234 Army, Navy, Air Force, Marine, and Coast Guard reservists.¹ North Carolina-based military units have played an important role in the Global War on Terror including multiple deployments to Operation Enduring Freedom (OEF) in Afghanistan and Operation Iraqi Freedom (OIF). Many servicemen and women have families in the state and many choose to make North Carolina their home when they become veterans. The effects of war reverberate across our state and within each of our local communities.

Treating Post Deployment Mental Health Problems in Community Settings

While it might be natural to expect that any post deployment mental health problems of service members and veterans would be identified, assessed, and treated within the Department of Defense (DoD)/Department of Veterans Affairs (VA) medical care continuum, the available data suggest otherwise.

Hoge and colleagues from the Walter Reed Army Institute of Research² found significant reticence to discuss post deployment mental health problems in military settings among service members who had served in OEF/OIF. The National Vietnam Veterans Readjustment Study³ showed that only 20% of

Vietnam veterans with a diagnosis of posttraumatic stress disorder sought VA care. Thus far, only about 1 out of every 3 OEF/OIF veterans eligible for VA care has applied for that care. Taken together, these findings indicate that many OEF/OIF veterans may seek care outside of DoD and VA. Their family members are also subject to significant deployment-related

“The stigma associated with seeing a mental health provider will often drive combat veterans and their family members to seek help in primary care settings, but primary care practices are not always well prepared to identify or treat such problems.”

stress, and they too will be seeking help in the greater community. The stigma associated with seeing a mental health provider will often drive combat veterans and their family members to seek help in primary care settings, but primary care practices are not always well prepared to identify or treat such problems.⁴ This

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article provides essential information on screening for, assessing, treating, and, when necessary, triaging disorders associated with military deployment.

Screening

Posttraumatic stress disorder (PTSD) is characterized by a constellation of symptoms that follow exposure to an extreme traumatic event which involves actual or threatened death or serious injury.⁵ The response to the event must include intense fear, helplessness, or horror and symptoms that persist more than one month including (1) reexperiencing the traumatic event through intrusive recollections, dreams, or nightmares; (2) avoidance of trauma-associated stimuli such as people, situations, or noises; and (3) persistent symptoms of increased arousal which may include sleep disturbance, hypervigilance, irritability, or an exaggerated startle response. A PTSD diagnosis must also be accompanied by clinically significant distress and a decline or impairment in social, occupational, or other important areas of functioning.

A structured clinical interview such as the Clinician Administered PTSD Scale⁶ (CAPS) is an optimal assessment for PTSD and has long been the gold standard for making that diagnosis in clinical studies. However, detecting possible PTSD at the population level or within a large cohort of returning combat veterans is best approached with a brief, optimally sensitive measure which minimizes false negatives while efficiently identifying those in need of further assessment.

Table 1. **The Primary Care Posttraumatic Stress Disorder Screen (PC-PTSD)**

In your life, have you ever had any experience that was so frightening, horrible, or upsetting that, in the past month, you:

1. Have had nightmares about it or thought about it when you did not want to?
YES / NO
2. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?
YES / NO
3. Were constantly on guard, watchful, or easily startled?
YES / NO
4. Felt numb or detached from others, activities, or your surroundings?
YES / NO

Current research suggests that the results of the PC-PTSD should be considered "positive" if a patient answers "yes" to any 3 items.

The 4-item Primary Care PTSD screening tool (PC-PTSD)⁷ has been adopted by both DoD and VA due to its brevity and sensitivity. It was developed specifically for application in primary care settings and has been incorporated into both DoD's Post Deployment Health Assessment (PDHA), performed at the time of return from a combat area, and its Post Deployment Reassessment (PDHRA), performed 3 to 6 months after return. The Primary Care PTSD screening tool has also been incorporated

into VA's computerized medical record system as a pop-up reminder on all OEF/OIF veterans registered for VA health care. This valuable screening tool is in the public domain and can be a useful aid in medical practices outside of DoD and VA.

While a score of 3 positive answers or more is required to trigger further action in VA settings, we advise that any positive response to a Primary Care PTSD question should spur further follow up from health care providers even if only to ask basic questions about personal and family readjustment following deployment. Most service members and veterans will not meet diagnostic criteria for any mental disorder and yet all of them are dealing with significant readjustment stress (as are their families). The object of screening is not simply to rule in or rule out a diagnosis of PTSD: it is to learn more about other common post deployment medical problems (eg, substance abuse, major depression) and to identify significant functional problems including job stress, unemployment, family stress, and homelessness. Combat veterans may report anxiety, sadness, loss of interest in work or recreation, or inordinate fear for the safety of family members and friends. Psychological trauma may surface indirectly as an exacerbation of chronic physical ailments such as shortness of breath in an asthmatic or increased pain in a person with arthritis. It may be expressed in new somatic symptoms (eg, headaches, abdominal pain) or as new or exacerbated substance abuse. It may lie veiled behind vague complaints of poor energy or poor sleep. Problems with memory, concentration, emotional lability, or irritability may also suggest traumatic brain injury which might then trigger further screening such as the 3-Question Screening Tool developed by the Defense and Veterans Brain Injury Center.⁸

Perhaps the most basic and most important screening step is simply to ask patients, "Are you a veteran or are you the family member of a veteran?" This question may be key to understanding why this particular patient is coming to see you and why now.

If a patient scores a 3 or higher on the Primary Care PTSD screening tool, a good follow-up instrument for further assessment would be the PTSD Checklist, Civilian Version (PCL-C).⁹ This 17-item self-report measure covers each of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) symptoms of PTSD. Patients are asked whether they were "bothered by that problem in the past month" and responses are scored on a 5-point scale ranging from 1 ("not at all") to 5 ("extremely"). Available in several forms, the PTSD Checklist, Civilian Version is recommended for post deployment screening because, unlike the military version, it is not focused on any one specific traumatic event. This allows the respondent to make connections to a broad range of deployment experiences, any one of which might be the key stressor for that individual. The PTSD Checklist can be scored in different ways; a total score (range 17-85) can be obtained by summing the scores from each item or the responses can be reviewed to establish that DSM-IV criteria for PTSD

have been met. Hoge et al² employed a cut-off score of 50 as a conservative indicator for a positive diagnosis of PTSD.

Treatment

A recent review of the evidence base for psychotherapies and psychopharmacological strategies in the treatment of PTSD among combat veterans by the Institute of Medicine of the National Academies¹⁰ suggested that more research is needed before all but one of these can be recommended at the highest level of confidence (exposure therapy being that single exception). Having acknowledged that finding, a number of clinical practice guidelines exist to assist clinicians in learning about available treatments, reviewing their evidence base, and making practical, patient-specific choices among them.

Most relevant among these is the VA/DoD Clinical Practice Guideline for the Management of Posttraumatic Stress.¹¹ Created by a joint working group of VA and DoD clinicians and researchers, this comprehensive guideline provides clinical algorithms that walk clinicians through the necessary steps from screening and initial assessment through treatment and reassessment. Separate algorithms are defined for primary care providers and mental health professionals. Evidence tables are provided for each recommendation and a substantial literature review is included. This guideline is available on the Internet (http://www.oqp.med.va.gov/cpg/PTSD/PTSD_Base.htm.) and is in the public domain.

The American Psychiatric Association has published the Practice Guideline for the Treatment of Patients with Acute Stress Disorder and Posttraumatic Stress Disorder.¹² The International Society for Traumatic Stress Studies, the world's largest international multidisciplinary professional organization working in the field of psychological trauma, provided a comprehensive set of treatment guidelines in 2000¹³ with a new edition expected in 2008. Both guidelines provide a thoughtful introduction to available therapies, significant background information, and evidence-based treatment recommendations.

A thorough review of these treatments is beyond the scope of this paper, but a brief summary statement of the most highly recommended modalities (based on the VA/DoD guidelines) may prove helpful. Among the psychotherapies, prolonged exposure therapies (based on behavioral principles including habituation and extinction), cognitive behavior therapies (focusing on correcting misattributions and maladaptive responses), and Eye Movement Desensitization and Reprocessing (believed to facilitate psychological and neurological processing of traumatic events) have the strongest evidence base. The use of psychodynamic psychotherapy (derived from psychoanalytic principles) is supported by at least one randomized control study but does not have as strong a research base. Little evidence exists to support the use of Critical Incident Debriefing in the prevention of PTSD, and there is some evidence suggesting that debriefing activities can actually increase the risk of PTSD by retraumatizing survivors who are not prepared to be reexposed to horrific memories.

Among the medications available for the treatment of PTSD, specific serotonin reuptake inhibitors and venlafaxine have the strongest evidence base. While many drugs from a wide range of classes have been studied in PTSD, there is little evidence to support their use except as adjunctive treatment. Available research suggests that prazosin reduces the frequency and intensity of posttraumatic nightmares and may be effective in managing other symptoms of PTSD, but it cannot yet be recommended as a stand-alone treatment. There is evidence that benzodiazepines are not effective as first line agents in the treatment of PTSD. Because of their potential for dependence and abuse, their use as single agents is strongly discouraged in the VA/DoD guidelines.

Accessing Additional Support

Clinical practice guidelines are of significant value in the management of PTSD. Similar guidelines for disorders that are frequently comorbid with PTSD are also available through their respective DoD/VA work groups and the American Psychiatric Association among other authoritative sources. As noted earlier, many of the problems faced by returning combat veterans and their families are not specifically clinical: they may best be conceptualized in functional terms (eg, work stress, unemployment, educational/training needs, housing needs, financial and/or legal problems), and family terms (eg, lack of social support, estrangement, family breakup). Veterans, their family members, and their practitioners may find it helpful to consult a unique service available in North Carolina: NCcareLINK.¹⁴ NCcareLINK (<http://www.nccarelink.gov>) is a comprehensive health and human services Web site offering information services and bilingual support that connects patients and their care givers with over 10 000 agencies and services across our state. Administered by the North Carolina Department of Health and Human Services, NCcareLINK was developed in partnership with DoD, VA, and state and community entities following recommendations made by the North Carolina Governor's Focus on Returning Veterans and their Families.¹⁵ People who are unable to access the Web-based service may call the toll-free telephone counterpart NC CARE-LINE (1-800-662-7030). Established in 2006, NC CARE-LINE will soon begin operating 24 hours per day 7 days per week.

North Carolina has a great stake in the post deployment health of military personnel, veterans, and their families. An impressive network of programs, services, and information systems stands ready to support these citizens and their health care providers in retaining and/or regaining their highest potential for health and function. Optimal health and function cannot, however, be attained unless key questions are asked throughout our entire health system. The first and most basic of these is "Are you a veteran or the family member of a veteran?" With this information in hand, effective work can begin. **NCMJ**

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Detecting Traumatic Brain Injury Among Veterans of Operations Enduring and Iraqi Freedom

George L. Jackson, PhD, MHA; Natia S. Hamilton; Larry A. Tupler, PhD

Advances in battlefield medicine and protective devices used in Operation Enduring Freedom-Afghanistan (OEF), beginning in October 2001, and Operation Iraqi Freedom (OIF), beginning in March 2003, are saving the lives of many service members who would have died in other wars. While the mortality rate for injures was 30% in World War II and 24% in Vietnam, the rate in these recent wars has been constantly close to 10%.¹⁻³ The result is that many veterans who previously would have died are living with very serious injuries, and those who formerly would have had serious and apparent injuries now have conditions that significantly impact their lives but are not always obvious.

One of these conditions, traumatic brain injury (TBI), is considered the signature wound of the current conflicts.^{4,5} It is estimated that almost 50% of soldiers injured in combat return with some form of TBI (mild, moderate, or severe).⁶ This compares with 14% to 18% of combat casualties having a brain injury during the Vietnam War.⁴

What is Traumatic Brain Injury?

Traumatic brain injury is a form of brain damage resulting from a sudden jolt, blow, or penetrating head injury.^{7,8} It most commonly occurs when the head is accelerated and then decelerated abruptly. The effect is that strain forces are applied to the axons (nerve fibers) in the brain. This type of closed TBI is broadly referred to as a diffuse axonal injury.^{9,10} These injures may result from the head hitting an immovable object, being struck in the head, or waves of energy from an explosion. Penetrating objects such as bullets may also damage the brain. Traumatic brain injury can result in

temporary to permanent cognitive, physical, or emotional dysfunction. The severity of the TBI depends on the symptoms that result from the injury, and outcomes can range from a complete recovery to permanent disability or death.¹¹⁻¹³ Table 1 lists common symptoms of TBI.¹⁴⁻¹⁷

“... traumatic brain injury (TBI) is considered the signature wound of the current conflicts. It is estimated that almost 50% of soldiers injured in combat return with some form of TBI (mild, moderate, or severe).”

Traumatic Brain Injury Severity

In more serious cases, when blasts and other mechanisms of injury result in loss of consciousness producing a TBI, the injury may be defined as mild (≤ 30 minutes) [American

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Table 1.
Common Symptoms of Traumatic Brain Injury

General Symptoms of TBI	Symptoms of Moderate to Severe TBI
Headaches	Loss of consciousness (30 minutes or more)
Difficulty organizing daily tasks	Personality change
Mental confusion (easily confused, easily feeling overwhelmed)	Loss of coordination
Lightheadness or feeling dizzy	Weakness or numbness in the extremities
More sensitive to auditory stimuli, lights, or other distractions	Slurred speech
Behavior or mood changes (feeling sad, anxious, or listless)	Dilation of one or both pupils
Double vision, blurred vision, or tired eyes	Inability to awaken
ringing in the ears	Seizures
Bad taste in the mouth	Repeated vomiting or nausea
Fatigue or lethargy (feeling tired all of the time)	A severe, persistent, or worsening headache
A change in sleep patterns	
Trouble with memory, concentration, or calculations	
Easily irritated or angered	
Impulsivity (lack of inhibition)	
Slowed movement, talking, reading, or thinking	
Sexual dysfunction	

TBI – traumatic brain injury

Sources: Centers for Disease Control and Prevention (May 2003);¹⁴ DePalma et al (2005);¹⁵ Kahn et al (2003);¹⁶ Lew et al (2006)¹⁷

Congress of Rehabilitation Medicine definition], moderate (≤ 6 hours), or severe (> 6 hours).¹⁸ Also accompanying TBI may be anterograde memory loss or posttraumatic amnesia, difficulty encoding new information following the injury. Posttraumatic amnesia may be mild (< 1 day), moderate (1 to 7 days), or severe (> 7 days).^{16,19} Retrograde amnesia tends to follow the same or somewhat less of a time gradient as posttraumatic amnesia. Not all TBI victims suffer from loss of consciousness or amnesia, but those with more mild exposure to trauma may become dazed and confused, characterized by difficulties with orientation, perception, concentration, memory encoding and retrieval, and judgment.¹⁴⁻¹⁶

Because an estimated 80% of individuals sustaining TBI are classified as mild (mTBI), it is often a condition that is not readily apparent.¹² Most mTBI patients make a rapid recovery, suffer few postinjury complications, and, for these reasons, often bypass acute medical attention or hospitalization. Nevertheless, up to one-third of mTBI patients develop chronic symptoms, and delayed symptom onset is not uncommon.¹¹

Postconcussive syndrome refers to an array of cognitive, physical, and emotional symptoms that can occur following mTBI.²⁰⁻²² Patients with postconcussive syndrome may complain of headaches, postural imbalance, insomnia, memory problems, fatigue, irritable or depressed mood, or interpersonal conflict.^{17,23} Postconcussive syndrome is challenging to diagnose using a detailed physical exam or neuroimaging alone. It is often the case, unfortunately, that misattributions of underlying psychopathology prevent postconcussive syndrome patients from receiving appropriate care. The constellation of cognitive, behavioral, and social deficits common to TBI may impinge on interpersonal relationships and family support, thus complicating recovery.²⁴ Table 2 lists characteristics of mild, moderate, and severe TBI.^{16,19}

Causes of Traumatic Brain Injury

Common causes of TBI, both civilian and military, include falls, motor-vehicle accidents, striking or being thrown against an object, or assault.⁷ In the OEF and OIF war zones, however, the most common sources of TBI are explosives and blasts.^{5,15,25,26} Traumatic brain injury accounts for approximately 60% of war injuries caused by blasts.⁵

Explosives can take the form of conventional bombs or enhanced-blast explosive devices.¹⁵ Conventional bombs cause a blast wave that spreads out around its point of origin. It is initially a wave of high pressure which is followed by strong and forceful wind. Damage tends to increase as distance from the

Table 2.
Common Criteria for Determining the Severity of Traumatic Brain Injury

	Loss of Consciousness	Brain Functioning	Posttraumatic Amnesia	Glasgow Coma Scale Score
Mild TBI	≤ 30 minutes	Normal MRI and CT	< 24 hours	13-15
Moderate TBI	≤ 6 hours	Abnormal MRI and CT	≤ 7 days	9-12
Severe TBI	> 6 hours	Abnormal MRI and CT	> 7 days	3-8

TBI – traumatic brain injury; MRI – magnetic resonance imaging; CT – computerized axial tomography scan
Sources: Coetzer et al (2002);¹⁸ Kahn et al (2003);¹⁶ Sternbach (2000)¹⁹

explosion decreases. Warfare in Iraq often uses explosive devices loaded with metal pieces which cause greater penetrating force, potentially causing penetrating injuries on top of closed injuries caused by blast waves. Enhanced blast-explosive devices can present greater damage than conventional bombs because the initial explosion triggers a secondary explosion, spreading out

force that lasts longer.¹⁵

Four basic types of injuries are caused by blasts: (1) primary—over-pressurization of “blast wave”; (2) secondary—projectiles based on proximity of primary blast; (3) tertiary—effects due to wind, which may propel the victim into walls, the ground, or other objects; and (4) quaternary—burns, asphyxia, and exposure to toxic inhalants. (See Table 3.)^{14,15,25,27}

manifest psychiatric presentations predating the TBI or in response to the trauma.^{22,32} However, more research is required to determine what post-TBI symptoms are due to mechanisms of brain injury versus functional psychiatric involvement either preceding or following the trauma

While extensive literature exists describing recovery from blunt-force trauma due to motor-vehicle accidents or falls,⁷

Table 3.
Types of Blast Related Injuries

Category of Injury	Source of Injury	Implications of Injury
Primary blast injury	Overpressurization of blast wave	Tympanic membrane damage; lung damage; occipital rupture; concussion
Secondary blast injury	Projectiles based on proximity of primary blast	Penetration of extremities (including the head)
Tertiary blast injury	Blast related wind impacting the speed and force with which the body hits or is hit by objects	Fracture; amputation; closed or open brain injury
Quaternary blast injury	Random circumstances such as burns, asphyxia, and exposure to toxic inhalants	Burns; closed and open brain injury; breathing problems (eg, asthma; COPD); exacerbation of cardiovascular risk factors (eg, hypertension)

COPD – chronic obstructive pulmonary disease

Sources: Centers for Disease Control and Prevention (May 2003)¹⁴ and (December 2006)²⁷; DePalma (2005)¹⁵; Finkel (2006)²⁵

Screening at the Time of Potential Traumatic Brain Injury

The most common initial screening tool is the Glasgow Coma Scale. It includes questions on motor responses (6 grades), verbal responses (5 grades), and eye-opening responses (4 grades). Lower scale scores indicate greater likelihood of more severe TBI.²⁸ Table 2 includes the scale cutoff scores for levels of TBI severity.^{16,19} A copy of the Glasgow Coma Scale can be found on the Internet at http://www.strokecenter.org/trials/scales/glasgow_coma.pdf.²⁹

The Defense and Veterans Brain Injury Center (DVBIC) at Walter Reed Army Medical Center has developed a Military Acute Concussion Evaluation assessment procedure for use in warzones. The Military Acute Concussion Evaluation is based on the Standardized Assessment of Concussion³⁰ and includes more detailed assessments of the incident leading to potential TBI and current clinical status than occurs with administration of the Glasgow Coma Scale. While not yet validated, a description of this procedure is available on the DVBIC Web site at <http://www.dvbic.org/>.³¹

Course and Recovery of Traumatic Brain Injury

Recovery from brain injury varies significantly by severity group. Victims of moderate to severe TBI may suffer from residual neurocognitive deficits for the remainder of their lives. They can manifest amnesia, hyperdistractibility, and other attentional deficits, language impairment, motor slowing and incoordination, and changes in personality.¹¹

Although most victims of mTBI suffering from PCS recover over a 3-month to 1-year time frame, many do not.²³ It has been argued that those who do not recover their function typically

data and studies describing blast injury are limited.⁹ Whereas blunt force trauma may be somewhat more focal due to coup and contrecoup forces, blast injury may be more diffuse due to primary overpressurized waves pervasively affecting the entire brain; secondary and tertiary effects might furthermore create more multifocal effects.¹⁵ There may also be an accumulation of effects secondary to repeated blasts. Veterans may have been exposed to multiple explosions, and while receiving only mild postconcussive effects from one blast, a second or third blast of equal force could result in more severe injury.⁹

Traumatic Brain Injury and Posttraumatic Stress Disorder Comorbidity

Posttraumatic stress disorder (PTSD) frequently follows exposure to blast and other TBI etiologies, and symptoms frequently overlap with those observed following TBI. Diagnostic discrimination between the two conditions may therefore be challenging and complicate treatment formulations. Furthermore, many brain areas typically affected in TBI such as frontal, temporal, and subcortical regions are the same as those putatively involved in PTSD symptom expression.³³

Some authors have noted that the overlap between symptoms of PTSD and TBI calls into question current diagnostic tools for discriminating PTSD among TBI patients and thus requires the development of new measures that can differentiate the two. At a minimum, it is likely that symptoms from TBI compromise the ability to cope with the stress of PTSD (eg, through disinhibition of executive-control processes), and PTSD likewise compromises the ability to navigate the cognitive and other manifestations of TBI.³⁴ Those with TBI may also have more severe PTSD.³⁵

Screening for Traumatic Brain Injury – Department of Defense

Because mTBI may not have obvious outward symptoms, and symptoms may overlap with other conditions,³⁶ extensive screening efforts are required. Starting in April 2003, all active duty, reserve, and National Guard service members and Department of Defense civilians deployed to a war zone have been required to complete an in-person post-deployment health assessment (PDHA) between 30 days before and 30 days after redeployment away from the war zone. This process includes a screening form (DD2796) that has 4 questions about potential TBI.³⁷ These address (1) experiences that could lead to TBI (eg, explosion); (2) condition following the event (eg, dazed, confused); (3) symptoms that began or got worse after the event (eg, memory problems); and (4) symptoms experienced in the last week. Patients indicating they were exposed to an event and have had symptoms are then referred for further evaluation.^{38,39} The screening forms and specific questions mentioned in this section are available on the Department of Defense Deployment Health Clinical Center-PDHealth Web site at <http://www.pdhealth.mil/>.

Since March 2005, it is required that returning service members be offered a postdeployment health reassessment (PDHRA) 90-180 days (preferably 120-150 days) following redeployment. Individuals who were hospitalized must have a PDHRA 90-180 days after discharge. This includes form DD2900, which has the same 4 TBI questions described above.⁴⁰ Information from the PDHA and PDHRA, along with the predeployment health assessment form DD2795⁴¹ (completed within 60 days prior to deployment), is maintained in the permanent medical record and Defense Medical Surveillance System.^{38,42} A recent report summarizing results of the PDHRA indicated a higher rate of self-reported mental health concerns and referrals than that observed with the PDHA, suggesting increased morbidity over time following deployment.⁴²

Screening for Traumatic Brain Injury – Veterans Health Administration

On April 2, 2007, a system-wide TBI Screening Clinical Reminder was introduced into the Veterans Health Administration (VHA). On April 13, VHA directive 2007-013, *Screening and Evaluation of Possible Traumatic Brain Injury in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) Veterans*, was released based on the deliberations of a dedicated task force.⁴³ In this directive, it was noted that “currently there are no validated [TBI] screening instruments accepted for use in clinical practice.” The directive furthermore cautioned that screening can lead to positive results due to other postdeployment conditions (eg, PTSD).

The TBI Screening Clinical Reminder is part of the VA Computerized Patient Record System (CPRS) and is designed to be administered to all veteran VHA patients who separated from active duty after September 11, 2001. It embodies a branching pattern of inquiry that first determines whether a

previous diagnosis of TBI has been established, and, if not, whether (1) a plausible etiology for a TBI exists (eg, being near an explosion); (2) posttraumatic neurological alterations followed the etiological event; (3) postconcussive symptoms followed the posttraumatic neurological alterations; and (4) postconcussive symptoms persisted into the week preceding the evaluation. Each of these branches (sections) of the clinical reminder is evaluated only if the branch preceding it is true. Positive findings for all 4 branches result in a positive screening result. If the outcome is positive, then follow-up ensues.

A TBI Second Level Evaluation format was recently implemented by VHA. Second-level screening probes in greater detail (a) etiological variables such as number of, types of, and parameters (eg, distance from blast) relating to events predicting TBI severity; (b) neurological sequelae such as number of loss of consciousness episodes, duration of longest loss of consciousness episode, and number of episodes; (c) nondeployment TBI; (d) pain documented as to location and degree of interference with life; and (e) physical exam and medication review. The practitioner signing the related progress note must be a psychiatrist, physical medicine and rehabilitation physician, or neurologist who arrives at a final TBI diagnosis.

Traumatic Brain Injury Incidence Among Veterans of Afghanistan and Iraq

Precise numbers describing the burden of TBI among OEF and OIF veterans are not available. Estimates come from a variety of sources. As of September 30, 2007 the Pentagon listed 4471 TBI diagnoses from OEF and OIF.⁴⁴ However, this number excludes cases of TBI not initially considered battle injuries. According to the founder of the Congressional Brain Injury Task force, more than 150 000 TBI instances have occurred among approximately 1.5 million OEF/OIF participants.⁴⁴

The rate of those who screened positive on the initial VA TBI Screening Clinical Reminder is 20%.⁴⁴ That does not mean all of these patients actually had a TBI. This figure represents those who screened positive for possible TBI, requiring further diagnostic workup which may or may not indicate a TBI. This rate is similar to that seen in at least one VA hospital in North Carolina.

Many TBI sufferers, especially if untreated, may endure medical, behavioral, and social consequences for many years—perhaps even a lifetime.^{4,17,24,45,46} It is essential that health care providers in the Department of Defense, VA, and private sectors do their best to identify and appropriately treat TBI among OEF and OIF veterans. **NCMJ**

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Veterans Health Administration Primary Care-Mental Health Integration Initiative

Edward P. Post, MD, PhD; William W. Van Stone, MD

The Veterans Health Administration has undertaken a large national initiative to integrate primary care and mental health services. A request for proposals was disseminated throughout the Veterans Affairs (VA) system inviting proposals for new programs to promote the effective treatment of common mental health and substance use disorders in the primary care environment. Both individual facilities and Veterans Integrated Service Networks (VISNs) were eligible to apply, and proposals could encompass activities at one or multiple VA facilities. Similarly, facilities within VISNs were free to use different evidence-based models for delivering integrated care. Program funding commenced during fiscal year 2007 (FY07).

The overarching rationale for the initiative is to integrate care for veterans' physical and mental health conditions, improve access and quality of care across the spectrum of illness severity, and allow treatment in mental health specialty settings to focus on persons with more severe mental illnesses.

The report of the President's New Freedom Commission on Mental Health emphasizes that mental health and physical health problems are interrelated components of overall health and are best treated in a coordinated care system.¹ That recognition also is embedded in the VA's Mental Health Strategic Plan and its goal to "[d]evelop a collaborative care model for mental health disorders that elevates mental health care to the same level of urgency/intervention as medical health care."²

The important context of integrated care recognizes several facts: primary care provides opportunities to screen for unrecognized disease; mental health and substance abuse conditions are common and are often treated by primary care practitioners; patients may prefer treatment in primary

care settings; an established relationship with a primary care practitioner fosters engagement in and adherence to treatment; and health conditions do not always fall neatly into "physical" and "mental health" categories. As former Surgeon General David Satcher said, "Primary care practitioners are a critical link in identifying and addressing mental disorders... Opportunities are missed to improve mental health and general medical outcomes when a mental illness is under-recognized and under-treated in primary care settings."³

“The report of the President’s New Freedom Commission on Mental Health emphasizes that mental health and physical health problems are interrelated components of overall health and are best treated in a coordinated care system.”

Approximately 20% of the 5 million veterans who received VA care in FY05 received mental health services. However, the number of veterans diagnosed with mental health disorders is even greater. While some have complex or severe conditions

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that require specialty services, others may benefit from receiving mental health treatment in the primary care setting, administered either by primary care practitioners who are given appropriate support or by mental health practitioners based in the primary care environment. Colocated collaborative treatment and care management are two evidence-based models for services that can promote patient engagement in and adherence to treatment and can avoid stigmatization and fragmentation of care. Furthermore, using these models allows providers to facilitate the coordination of care for mental health problems and other medical conditions which can translate into important patient outcomes. For example, one recent trial of an effective 2-year integrated care program for depression among older primary care patients demonstrated reduced all-cause mortality over a 5-year period.⁴

An example of the evidence base for integrated care models within VA is the Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) study which VA and the Substance Abuse and Mental Health Services Administration (SAMHSA) of the US Department of Health and Human Services undertook to better understand what care delivery systems are effective for managing depression, anxiety disorders, and problem drinking in older primary care patients.⁵⁻⁷ The PRISM-E randomized controlled trial demonstrated that patients were significantly more likely to engage in mental health services that were integrated with primary care than to follow through on referrals to specialty services. For example, depressed patients in integrated care were 2.86 times more likely to have at least one contact with a mental health specialist than those in referral care.⁷ Findings like these led the President's New Freedom Commission to recommend important elements of integrated care such as expanded screening and collaborative care in primary care settings.

While much of the research evidence in this area has focused on depression, there also have been studies demonstrating the efficacy of an integrated approach for anxiety disorders⁸⁻¹¹ and problem drinking.¹²⁻¹⁶ Although there is no current evidence demonstrating the effectiveness of this approach for managing patients with posttraumatic stress disorder (PTSD), research is in progress.

Three major categories of integrated care models are being implemented in the Primary Care-Mental Health Integration Initiative: (1) colocated collaborative care; (2) care management; and (3) blended models that incorporate features of the other two.

Colocated collaborative care entails both mental health and primary care practitioners being physically present in the primary care setting with shared responsibility for evaluation, treatment planning, and monitoring outcomes. Episodes of care in this model can vary depending on the needs of the patient, ranging from a referral with a "warm hand-off" to informal consultation with primary care practitioners. A particular example of colocated collaborative care in VA is the White River Model of open access mental health treatment in primary care. This model has demonstrated significant increases in both the proportion of depression screen-positive patients receiving any treatment as

well as the proportion of patients receiving guideline-concordant treatment for depression.¹⁷

Care management models need not be physically located in the primary care setting, but care managers are actively involved in the process of delivering mental health treatment to primary care patients. Nurses constitute a core profession in care management, although social workers and psychologists perform the role of mental health care manager, too. Care managers interact directly with patients, facilitate ongoing evaluation, and maintain active communication that enables responsibility for mental health treatment to remain in the primary care setting. Two examples of care management models in VA are Translating Initiatives for Depression into Effective Solutions (TIDES) and the Behavioral Health Laboratory. The TIDES care management model uses registered nurses to provide guideline-based treatment support and has demonstrated high levels of treatment engagement among depressed primary care patients.¹⁸ The Behavioral Health Laboratory uses a software-based structured assessment for initial evaluation as well as on demand follow-up in support of primary care-based mental health and substance abuse treatment. Its implementation in a primary care setting led to a significant increase in the proportion of patients screening positive for depression as well as identification of substantial numbers of cooccurring mental health disorders and substance misuse.¹⁹

Finally, blended models combine elements of both care management and colocated, collaborative care. In a blended model, the mental health practitioner evaluates patients and offers psychosocial treatment when preferred or needed while the care manager provides complementary services including education, ongoing assessment, monitoring of adherence, algorithm-based use of medication, and referral management when necessary.

Irrespective of the structural form of the integrated care model, there are standard minimum requirements for the scope and process of services provided under the initiative. Foremost among these is a focus on prevalent conditions in primary care, namely depression, alcohol misuse and abuse, and PTSD. This is in keeping with the overarching rationale of integrated care being a complement rather than a substitute for mental health specialty services. Integrated care programs have an existing foundation upon which to build in that VA already screens primary care patients for depression, alcohol misuse, and PTSD on an ongoing basis. Important required components of evaluation, treatment, and follow-up include the following: risk assessment and appropriate action for suicidality among patients that screen positive for depression and PTSD; watchful waiting for subsyndromal conditions; availability of evidence-based treatments in primary care including brief treatment for problem drinking and pharmacological treatment for major depression; access to evidence-based psychotherapies; and ongoing monitoring for treatment adherence, medication side effects, and clinical outcomes. The fundamental aim of these processes is to support the primary care practitioner in addressing prevalent mental health concerns in a manner that is flexible and convenient for patients as well as centered on a patient's need for disease education and preferences for treatment.

As mentioned previously, the VA Primary Care-Mental Health Integration Initiative is a large national implementation effort presently composed of 92 integrated care programs. The sites for these programs include VA Medical Centers (VAMCs), Community Based Outpatient Clinics (CBOCs), and VISN-level groups of facilities. These sites are implementing diverse models of care including 24 colocated collaborative programs, 19 Behavioral Health Lab programs, 25 care management programs including sites using the TIDES model, and 24 sites with blended models of care. Annualized funding in FY07 was \$32 million representing 409 full-time equivalent positions. The program is continuing at a similar level of funding in FY08 and expansion of sites is anticipated in FY09.

In North Carolina there are 3 integrated care programs being funded through this initiative. A blended model consisting of colocated collaborative care and care management is being implemented at the Durham VAMC, the satellite Durham Clinic, and the Raleigh CBOC, which collectively represent a target population of 16 933 unique primary care patients. A similar blended model is also being implemented at primary care clinics in the Fayetteville VAMC serving a target population of 9600 veterans. Finally, the Salisbury VAMC is implementing a colocated collaborative model of integrated care in clinics serving 11 589 unique primary care patients.

The national program office for Primary Care-Mental Health Integration is undertaking a variety of activities in support of field implementation as well as evaluation of this important initiative. Program activities include national conferences attended by both primary care and mental health practitioners; monthly national educational teleconferences; policy development including procedures and tools for workload tracking, clinical utilization tracking, and performance measurement; collaboration on development and dissemination of automated decision

supports; and training and technical assistance to field sites. An important example of these activities in FY07 was the development of new performance measures, processes, and tools surrounding evaluation and follow-up of positive screens for depression, PTSD, and alcohol misuse. In particular, performance measures are in place for FY08 to track whether practitioners are following up on PHQ-2 screening for depression with a PHQ-9, risk assessment for suicidality, and pertinent clinical evaluation and follow-up of these assessments; pertinent clinical evaluation and follow-up of PC-PTSD screening for posttraumatic stress disorder including risk assessment for suicidality; and follow-up of AUDIT-C screening for alcohol misuse and abuse with appropriate patient-specific counseling and follow-up.

Finally, the national program office is actively collaborating with the Serious Mental Illness Treatment Research and Evaluation Center at the Ann Arbor VAMC to develop ongoing program evaluation of primary care-mental health integration. The major goals of this evaluation are (1) to assess the extent to which integrated care programs have been implemented across the VA system; (2) to assess patient-level access to care, receipt of services, and disease-specific outcomes; and (3) to determine what factors contribute to differences in mental health-related access and quality of care including variation related to specific integrated care models, model fidelity, and other site-specific program characteristics. This evaluation effort includes so-called formative evaluation components that will enable targeting of specific areas for attention. Ongoing availability of information from the evaluation team will greatly assist the program office in its overall goal of continuous quality improvement for veterans with mental health conditions by maximizing the successful implementation of integrated care programs throughout the VA system. **NCMJ**

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Integrating Primary Care and Mental Health in the Army

Michael T. Latzka, MD, LTC, MC

Fifteen months ago, a family from the 82nd Airborne Division said their goodbyes from their North Carolina home at Fort Bragg. They weren't moving to another state, and they weren't moving together. Their goodbyes were to each other as one member of that family was going to war nearly halfway around the world. This was not just an isolated incident but a scene repeated thousands of times on military parade fields and in home front yards across the state of North Carolina. It has become a familiar scene in the years since September 11, 2001. Life has changed for everybody since that eventful day, but it has especially changed for the soldiers and families stationed at Fort Bragg, North Carolina.

Fort Bragg is one of the largest and busiest posts in the United States Army. Its lead position on the Global War on Terrorism has produced great sacrifice from the soldiers on the front lines and from the families at the home front. These sacrifices can be measured in dollar costs, time away, and in lives lost, but they can not be so easily measured by the numerous stressors on the families or the soldiers who have deployed to combat. Soldiers and families must cope with a wide variety of stressors which may manifest themselves in problematic behaviors. One study that did identify a response by soldiers to the stressors of combat showed a need for greater access to mental health resources within the military.¹ In response to this need, the Fort Bragg medical system has taken the lead to battle against these stressors by becoming a center of excellence for the recognition and treatment of depression and posttraumatic stress disorder (PTSD) in the military.

RESPECT-MIL (Re-engineering Systems of the Primary Care Treatment of Depression and PTSD in the Military) is a carefully-designed system that helps identify and treat soldiers

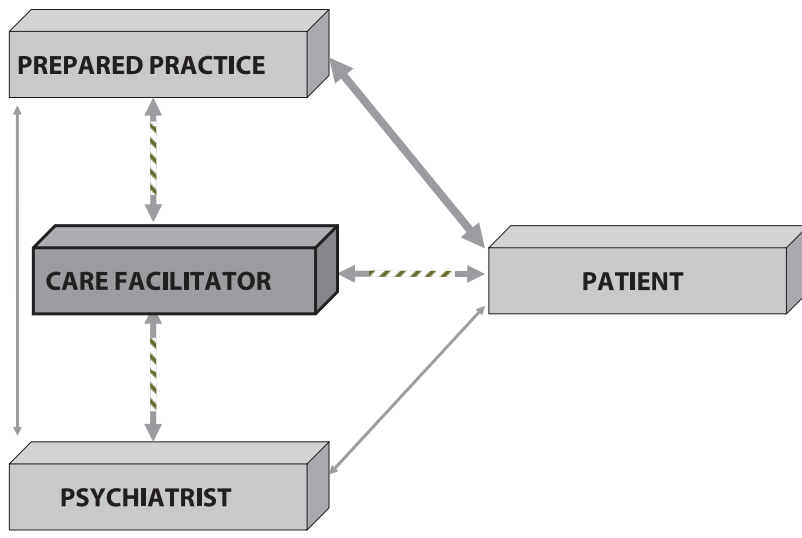
who may have depression or PTSD. It was first developed for civilian practices with a primary care emphasis to better identify and treat depression.² The system uses a 3-component model (see Figure 1) and works when a well-prepared primary care practice teams up with a nurse care facilitator and a behavioral health professional. The nurse care facilitator and behavioral health professional facilitate the care of patients who have been identified with depression and are being treated by a primary care practitioner. Implementation begins when primary care and behavioral health champions lead a 3-hour training session

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for clinicians and administrative staff. Nurse care facilitators complete 2 days of training and then continue ongoing training as they interact with their initial patients. Champions use academic detailing and case-based “lunch and learns” to reinforce concepts. The core elements of the 3-component model are (1) routine screening for depression and PTSD; (2) diagnostic assessment with structured questionnaires for all those screening positive; (3) patient engagement, education, and eliciting treatment preferences; (4) proactive follow-up by the primary care clinician and RESPECT care facilitator; and (5) enhanced support by a mental health specialist through supervision of the

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Figure 1.
Components of the RESPECT-Mil Model



care facilitator and availability for curbside consultation. (See Box 1.) Patients with complicated illnesses (eg, significant suicide risk) or who prefer specialty care are referred to mental health providers. For patients treated in primary care, the care facilitator reinforces the primary care clinician's treatment plan through telephone follow-up that addresses treatment adherence, self-management goals, and symptom response using structured questionnaires. The care manager is supervised by a psychiatrist and communicates any recommendations for management changes to the primary care clinician. This proactive treatment model increases the intensity of follow-up (see Figure 2) and has been demonstrated to increase guideline concordant care for depression and improve patient outcomes.³ Because of its success in the civilian community, key leaders in the Army medical department put together a study at Fort Bragg to assess the model's feasibility within the military health care system.⁴

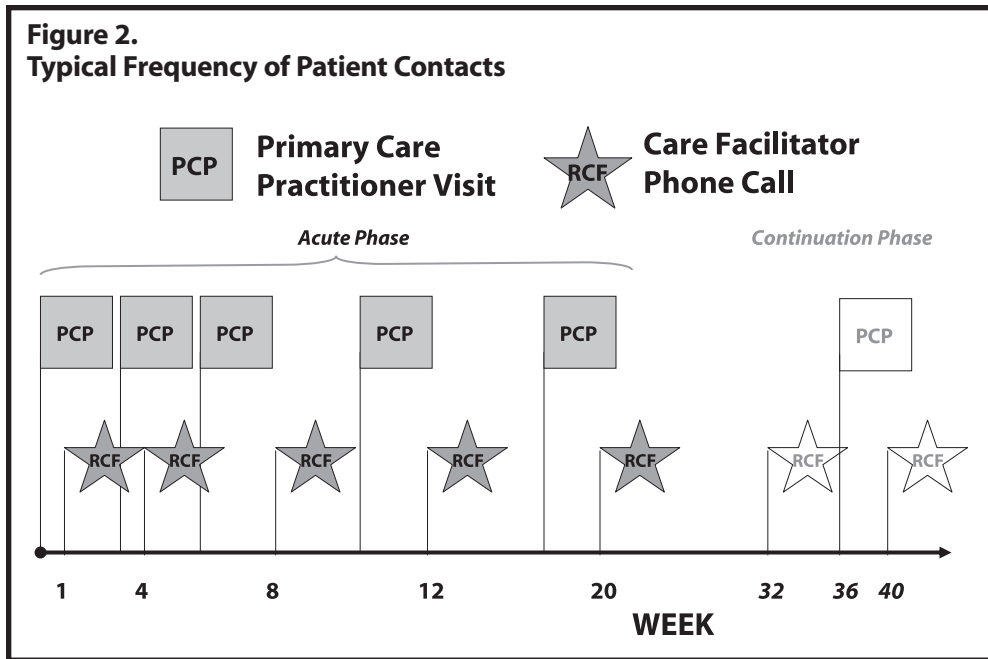
Health Clinic have been screened for depression and PTSD. Of the entire population of soldiers screened, just under 20% screened positive for either depression or PTSD. Of those soldiers who screened positive, roughly one-third were false positives and another one-third were already being treated for their depression or PTSD within the military behavioral health care system. The final one-third of those positive screens were newly identified depressive disorder or PTSD. About half of the soldiers chose to participate in RESPECT-MIL while the other half went to behavioral health. Only a small percentage chose no referral at all.

The RESPECT-MIL care model involves a paradigm shift from one clinician-one patient interactions to a team care model that features telephone follow-up and evaluation. It also requires a change in cultures from one where medical and mental health services are delivered relatively independently to one involving greater collaboration. Because these represent important changes in medical care delivery, we typically begin implementation with small-scale pilots (eg, the most highly motivated clinicians in a care site) and then gradually expand to involve more clinicians and more clinical sites at the base. These implementation challenges are quite similar to those seen in the private sector. Challenges that may be unique to the military include a highly mobile patient population, highly mobile clinical staff, and primary care services designed more for acute rather than longitudinal care. We have dealt with these later challenges

Box 1.
RESPECT-Mil Care Processes

- ★ Routine Screening
 - ★ On arrival at sick call medic/nurse screens patient for depression and posttraumatic stress disorder as part of measuring vital signs
- ★ Assessing Screen Positives
 - ★ Screen positives complete PHQ-9 depression questionnaire and posttraumatic stress disorder checklist to guide diagnosis
 - ★ Primary care providers score and complete diagnosis
- ★ Treat Those With a Potential Diagnoses
 - ★ Assess suicide risk
 - ★ Elicit relevant history
 - ★ Share diagnosis with patient, offer treatment and referral to care facilitator
- ★ Systematic Follow-Up
 - ★ Primary care continues to manage
 - ★ Care facilitator provides additional telephone follow-up
 - ★ Communication and treatment advice by team psychiatrist

Figure 2.
Typical Frequency of Patient Contacts



in part by developing a greater capacity for ongoing training of new staff.

This initial experience to date has been very valuable. It has allowed for a process improvement within a military primary care clinic where a systematic approach to behavioral health needs is being addressed and is also becoming a part of the routine health care approach and culture of care at Robinson Health Clinic. It has also spread to 3 other clinics at Fort Bragg and

anecdotes about their improved ability to identify and care for depression and PTSD in soldiers. The result is that after 15 months of being in combat soldiers are returning home to their families in North Carolina, and they are also returning to a medical community that is improving its ability to help them deal with some of their health needs. In this way we can begin to address their needs and build a better military family right here at home. **NCMJ**

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Coming in the March/April 2008 issue of the
North Carolina Medical Journal
a look at:
Use of Data for Health Policy

The Citizen Soldier Support Program: Building Bridges Between Communities and Military Families

Steven R. Moore, RPh, MPH, FRSH, FASHP, CPHP

Citizen soldiers live across the nation, and they can be found in most local communities. In North Carolina, they are members of the North Carolina National Guard and the Military Reserves. The National Guard Armory has long been a local institution known to most citizens and readily recognized as a critical part of community structure. The needs of deployed Guard members and reservists and their families are unique and differ from those of active duty military forces. Active duty forces are primarily clustered around established military installations that usually house a wide variety of services and support networks for both the soldier and the affected family. Guard members or reservists often live far away from a military installation. Traditionally they train on selected weekends and on short tours of duty for extended training during the summer. As the concept and needs of the total military force have changed, these citizen soldiers are now being deployed for extended tours of duty, and the impact of their service upon themselves, their families, and their communities has dramatically changed.

Guard members and reservists are located in every North Carolina county, and families are routinely familiar with the short tours of duty required of Guard members or reservists in the past. When the citizen soldier is deployed, however, for an extended period of time, his or her family becomes an active military family. When faced with the active long-term deployment of a significant family member, the remaining family members must cope with a wide variety of new and unique circumstances that many had not planned for and which many may find quite daunting. Among these changes are issues affecting their health. Military families may have greater and very different health care needs compared to the general population. Nonetheless the families of Guard members and reservists still must largely acquire care in the local community. This may be challenging for both families and community providers who may not

be ready to serve this population. Nonetheless the overall impact of having a deployed family member can dramatically impact the family's health.

Introduction to the Citizen-Soldier Support Program

The Citizen-Soldier Support Program is a federally-funded, national demonstration program whose mission is to mobilize and engage communities to support service members of the National Guard and Military Reserves and their families before, during, and after mobilization and deployment. The Citizen-Soldier Support Program is in its third year of operation and is rapidly moving toward implementing a variety of best practices and lessons learned in its first 2 years of operation.

As a demonstration project, the Citizen-Soldier Support Program and its products need to be readily reproducible across

“Community capacity is needed to adequately support citizen soldiers and their families in an effort to (1) strengthen them; (2) provide them with economic security; and (3) develop family-community connections.”

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North Carolina as well as in other states. Although the Citizen-Soldier Support Program in its early stages sought to develop direct community resources and show the impact there, it quickly became evident that these local models simply were economically unfeasible for real world duplication. In its current activities, the Citizen-Soldier Support Program is seeking to target its resources into larger models that impact systems and thus have a far greater potential benefit for communities and individual families.

With critical and targeted input from its National Advisory Committee, a strategic planning effort was undertaken, and the Citizen-Soldier Support Program is working to move forward on a number of targeted programs. Although these programs may impact a wide variety of family and community support activities, a number directly impact the health care status of citizen soldiers, their families, and their communities.

One area of health most dramatically impacted by deployment is mental health. Health concerns may be as subtle as the depression or anxiety of family members or as dramatic as the posttraumatic stress disorder (PTSD) or traumatic brain injury (TBI) of the returning soldier. The Governor's Focus on Returning Combat Veterans and Their Families is a statewide effort focusing on the mental health of returning soldiers. Building upon and cooperating with this effort, the Citizen-Soldier Support Program has brought together a number of varied specialists to form a steering committee to focus the joint efforts of all concerned stakeholders. The group includes representatives of the North Carolina National Guard and Military Reserves, Veterans Administration, state government, private medical practitioners, and a variety of other social support parties. Stakeholders hope to coordinate their efforts to address the mental health needs of returning combat veterans and their families. The group is intensely seeking to identify the geographic distribution of the state's mental health practitioners and then segment this population according to those who are in the TRICARE system (the Department of Defense managed health care program) and those who are not. Mental health problems may not be strictly managed through military health care, thus the continuum of mental health services including the Veterans Administration and the civilian sector are integral to serving the needs of returning soldiers and their families. A final comprehensive report on addressing this problem is forthcoming in early 2008.

Citizen Soldier Support Program Health Initiatives

The Citizen-Soldier Support Program has planned multiple initiatives. First, a training effort piloted through the Area Health Education Centers (AHEC) program seeks to provide targeted exposure to community-based medical practitioners on how to assess and treat specific problems experienced by citizen soldiers and where to refer them for additional care. Following the initial training and evaluation of this pilot project in the Coastal AHEC in January, similar efforts will be designed for other regions in the state. The goal is to export this model to

similar practitioner training programs in other states as well. The Coastal AHEC training efforts target 2 groups of practitioners. An evening session targets primary care practitioners, especially family physicians, and focuses on the unique nature of the military experience and the impact of these experiences on mental health, especially PTSD. A full-day session targets the whole range of mental health professionals and presents the military perspective and its impact on mental health but also highlights aspects of assessment, clinical practice guidelines, and treatment interventions. Both programs provide attendees with a better understanding of TRICARE and how it can be used by practitioners to assist military health care coverage.

Second, a community-based health delivery model using mental health personnel in a largely rural area is being developed through the Mountain AHEC. The effort seeks to establish a real-world model that can be sustainable and effective where mental health practitioners are in short or limited supply. During the first year Haywood County will be provided psychiatric physician extenders to support community-based physicians in addressing mental health issues for the full range of military personnel, veterans, and their families. In addition to the services of psychiatric nurse practitioners and social workers, comprehensive medication management services also are being provided. The program will be expanded to Clay and Jackson counties over the next 2 years. It is hoped that the community-based effort will be effective in addressing the variety of military/veteran family community needs and can be made sustainable when properly implemented. When developed and evaluated, the exportable components of this effort will be publicly available.

Furthermore, expanded access to online AHEC resources will seek to increase the readily available information for both practitioners and concerned beneficiaries. Specific material related to military and mental health issues will be available through the AHEC Digital Library. The AHEC Digital Library provides access to military mental health information for practitioners¹ right in their own home communities. This freely available collection includes links to information on mental health aspects of amputation, deployment, depression, posttraumatic stress disorder, substance abuse, trauma, and traumatic brain injury as well as preformulated searches of the medical literature on pertinent topics, patient education materials, and information for practitioners who treat children.

Additionally, NC HealthInfo, a collection of links for health providers, services, and programs across the state, offers access to expanded information on health topics, military health care, veteran health care, and other related topics.² Individuals can access a series of medical and health topics and even locate local resources that provide these services. A special section devoted to military and family health concerns and issues was developed in collaboration with the Citizen-Soldier Support Program.³ Soldiers and family members will find reliable information on amputation, deployment, traumatic brain disorder, and substance abuse. As a component of this effort, additional resources will help beneficiaries and practitioners understand TRICARE and increase their capability to enroll or utilize its services as well as

navigate through the military health care system. The Citizen-Soldier Support Program Web site will also be expanding content to provide greater information on TRICARE for practitioners and streamlining practitioner enrollment in TRICARE.

Other Citizen-Soldier Support Program Initiatives

The Citizen-Soldier Support Program has undertaken several other community initiatives. It developed an Adopt-a-Soldier/Family model connecting reservists to a local faith/civic community organization. Working with the 108th Army Reserve Division in Charlotte as it expands its command responsibility from a regional to a national platform, our efforts will help to integrate adopt-a-soldier/family efforts into a comprehensive national Family Readiness Program for all Reserve members and their families.

In an effort to integrate its family support services across all active, Guard, and Reserve components and to ensure consistent delivery of quality services to all personnel regardless of component, the Citizen-Soldier Support Program was invited to develop a curriculum to train Army family service personnel in community engagement and capacity building. This will hopefully be utilized in a Chapel Hill-based national training institute which will provide this resource on an ongoing basis.

The Citizen-Soldier Support Program developed a statewide partnership to promote and deliver lower cost or pro bono legal services for Guard and Reserve families. Individuals from the North Carolina State Bar, military legal personnel, state law schools, and legal aid are working to develop mechanisms to provide needed support to citizen soldier families where deficiencies and needs exist.

Lastly, the Citizen-Soldier Support Program created community scorecards to assist communities in understanding how best to interact with citizen soldiers and to recognize those communities which are exceptional in this effort. Community

capacity is needed to adequately support citizen soldiers and their families in an effort to (1) strengthen them; (2) provide them with economic security; and (3) develop family-community connections. The process will include developing critical community services (eg, child care, respite care, housing, economic stability services) and evaluating their effectiveness in the community. This effort will help communities understand both what works and what needs improvement. The ability to recognize communities who have done an outstanding effort in citizen soldier support also will be developed.

Conclusion

The Citizen-Soldier Support Program is a demonstration program and, as such, through a trial and evaluation process, we have established several efforts that can both be effective for those initially impacted as well as suitable for replication in other geographic locations. Within whatever continuum that impacts citizen soldiers, their families, and their communities, health care and its unique attributes are certainly critical. Local practitioners may experience problems adapting to this new community need, but understanding military health care is essential. Participating in the TRICARE delivery network may be new and daunting but also may be necessary. The geographical realities of widely dispersed individuals who often lack local peers experiencing the same situations, the challenges of blending existing health care and insurance within the TRICARE parameters, the lack of specialized medical practitioners in this widely dispersed geographical distribution, and the challenge of a new and changing social system that has direct impact upon the health of all involved—these are the challenges facing our citizen soldiers, their families, and our communities including our health care practitioners. The Citizen-Soldier Support Program stands ready to support this challenge and provide the coordination required to ensure that the difficult aspects of these challenges are minimized. **NCMJ**

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Military Families: Opportunities and Challenges

Denisse Marion-Landais Ambler, MD

North Carolina is home to the fourth largest concentration of active duty military personnel (101 563) in the continental United States¹ as well as substantial numbers of National Guard and Reserve members. Of the active-duty component, 37% are married with children, and 6% are single parents. Of the reserve component, 34% are married with children, and 8% are single parents. There are an estimated 96 000 military children in North Carolina.² More than 12 000 of North Carolina's military personnel have been mobilized and over 3000 are actively deployed.³ The mobilization and movement of so many spouses, fathers, and mothers has an enormous impact on the families they leave behind.

Military families have always faced unique challenges and opportunities. Answering the call to serve the greater interests of country require members of the military to sacrifice the personal duties to family. Military family members also make great sacrifices. For the active-duty family, frequent changes in duty station are a way of life that requires concomitant changes in schools, friends, and support systems. The Military Child Education Coalition™ reports that a military child moves an average of every 2.9 years which may be 3 times more than his or her civilian peers.⁴ Parent-child separations are common as one or both active duty parents leave on tours of duty. For those in the reserve component, the traditional commitment of a monthly weekend with short-term annual training no longer prevails. The wars in Iraq and Afghanistan have brought new obligations for all service members. Prolonged separations have become the norm, and repeated tours of duty to combat zones have created unpredictability for the military family. Some families have seen a loved one leave for a third or fourth tour.

For as long as there has been war, there have been loved ones waiting for the warriors to return home. Military families, like all families, come in various shapes and sizes. Given that approximately 15% of service members are female,⁵ it is not always the mother who is left to handle the homefront. Single parents and dual military couples must have Family Care Plans in place that indicate how dependents will be cared for in the case of deployment. Grandparents, extended family, and sometimes

“Understanding the experiences of the injured veteran and his or her family is a critical component of healing.”

even nonbiological relatives become a part of the family as they assume care of children during parental deployments. Most military support systems for families on the home front are oriented toward “military dependents” and particularly female spouses and children; those not fitting this demographic can face additional isolation. Military dependents are defined as

the spouse or servicemember's children who are unmarried and under 21 years or who are incapable of self-support due to physical or mental limitations, dependent parents, and similarly dependent brothers or sisters. Family members such as grandparents or aunts and uncles who are not captured under the definition of military dependent are less likely to be familiar with the resources available to them and thus less likely to use them.

Additionally, during deployment some families choose to move closer to other support systems such as extended family, which may entail a move to another city or even state. Such a move may mean a change in school, employment, and established health care resources. It may also separate the family further from the service member's home unit and his or her Family Readiness Group. A Family Readiness Group is the family's official communication network with other military families

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which offers them mutual support. Family Readiness Groups also provide opportunities to share lessons learned in regards to available community resources that may or may not be present in other areas.

Being part of a military family does have advantages. By definition, one family member is employed and has access to health care resources. If the service member is part of the active duty component, there may be additional advantages such as housing assistance through government housing or a basic allowance for housing. Schools and day care are often available on base as well as access to a health care system. However, for those in the reserve component, families often do not have such military services readily available to them. Reserve component families are more likely to use their local community services and supports, particularly if they live far from a base. Given that there are service members in all 100 North Carolina counties, most civilian health care practitioners are likely to have at least one military family in their practice. Spouses who move closer to extended family (and away from military installations) during a family member's deployment may face changes in their health care services. Changing between civilian health coverage and the TRICARE system can mean a change in providers and a disruption of continuity of care at an already stressful time.

Of the many challenges faced by military families, the most daunting and obvious is that a loved one is deployed to a war zone. Rentz et al⁶ examined changes in the occurrence of child maltreatment in military families and the impact of deployment increases in the period 2000-2003. The rate of maltreatment in military families after the September 11, 2001 attacks was twice as high as in the period preceding that date. This article pointed to the stress of deployment and reintegration (and the risk thereof) as the likely culprit. Gibbs et al⁷ also found greater rates of substantiated child maltreatment among families of enlisted (noncommissioned) soldiers in the US Army when the soldiers were on combat-related deployments. Junior enlisted families are often among the youngest families and those who commensurately receive the least compensation, factors that are known to place civilian families at risk for domestic violence. It is important to note that entry into the military maltreatment referral process tends to be more sensitive than entry into civilian child protective services. This is because families live on base among those with whom the service member works and this allows for multiple points of observation and identification of a domestic violence situation. These articles, however, did not explore the effects of deployment on the reserve population or nonspouse caretaker referrals, populations which may in fact have fewer formal supports during a deployment.

There is no denying that war itself is a stressor. The service member undergoes physical and mental changes that allow him or her to survive living in a war zone. These adaptations are vital to mission readiness. The service member's family goes through changes during deployment as well. The wars in Iraq and Afghanistan have brought both reminders of lessons learned in past conflicts as well as new understandings of these challenges. The knowledge gained from the Mental Health Advisory Team reports, real-time assessments of behavioral health

benchmarks, and treatment in-theater is allowing real-time adjustments in combat stress treatment protocols. Advances in battlefield medicine are saving many from previously lethal injuries. However, some veterans will return with mental and physical injuries. Some will not return at all. All will have experienced some change. Their families have changed and grown in their absence as well.

Children as a whole are thought to be quite resilient when facing the deployment of a parent, but data from the present conflicts must be collected to evaluate their health and needs. Deployments cause stress on the entire family unit. Pediatricians and other primary care practitioners have the opportunity to explore the effects of deployment on the individual and family. The well-being of the parent who remains at home often directly impacts the response of the children. This observation appears to be particularly meaningful for the youngest children. Children of latency age have an increased verbal ability that allows for greater understanding and discussion of a parent's absence due to trainings and deployment. A wide range of reactionary behaviors may be seen from regressions in development (eg, bedwetting, resumption of thumb sucking) to attempts at mastery (eg, initiating a school project for veterans). Teenagers may display various responses as well, ranging from the young person who takes on many of the deployed parent's responsibilities to the adolescent who develops acting out behaviors. Maintaining routines helps to provide stability for children. Remaining connected to the deployed loved one is important also. The use of the Internet and text messaging has made this interaction more possible than ever before. The availability of these technologies also has added a new dimension because service members may feel more compelled to parent from the warzone in real time.⁸ At the same time as technology allows for connections, it should be closely monitored as media exposure of war can add to families' anxieties.

Families also adapt as the deployed service member reintegrates into the family. Reestablishment of routines and parental and spousal roles can take time. Patience is always required. When a family member returns with injuries the reintegration into family life may be complicated. When a parent returns with psychiatric trauma the family, spouse and children, can also be profoundly affected. The loss of a parent is undoubtedly life-altering. There is little research to date on these aspects of the wars in Iraq and Afghanistan, but the long-term effects on families and children of service members will perhaps be one of these conflicts' greatest legacies.

In recent years there has been an explosion of information and services, both nationally and in North Carolina, directed toward support of our military families. National efforts such as the SOFAR project and Zero to Five target children of deployed parents. The American Academy of Pediatrics has compiled a list of resources to help military families with special needs children find medical homes. Various other national and state by state programs are evolving to meet the needs of military families.

In North Carolina, the Citizen-Soldier Support Program is an effort established by Congress and spearheaded by the

Odum Institute at the University of North Carolina at Chapel Hill (UNC-Chapel Hill). Created to build bridges between local community resources and military families, the program focuses especially on the needs of National Guard and other Reserve component members and their families. The Governor's Focus on Returning Combat Veterans and their Families is a partnership between the state and the federal government, community practitioners, and community programs that addresses the mental health and substance abuse needs of North Carolina's veterans and their families. This year, North Carolina also became host to the nation's first statewide "Living in the New Normal: Supporting Children Through Trauma and Loss" initiative, which brought together more than 100 representatives of government, business, education, health agencies, and faith-based organizations at a Public Engagement Workshop held in Raleigh as a part of the new statewide initiative created by the Military Child Education Coalition.^{TM2}

At this point, the abundance of information but lack of clear direction in locating available resources stymies many families. One effort designed to guide families through the system is NC Health Info (www.nchealthinfo.org), a special Internet portal based at the Health Sciences Library at UNC-Chapel Hill. NC Health Info contains a collection of consumer health information with an easy-to-use mental health information area for military members and their families. It also has a specific portal for professional primary care and mental health providers containing comprehensive coverage of military-related mental health topics and best practice information. NC Health Info was the first "Go Local" Web site which was created and developed by librarians at the UNC-Chapel Hill Health Sciences Library to provide access to information about local health services combined with reliable health information provided by MedlinePlus, the National Library of Medicine's consumer health site. It serves as a model for more than 25 other state and regional health-information sites.⁹

As our veterans return there will be numerous opportunities

to assist them as they traverse the divide between civilian and military life. The biggest barrier to meeting the needs of military families is the shortage of civilian practitioners who have an understanding of the challenges facing military families. Knowing how deployment and reintegration affects families allows practitioners to identify when additional help is warranted. Understanding the experiences of the injured veteran and his or her family is a critical component of healing. The North Carolina AHEC Digital Library is a welcome resource for the practicing clinician interested in becoming more knowledgeable about the specific needs of military members and their loved ones. All North Carolina health professionals are eligible for membership in the AHEC Digital Library, a unique digital system that supports health professionals by providing a single, customized, web-based interface into health information resources and services. The AHEC Digital Library supports the delivery of quality, evidence-based health care across North Carolina and ensures that even in rural underserved areas of the state providers have access to the current information and resources necessary to provide quality care.¹⁰

Most military families wish only for an acknowledgement of their sacrifices. The call to duty has come for many of our neighbors here in North Carolina. Those of you who live near one of our military bases may be familiar with the sacrifices made by our country's service members and their families. Others may not realize that a neighbor gives service as part of the Reserve component. Sensitivity to the new stressors soldiers and families face during mobilization and deployment is important. Practical assistance is required for spouses adjusting to the functional roles as a single parent. Social and emotional needs of the children of deployed parents must be addressed. Military families often rely on civilian supports, particularly if the family is not located near a base and/or service members are on their initial deployments. North Carolina medical professionals have the opportunity to provide care for military family members right now. The challenge is to take the opportunity. **NCMJ**

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Diane Poole; Randy Collier; Nettie Evans, RN, MSN; Janice Faulkner; Michael Priddy, PhD; and Janet Knox

In 2001 the University Health Systems of Eastern Carolina and its flagship 745-bed tertiary care center, Pitt County Memorial Hospital, were experiencing workforce shortages resulting in closed beds and subsequent service delays. Projections of a forthcoming health care workforce crisis propelled the health system to develop new strategies to address this issue. Workforce development became an organizational priority to assure that the 1.2 million citizens in its catchment area could have timely access to its tertiary care services.

A partnership was established that included University Health Systems of Eastern Carolina, East Carolina University and Brody School of Medicine, Pitt Community College, Eastern Area Health Education Center, Greenville-Pitt Chamber of Commerce, and Pitt County Schools. The partners shared a common belief that low student academic achievement was one of the largest barriers to resolving the health workforce shortage in eastern North Carolina. They agreed that investing in local students who desired to live and make a difference in the region could serve to promote economic development through increased opportunities for stable, good paying jobs while concurrently addressing the University Health Systems' workforce demands.

To respond to the needs and to take advantage of the resources available to the system, the Pitt County Health Sciences Academy was developed. With financial support from The Duke Endowment and the creative and committed leadership of this unique partnership, the Academy opened its virtual door to high school freshmen in the fall of 2003 and evolved as a broad-based, far-reaching strategy to create systemic change by improving students' academic strengths in math, science, and reading comprehension. The Academy is a high school enhanced curriculum, a school-within-a-school model, that provides 4-year health career pathways (academic and

health sciences elective courses) for students pursuing health care-related careers after graduation. The Academy partners with Pitt Community College and East Carolina University's Brody School of Medicine to provide academic opportunities beyond the standard high school curriculum. Its goal was to produce students with increased academic knowledge and skills combined with an awareness of health career options. Emphasis was placed on the math, science, technology, reading, and critical thinking skills required for successful admission and completion of rigorous college or university health sciences coursework.

The first 4-year class of 51 students graduated in May 2007, and a total of 110 students have graduated since 2005. Thirty former high school participants have already entered the part-time workforce of Pitt County Memorial Hospital while pursuing health careers in colleges and universities. The program conducted 1- and 2-year follow-up studies of the graduates and found that 93% are pursuing health-related occupations.

The program has learned along the way that it can be more intensive and key modifications made to Pitt County Health Sciences Academy since its inception include opening its enhanced curriculum to all students, realigning its cohort to meet accountability standards, implementing an early college track, and enhancing early employment options such as internships and pharmacy technician certifications. In the future it plans to expand the early college option, consolidate the academy into a single facility, and explore aligning it with a regional math and science high school.

The partnership recognizes that the success of this endeavor can be expanded and continued. The program looks forward to continuing its task of expanding the academic achievement and interest in health careers of regional students.

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Randy Collier is retired Pitt County Health Sciences Academy director.

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Janet Knox is current administrator, Pitt County Health Sciences Academy. Ms Knox can be reached at jknox (at) pitt.k12.nc.us or 1717 West Fifth Street, Greenville, NC 27834.



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Spotlight on the Safety Net

*A Community Collaboration
Kimberly M. Alexander-Bratcher, MPH*

Durham Veterans Affairs Medical Center

The Veterans Health Administration (VHA) provides health care to servicemen and women honorably discharged from the military. Health care is provided on a priority system. Veterans with injuries related to the current conflicts receive first priority. Priority is next given to veterans based on the magnitude of their disabilities. The Veterans Health Administration also provides health care services for nonservice-related health issues based on availability and it offers a safety net program for low-income veterans. The safety net services are provided based on the available capacity of needed health services and on the patient's income. The VHA offers 5 specific safety net programs for low-income veterans: Home Based Primary Care, Care Coordination Home Telehealth, Contract Nursing Home, Compensated Work Therapy, and Health Care for Homeless Veterans. These programs are provided through the 4 Veterans Affairs Medical Centers (VAMCs) in North Carolina located in Asheville, Durham, Fayetteville, and Salisbury.

The Home Based Primary Care program provides a safety net for veterans between hospital discharge and Medicare coverage. A multidisciplinary team including the primary care physician, psychologist, social worker, nutritionist, dietician, and pharmacist provides care in the patient's home. The average patient is 77 years old and has some cognitive deficit. Many of the program's patients would be in nursing homes without the availability of the program. The length of stay in the program may be a few months, many years, or the remainder of a veteran's life. The program simply requires that the veteran be in need of home care and have a referral from a primary care provider in the VA system. The Durham VAMC provides this program to veterans within a 35-mile radius of the center. Other programs operate in Asheville and Salisbury with plans to expand to Fayetteville, Greenville, Morehead City, and Raleigh.

The Care Coordination Home Telehealth program provides distance care management for veterans with chronic progressive health problems including diabetes, hypertension, heart failure, and chronic obstructive pulmonary diseases (COPD). The program connects patients with a care coordinator to help them avoid emergency rooms visits and serves as the eyes and ears of the patient's physician. Monitors are placed in patients' homes that allow them to measure and input health data including heart rate, blood pressure, blood sugar, and oxygen saturation. The patients and their caregivers receive training on the monitors which ask a series of customized symptom questions. Patients may be connected directly to the measuring devices or patients or caregivers can input the data. The data are transmitted through telephone lines to the care coordinator and are then stratified by patient risk so that those with abnormal values are helped first.

Patients in the program are referred by their providers and must have a targeted condition, take 10 or more medications, have been hospitalized or visited an emergency room in the past 2 years, and be able to operate the monitor or have a caregiver who can operate the monitor. Patients range in age from 20 to 90 years in age. Since the program's inception in the Durham VAMC in August 2005, 550 veterans have been served. There are currently 356 active program participants. On a sample of program participants during a 7-month period, the program achieved a 65% reduction in days in a hospital bed, a 59% reduction in patient admissions, and a 54% reduction in patient visits. Future plans include expanding the program to include posttraumatic stress and substance abuse disorders.

The Contract Nursing Home program provides long-term care for veterans on the basis of need without regard to their priority status. Those with 70% to 100% disability receive paid nursing home care, long-term care, or home care programs. These home care programs include home health aids, adult day health care,

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and noninstitutional respite care. The Veterans Health Administration pays North Carolina's veterans' homes, located in Salisbury and Fayetteville, a stipend for each enrolled veteran. Veterans themselves may also receive payment in the form of compensation for military service-related conditions, pensions for conditions not related to military service, or Aid in Attendance funds for homebound veterans to receive care for daily living activities. Most of these veterans can receive care for free in a VAMC or satellite clinic. The program provides access to primary care, allied health, and other health care practitioners. The program has served more than 450 veterans since fiscal year 2006.

The Compensated Work Therapy program attempts to successfully reintegrate disabled veterans into the community through access to meaningful vocational opportunities aligned with the veteran's highest functional level. The program supports the idea that all veterans have potential for rehabilitation and focuses on recovery of a quality of life with which each veteran is comfortable. The program works with clinics and organizations across the Triangle including Duke University, the Employment Security Commission, the University of North Carolina (UNC) at Chapel Hill, North Carolina Vocational Rehabilitation, state agencies, and various private sector companies. It offers supported employment which specializes in working with veterans with severe mental illnesses, transitional work experience open to all veterans with any level of disability, and incentive therapy which caters to lower functioning veterans. A recently implemented program, Compensated Work Therapy served 45 veterans between August and November of 2007.

Health Care for Homeless Veterans provides health care (medical, mental, and dental), transitional housing, and special events for homeless veterans. The program helps homeless veterans establish a primary care home in a VAMC or satellite clinic. The program has a grant-in-per-diem program for transitional housing that will pay the community for transitional housing for up to 2 years. Currently, there is a partnership with Volunteers of America to build 24 housing units in Durham. Other facilities include Healing with Care, a 9-bed facility in Durham that will accept HIV-positive veterans; Servant Center in Greensboro for medically disabled and terminally ill homeless veterans; and Hospice. The UNC School of Dentistry is contracted to provide dental services for the program. In 1994 the Durham VAMC began community wide one-day events to connect homeless veterans with many services including employment, food, clothing, haircuts, financial counseling, and legal assistance in addition to mental health, posttraumatic stress disorder, and substance abuse services.

These 5 safety net programs administered by VHA provide significant services and opportunities that help bridge the gaps in care for low-income veterans across North Carolina.

Contributions from Bob Williamson, MSW, program coordinator, Health Care for Homeless Veterans; Tridell Morgan, MBA, program coordinator, Compensated Work Therapy; Ivey Chavis, MSW, coordinator, Contract Nursing Home; Peggy Becker, LCSW, program director, Home Based Primary Care; and Sue Kistler, lead care coordinator, Care Coordination Home Telehealth Program.

Readers' Forum

To the Editor:

There is no shortage of statistics about the obesity epidemic our nation faces. North Carolina is no stranger to this issue—just look around us as we shop at grocery stores or sit in doctors' offices to be treated for chronic conditions. Last year the Trust for America's Health ranked North Carolina as having the 17th highest rate of adult obesity and the 5th highest rate of overweight youths (ages 10-17) in the nation. We are taking personal risks by gaining excess weight, eating unhealthy foods, and not getting enough exercise. The costs to a person's life span are staggering, and that includes the high cost of health care needed to offset these lifestyle choices.

In response to this trend, Blue Cross and Blue Shield of North Carolina (BCBSNC) launched the Healthy Lifestyle Choices program [see also *North Carolina Medical Journal*, July/August 2006, pages 313-315]. This preventive health program began as a pilot program to help engage participants in regular exercise and nutritious eating. As part of our effort, participants received a personalized report on opportunities for lifestyle improvement, a diary to record food intake and physical activity, a step counter, a tape measure (to track waist circumference), a newsletter, and other educational materials. BCBSNC also provided physician toolkits for the treatment of obesity to 200 high-volume primary care practices. We acknowledged the critical role of the patient's physician by providing reimbursement for up to 4 office visits for the evaluation of obesity as a sole diagnosis.

Recently released results of a 2-year follow up study (2005-2006) compared the impact our Healthy Lifestyle Choices program had on the medical costs and behaviors of almost 1200 participants. Simple lifestyle changes added up to big savings—almost \$200 annually per participating member in the Healthy Lifestyle Choices program. Savings over the 2-year period totaled close to \$450 000. That translated into medical expenses that were one-third less than the average medical trend. The implication is that living a healthier lifestyle can save money.

Our findings are even more startling when you consider the significant impact our choices and habits have on the cost of health care. In fact, in 2004 BCBSNC found that members who are overweight cost the company 18% more than normal weight members in medical claims and expenses, and obese



members cost 32% more. Preventive health programs offered by BCBSNC aim to curb that trend.

Results of the Healthy Lifestyle Choices program hit not only the bottom line, but also waistlines. Of those participants with a weight loss goal, 49% lost an average of 11.6 pounds. In addition, waist circumference decreased one-half inch for participants on average. Participating members also had real success in increasing the number of days exercised per week and in increasing consumption of fruits and vegetables to two or more times per day.

The success of the program led BCBSNC to expand its healthy living offerings into our comprehensive Member Health Partnerships program, which gives members access to a wide variety of health and disease management resources. Recently added benefits include one-on-one health coaching, where members can talk to a registered nurse about losing weight, chronic conditions, or other health issues. Most members who enroll also have access to 6 free nutritional visits. We believe these approaches are, along with physician advocacy, helping to drive changes in behavior.

The results have exceeded our expectations with the emphasis on long-term lifestyle changes to help people improve their health and manage their costs. It is encouraging to see that participants are making healthier lifestyle changes in both diet and exercise. Nutrition visits are growing quickly. We are on the right track, working with a full range of health care team members to help patients/members manage their weight and weight-related health issues.

While these results are encouraging, we have only scratched the surface of the problem. In order to inculcate true lifestyle changes we need to engage members/patients not only at home but at work and school. This is a family project in the broadest sense. In the meantime, BCBSNC will continue to offer members tools and resources to help them, working with their doctors, make the best choices for their own health. It's a marathon, not a sprint.

*Don Bradley, MD
Chief Medical Officer and Senior Vice President
Blue Cross and Blue Shield of North Carolina*

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To the Editor:

In your Readers' Forum section of the September/October 2007 *Journal* one of your readers commented on the shortage of family physicians in the United States. He was quite correct in this evaluation and suggested solutions. One very important point he did not mention is the role that physician assistants and nurse practitioners will play in the care of sick Americans. I strongly believe these professionals will play an extraordinary role in the new health reform in this country. It is very well-known that many



minor illnesses can be taken care of by these practitioners; they listen to the patient, perform a physical examination, and diagnose and treat the illness. The successful results of the retail or minute clinics is the best proof of what the aforementioned practitioners can do to cut the cost of the increasing expenses of our health care. Of course this is only one factor in our broken system; the whole problem is more complex.

*C. A. Ruiz, MD
Greensboro, North Carolina*

Publishers of the *North Carolina Medical Journal*

The North Carolina Institute of Medicine

In 1983 the North Carolina General Assembly chartered the North Carolina Institute of Medicine as an independent, nonprofit organization to serve as a nonpolitical source of analysis and advice on issues of relevance to the health of North Carolina's population. The Institute is a convener of persons and organizations with health-relevant expertise, a provider of carefully conducted studies of complex and often controversial health and health care issues, and a source of advice regarding available options for problem solution. The principal mode of addressing such issues is through the convening of task forces consisting of some of the state's leading professionals, policy makers, and interest group representatives to undertake detailed analyses of the various dimensions of such issues and to identify a range of possible options for addressing them.

health policy
North Carolina Institute of Medicine

The Duke Endowment

The Duke Endowment, headquartered in Charlotte, NC, is one of the nation's largest private foundations. Established in 1924 by industrialist James B. Duke, its mission is to serve the people of North Carolina and South Carolina by supporting programs of higher education, health care, children's welfare and spiritual life. The Endowment's health care grants provide assistance to not-for-profit hospitals and other related health care organizations in the Carolinas. Major focus areas include improving access to health care for all individuals, improving the quality and safety of the delivery of health care, and expanding preventative and early intervention programs. Since its inception, the Endowment has awarded \$2.2 billion to organizations in North Carolina and South Carolina, including more than \$750 million in the area of health care.

The Duke Endowment

Running the Numbers

*A Periodic Feature to Inform North Carolina Health Care Professionals
About Current Topics in Health Statistics*

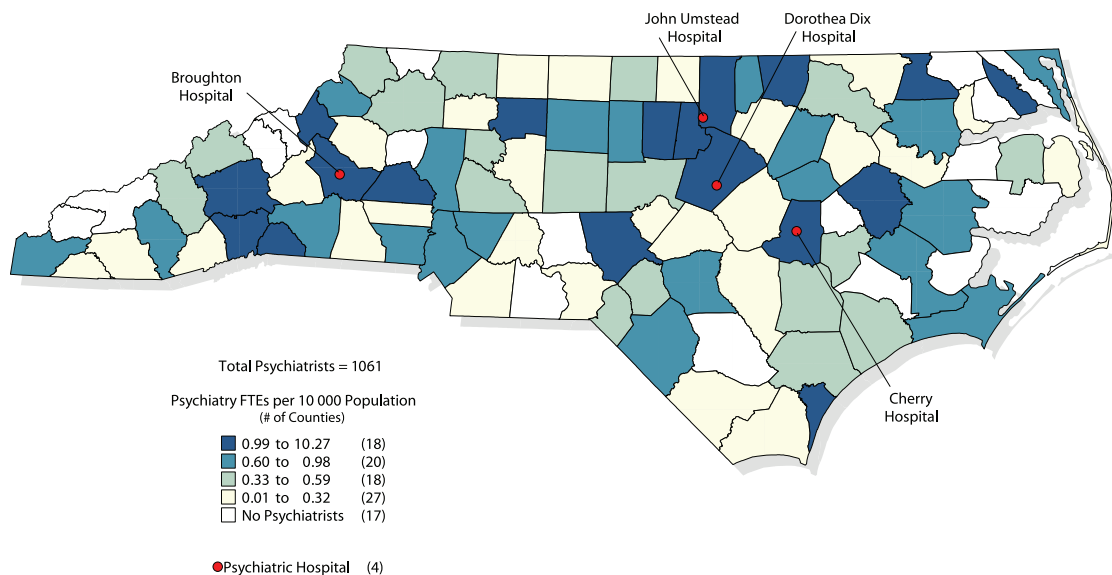
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Mental Health Professionals in North Carolina

Nearly one-third of nonelderly adults and one-sixth of children experience a mental health disorder in their lifetimes. Thirteen percent of Americans receive some form of mental health treatment each year including inpatient treatment (0.9%), outpatient treatment (7.9%), and behavioral medication (10%).

There are 3 broad classifications of mental health patients: (1) persons with developmentally disabilities, (2) persons with substance abuse disorders, and (3) persons with mental illnesses. Within this third group, there are numerous illnesses of varying severity. A severely mentally ill person who suffers from schizophrenia or bipolar disorder may have trouble functioning independently in society. People with moderate depression or posttraumatic stress disorder may be appropriately treated with medication. Within mental health there exists a wide range of health issues that may not require intense medical treatment but which may affect a patient's well-being.

Figure 1.
Psychiatrist Full-Time Equivalents per 10 000 Population North Carolina, 2004



Source: LINC, 2005; North Carolina Health Professions Data System, with data derived from the North Carolina Medical Board, 2004; NC DHHS, MHDDSAS, 2005.

Produced by: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

*Psychiatrists include active (or unknown activity status), in-state, nonfederal, nonresident-in-training physicians who indicate a primary specialty of psychiatry, child psychiatry, psychoanalysis, psychosomatic medicine, addiction/chemical dependency, forensic psychiatry, or geriatric psychiatry, and secondary specialties in child psychiatry and forensic psychiatry.

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Research estimates suggest there are 64 000 children and 49 000 adults with developmental disabilities in North Carolina. All together, research suggests 400 000 North Carolinians suffer from substance abuse disorders. Research also estimates there are 66 000 children and adolescents and 356 000 adults with serious mental illnesses within the state.

Among people with more moderate mental illnesses, depression is one of the most common ailments. According to the National Center on Drug Use and Health, 9% of North Carolina residents ages 12 to 17 years old suffered from at least one depressive episode in 2005. Among adults in the state, nearly 8% suffered at least one episode.

According to the Health Professions Data System at the University of North Carolina at Chapel Hill, 44 North Carolina counties qualified as Mental Health Professional Shortage Areas in 2004 because they had fewer than one-third of a psychiatrist for every 10 000 people. Between 1999 and 2004, 48 counties experienced a decline in psychiatrists relative to the change in population, 5 counties lost the psychiatrists they had, and 12 counties had none and gained none. In other words, during that 5-year period, nearly two-thirds of North Carolina counties either had no psychiatrists or experienced a decline in supply. The map in Figure 1 shows the uneven distribution of psychiatrists across counties and their density in relation to the state's major mental health facilities.

Compared to the rest of the nation, North Carolina ranks 20th in the density of psychiatrists. In 2005 North Carolina had 1091 psychiatrists in practice, or 1.2 per 10 000 population. Regardless of rank, North Carolina is well below the overall national average. In 2005 the United States had 41 958 psychiatrists in practice, or 1.42 per 10 000 population. For psychologists, North Carolina fell below the national average with 2.58 psychologists per 10 000 population compared to 3.35 for the nation. It is only in the social work profession where the state exceeds the national average with 17.9 per 10 000 compared to 15.8 per 10 000 population.

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*Contributed by the North Carolina Health Professions Data System,
Sheps Center for Health Services Research, the University of North Carolina at Chapel Hill*

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John Anderson MD, MPH
Duke Primary Care
615 Douglas Street, Suite 601
Durham, NC 27705
Email: donna.ecclestone@duke.edu

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Medical Director

The Private Diagnostic Clinic, PLLC, Duke's faculty practice plan, seeks a Medical Director to align and lead our specialty and primary care physician network in Wake County. The **PDC Medical Director** of Wake County will maintain a clinical practice and will be responsible for the oversight of both primary and specialty care in Wake County. The selected candidate will work collaboratively with the Surgical Medical Director in Wake County, the Medical Director of Duke Primary Care, Duke Raleigh Hospital administration, and the Private Diagnostic Clinic to support Duke Medicine growth in the local area.

Interested candidates should contact:
Theodore Pappas, M.D.,
PDC Executive Medical Director,
3100 Tower Blvd, Suite 600, Box 80,
Durham, NC 27707
Email: donna.ecclestone@duke.edu

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