

Older Jail Inmates and Community Acute Care Use

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Jail has become a critical site for linking medically vulnerable older adults to community health care. Approximately 12 million Americans pass through jails each year and nearly all return to the community within 6 months where many struggle to access non-emergency medical care. Between 1996 and 2008 the number of “older” or “geriatric” inmates (aged 55 years or older) increased 278% compared with a 53% growth in the overall jail population.^{1,2} Now, approximately 550 000 older adults spend time in jail each year, comprising 10% of all inmates. Yet little is known about their health care and social service needs.

Reducing acute care use (hospitalizations and emergency department [ED] use) and improving insurance access for former inmates is a priority in the Affordable Care Act (ACA).³ Although most inmates are without health insurance,⁴ those with insurance demonstrate reduced recidivism and better access to mental health and substance abuse treatment when released.^{5–7} The ACA expands Medicaid eligibility for low-income adults and allows eligible inmates to apply for coverage while in jail.^{3,8} As most persons passing through jails will be eligible for Medicaid in states participating in the expansion, an estimated 4 to 6 million jail inmates will gain new coverage by the end of 2014 through outreach and patient navigator assistance.⁹

For community-dwelling older adults, health and social factors beyond insurance drive community acute care use, such as functional impairment, uncontrolled symptoms, and housing instability.^{10–12} This may also be true for older former inmates, many of whom experience “accelerated aging” because of high rates of disability and chronic disease at relatively young ages.¹³ Therefore, we conducted a study of older jail inmates to describe predetainment acute care use and anticipated plans for using acute care after release, and to assess the factors associated with use.

Objectives. We examined older jail inmates’ predetainment acute care use (emergency department or hospitalization in the 3 months before arrest) and their plans for using acute care after release.

Methods. We performed a cross-sectional study of 247 jail inmates aged 55 years or older assessing sociodemographic characteristics, health, and geriatric conditions associated with predetainment and anticipated postrelease acute care use.

Results. We found that 52% of older inmates reported predetainment acute care use and 47% planned to use the emergency department after release. In modified Poisson regression, homelessness was independently associated with predetainment use (relative risk = 1.42; 95% confidence interval = 1.10, 1.83) and having a primary care provider was inversely associated with planned use (relative risk = 0.69; 95% confidence interval = 0.53, 0.89).

Conclusions. The Affordable Care Act has expanded Medicaid eligibility to all persons leaving jail in an effort to decrease postrelease acute care use in this high-risk population. Jail-to-community transitional care models that address the health, geriatric, and social factors prevalent in older adults leaving jail, and that focus on linkages to housing and primary care, are needed to enhance the impact of the act on acute care use for this population. (*Am J Public Health.* 2014;104:1728–1733. doi:10.2105/AJPH.2014.301952)

METHODS

We conducted a cross-sectional study with 247 inmates aged 55 years or older in the San Francisco County Jail in California between May 15 and November 15, 2012. Eligibility included speaking English, Spanish, or Cantonese; not posing a safety risk (according to the Sheriff’s deputy, regardless of housing unit); and answering all questions about acute care use. We obtained research consent by using a teach-to-goal method.¹⁴ Native-speaking interviewers read questionnaires to participants, and staff abstracted medical records. Consistent with federal regulations governing prisoner research,¹⁵ permitted practice in California,¹⁶ and relevant ethical considerations,¹⁷ we deposited \$10 in participants’ jail accounts as compensation for their time.

Measures

Acute care use. We asked: “In the 3 months before jail, did you ever visit a hospital emergency room?” and “In the 3 months before jail, did you ever stay overnight in a hospital?” We defined anticipated postrelease acute care use as responding to “after you are released from

jail, where will you go for health care?” with “emergency room,” “hospital,” or “jail.” Few inmates receive discharge planning in jail and few of our study participants would have received it before our interviews, which were conducted soon after incarceration.

Sociodemographics and health conditions. We assessed sociodemographics including annual income (categorized as ≤\$15 000 vs >\$15 000 based on the new ACA cut-off for Medicaid minimum income eligibility criteria of 133% of the federal poverty level in 2013³). We assessed health conditions through a combination of chart review and self-report with previously validated questions from the Health and Retirement Study.¹⁸ We identified serious mental illness through the same method by using the Bureau of Justice Statistics’ definition of serious mental illness (major depressive, mania, or psychotic disorder).¹⁹ Self-report is well-validated in older adults^{20,21} including with vulnerable populations such as the homeless.²² We conducted medical chart review of all participants who consented (93%) to increase detection of diagnoses for those participants who do not know their medical conditions.

TABLE 1—Predetainment Acute Care Use and Plans to Use Acute Care After Release From Jail According to Participant Characteristics Among 247 Inmates Aged 55 Years or Older in the San Francisco County Jail: California, 2012

Characteristic	All Participants (n = 247), No. (%) or Mean (Range)	No Predetainment Acute Care Use ^a (n = 119; 48%), No. (%) or Mean (Range)	Predetainment Acute Care Use (n = 128; 52%), No. (%) or Mean (Range)	P	No Anticipated Acute Care Use ^b (n = 132; 53%), No. (%) or Mean (Range)	Anticipated Acute Care Use (n = 115; 47%), No. (%) or Mean (Range)	P
Age, y ^c	59 (55–75)	59 (55–75)	59 (55–70)	.91	60 (55–75)	59 (55–68)	.13
Other sociodemographics							
Age 55–64 y	221 (90)	106 (89)	115 (90)	.84	115 (87)	106 (92)	.2
Race/ethnicity							
Black	155 (63)	74 (62)	81 (63)	.66	87 (66)	68 (59)	.73
White, non-Latino	50 (20)	21 (18)	29 (23)		24 (18)	26 (23)	
Latino	22 (9)	12 (10)	10 (8)		12 (9)	10 (9)	
Asian/Pacific Islander	14 (6)	8 (7)	6 (5)		7 (5)	7 (6)	
Female	12 (5)	4 (3)	8 (6)	.38	9 (7)	3 (3)	.15
Annual income < \$15 000	197 (80)	93 (78)	109 (85)	.15	107 (81)	95 (83)	.91
High school, GED, or more	183 (74)	91 (76)	92 (72)	.41	97 (73)	86 (75)	.82
Health conditions^d							
Self-rated health status							
Poor or fair	129 (52)	53 (44)	77 (60)		71 (53)	59 (51)	
Good, very good, or excellent	117 (48)	66 (56)	51 (40)	.016	61 (47)	56 (49)	.738
Hypertension	154 (62)	76 (64)	80 (62)	.83	92 (70)	63 (55)	.01
Diabetes	42 (17)	22 (18)	20 (16)	.55	25 (19)	17 (15)	.39
Heart attack or coronary disease	49 (20)	18 (15)	31 (24)	.07	30 (23)	19 (17)	.22
Congestive heart failure	17 (7)	4 (3)	13 (10)	.04	12 (9)	5 (4)	.11
Stroke	25 (10)	10 (8)	15 (12)	.39	16 (12)	9 (8)	.26
Cancer ^e	18 (7)	5 (4)	13 (10)	.07	9 (7)	9 (8)	.76
Chronic lung disease	39 (16)	18 (15)	21 (17)	.76	25 (19)	14 (12)	.14
HIV/AIDS	13 (5)	5 (4)	8 (6)	.46	4 (3)	9 (8)	.15
Hepatitis C	121 (49)	53 (45)	69 (54)	.18	67 (51)	55 (48)	.64
Alzheimer's, dementia, senility ^f	24 (10)	8 (7)	16 (13)	.12	16 (12)	8 (7)	.18
Arthritis or rheumatism	124 (50)	61 (51)	63 (50)	.13	65 (49)	60 (52)	.69
≥ 3 chronic conditions	116 (47)	50 (42)	66 (52)	.13	68 (52)	48 (42)	.13
Serious mental illness ^g	118 (48)	50 (42)	75 (59)	.07	60 (46)	58 (50)	.47
Geriatric conditions							
Persistent pain	124 (50)	51 (43)	74 (57)	.02	64 (48)	61 (53)	.52
Persistent shortness of breath ^h	37 (15)	13 (11)	25 (19)	.08	24 (18)	13 (12)	.15
Functional impairment ⁱ	110 (45)	34 (29)	51 (40)	.06	47 (36)	38 (33)	.67
Recent fall(s) ^j	75 (30)	26 (22)	49 (39)	< .01	42 (32)	33 (29)	.6
Social and behavioral health factors							
Tobacco use ^k	162 (66)	73 (62)	89 (70)	.18	86 (66)	76 (67)	.87
Drug use ^l	134 (54)	66 (55)	70 (54)	.71	76 (58)	58 (50)	.26
Problem alcohol use ^m	148 (60)	70 (59)	79 (61)	.68	87 (66)	62 (54)	.05
Homelessness ⁿ	112 (45)	42 (36)	71 (55)	< .01	61 (46)	52 (45)	.17
Medication insecurity ^o	100 (40)	39 (33)	64 (50)	.01	55 (41)	49 (42)	.88
Food insecurity ^p	152 (62)	68 (57)	89 (70)	.04	79 (60)	79 (68)	.17

Continued

Geriatric conditions. We assessed the following geriatric conditions commonly associated with acute care use: persistent symptoms (pain

and shortness of breath),^{23,24} functional impairment, and recent falls.^{10,12,25} Functional impairment included any self-reported activity

of daily living difficulty (bathing, feeding, dressing, transferring, or toileting)^{26,27} or a mobility impairment (needing an assistive

TABLE 1—Continued

	Acute care use						
Has primary care provider	174 (70)	89 (70)	85 (71)	.74	104 (79)	70 (61)	<.01
Recent acute care use	128 (52)	64 (48)	64 (56)	.26
Anticipated acute care postrelease	115 (47)	64 (54)	64 (50)	.42

Note. GED = general equivalency diploma.

^aWe defined recent acute care use as answering “yes” to the questions “In the 3 months before jail, did you ever visit a hospital emergency room?” or “In the 3 months before jail, did you ever stay overnight in a hospital?”

^bWe defined plans for acute care use after release as answering “emergency room,” “hospital,” named a specific emergency room, or replied “I get my health care in the jail” to the question “after you are released from jail, where will you go for health care?”

^cAge analyzed with *t* tests. All other factors analyzed with χ^2 tests.

^dHealth conditions determined through self-report or documentation in the jail medical record.

^eExcluding minor skin cancers.

^fDetermined through documentation in the jail medical record or by answering “yes” to the following question from the Health and Retirement Survey²⁸: “Do you have or have you ever been told by a medical professional that you have Alzheimer’s, dementia, or senility?”

^gSerious mental illness includes any major depressive, manic, or psychotic disorder and was determined through self-report or documentation in the jail medical record.¹⁹

^hPersistent defined as a symptom described as “moderate or severe” and occurring “constantly or frequently.”^{23,24}

ⁱFunctional impairment defined as having difficulty with 1 or more activities of daily living (bathing, eating, transferring, toileting, or dressing)²⁷ or needing a cane, wheelchair, walker, or other aid to help with daily activities.

^jDefined as any self-reported fall to the ground within the past 3 months.²⁵

^kTobacco use defined as answering “yes” to “In the week before you came to jail, did you smoke cigarettes?”

^lDrug use defined as documentation of current drug use in the jail medical record or answering “no” to “In the last year, could you get through the week without using drugs?”³²

^mProblem alcohol use defined as documentation of current alcohol use disorder in jail medical record or a positive screen on the validated, 3-item Alcohol Use Disorders Identification Test-C.³³

ⁿHomelessness defined as needing to spend 1 or more nights outside or in a homeless shelter in the 30 days before jail.²⁹

^oMedication and food insecurity defined as answering “yes” to “Was there a time in the last year when you did not have enough money for medications or food?”³¹

device [e.g., cane, walker] to help with daily activities)²⁸ in the 2 weeks before detainment.

Social and behavioral health factors. We assessed homelessness, medication insecurity and food insecurity.^{29–31} In addition, we assessed illicit drug use through jail medical record documentation of current use or a positive screen on a Drug Abuse Screening Test item.³² We defined problem alcohol use as medical record documentation of current alcohol use disorder or a positive screen on the 3-item Alcohol Use Disorders Identification Test-C.³³

Statistical Analysis

We used descriptive statistics to describe participant characteristics and the prevalence of predetainment acute care use and anticipated acute care use. We assessed associations with acute care use with χ^2 analyses. All variables for which $P < .2$ in the bivariable analyses were included in the multivariable modified Poisson regression models.

We conducted analyses by using Stata version 12 (StataCorp LP, College Station, TX). We managed study data by using Research Electronic Data Capture (REDCap, version 5.9.7, Vanderbilt University, Nashville, TN) application.³⁴

RESULTS

Of 319 adults aged 55 years or older in jail over the study period, 23 (7%) did not meet inclusion criteria: 7 (2%) did not speak English, Spanish, or Cantonese, and 16 (5%) were deemed a safety risk by the Sheriff’s department. Of the remaining 296, 44 (15%) declined and 252 (85%) were enrolled. Two (<1%) withdrew and 3 (1%) did not answer the acute care use questions, resulting in a sample of 247. Overall, 230 (93%) consented to medical chart review. Those who did not meet inclusion criteria, declined to participate, or declined permission for medical chart review did not differ in age from participants.

Most participants were male (95%) and Black (63%) and the mean age was 59 years (range = 55–75 years; Table 1). More than half (52%) reported using acute care within 3 months of detainment. Of these, 69 (54%) used ED services and were not hospitalized, 50 (39%) used ED services and were hospitalized, and 9 (7%) were hospitalized without ED use. Nearly as many (47%) anticipated using acute care after release (Table 1). Predetainment users were no more likely to anticipate using acute care after release than nonusers (50% vs 43%; $P = .26$; Table 2). Overall, 73% used

acute care within 3 months of detainment or anticipated using it after release.

Characteristics According to Acute Care Use

Participants reporting predetainment acute care use were more likely to have congestive heart failure (10% vs 3%; $P = .04$), poor or fair self-rated health (60% vs 45%; $P = .03$), persistent pain (57% vs 43%; $P = .02$), and falls (39% vs 22%; $P = .01$). Social factors associated with predetainment acute care use included homelessness (55% vs 36%; $P < .01$), medication insecurity (50% vs 33%; $P = .01$), and food insecurity (70% vs 57%; $P = .04$; Table 1).

Participants who anticipated using acute care after release were less likely to have a primary care provider (61% vs 79%; $P < .01$), problem alcohol use (54% vs 66%; $P = .05$), or hypertension (55% vs 70%; $P = .01$; Table 1).

Independent Predictors of Acute Care Use

After multivariable adjustment, homelessness remained independently associated with predetainment acute care use (relative risk [RR] = 1.42; 95% confidence interval [CI] = 1.10, 1.83), and having a primary care

TABLE 2—Factors Independently Associated With Recent Acute Care Use and Anticipated Acute Care Use After Release Among 247 Inmates Aged 55 Years or Older in the San Francisco County Jail: California, 2012

Factors	Predetainment Acute Care Use, Adjusted RR (95% CI)	Planning to Use Acute Care After Release, Adjusted RR (95% CI)
Age	1.01 (0.97, 1.04)	0.99 (0.95, 1.02)
Female gender	...	0.52 (0.20, 1.34)
Smoking	1.19 (0.89, 1.60)	...
Very poor or poor self-rated health status	0.88 (0.65, 1.19)	...
Hypertension	...	0.71 (0.55, 0.93)
Any heart disease	1.23 (0.95, 1.59)	0.80 (0.53, 1.21)
Cancer	1.28 (0.92, 1.77)	...
Chronic lung disease	...	0.70 (0.4, 1.23)
HIV	...	1.59 (1.03, 2.47)
Hepatitis C	0.96 (0.74, 1.24)	...
Alzheimer's disease, dementia, senility, or serious memory problem	1.20 (0.86, 1.67)	0.69 (0.32, 1.48)
Serious mental illness	1.10 (0.85, 1.42)	...
Functional impairment	0.93 (0.69, 1.26)	...
Persistent pain	1.12 (0.83, 1.51)	...
Persistent shortness of breath	0.98 (0.71, 1.34)	1.06 (0.61, 1.85)
Recent fall(s)	1.19 (0.88, 1.6)	...
Problem alcohol use	...	0.72 (0.55, 0.94)
Homelessness	1.42 (1.10, 1.83)	0.90 (0.69, 1.18)
Has primary care provider	...	0.69 (0.53, 0.89)

Note. CI = confidence interval; RR = relative risk.

provider was associated with a 31% decreased risk of anticipated acute care use (RR = 0.69; 95% CI = 0.53, 0.89; Table 2).

Other factors inversely associated with anticipated use were hypertension (RR = 0.71; 95% CI = 0.55, 0.93) and problem alcohol use (RR = 0.72; 95% CI = 0.55, 0.94). Having HIV was associated with a 59% increased risk of anticipated acute care after release (RR = 1.59; 95% CI = 1.03, 2.47).

DISCUSSION

More than half of older jail inmates reported using acute care in the 3 months before jail, and nearly half anticipated using acute care after release. Overall, the majority (73%) reported using acute care before jail or anticipating use of acute care after release. Most participants in this study were between the ages of 55 and 64 years, and therefore did not meet the Medicare age requirements, and most reported an annual

income that would make them eligible for Medicaid under the ACA. Moreover, identifying a primary care provider was associated with a reduced risk of planning to use acute care after release. These findings suggest that older jail inmates may benefit from the ACA's effort to facilitate access to primary care for former jail inmates by enrolling them in Medicaid through evidence-based strategies such as patient navigation.^{7,9}

This study also suggests that factors beyond access to insurance likely lead to acute care use in this medically complex population. Consistent with the "accelerated aging" of incarcerated populations,¹³ participants in this study with an average age of 59 years reported poor or fair health (52%), chronic lung disease (16%), and recent falls (30%) at rates similar to those reported in community-based lower-income older adults with an average age of 71.7 years (51% poor or fair health, 23% lung disease, and 22% recent fall).³⁵ Three-month

ED use (48%) in this study was similar to rates found in community-dwelling persons approaching the end of life (51%)³⁶ and far exceeded the 19.1% 1-year ED use found in nationally representative community dwellers with a similar average age (59.6 years).²²

Expanded Medicaid enrollment for jail inmates may not sufficiently reduce their post-release acute care use. Although this study's participants had access to Healthy San Francisco, a program that extends community clinic care access to all San Franciscans regardless of insurance, there remained a high rate of predetainment acute care use. Reasons for high acute care utilization could include poor understanding of the benefits of primary care because of low health literacy common in incarcerated and older populations, a struggle to access primary care because of functional impairments (45% in this study), or seeking acute care for pressing social service or behavioral health needs. In this study, nearly half (46%) of those who reported recent acute care use visited an ED without requiring hospitalization, suggesting the possibility of low medical acuity. In addition, homelessness remained the primary factor independently associated with acute care use in multivariable analyses. Taken together, these findings suggest that older jail inmates may require access to social service programs in addition to insurance if acute care utilization rates are to be reduced.

The cross-sectional design limited our ability to determine the causes of acute care use or anticipated acute care use after release, though in our analysis we included the health, geriatric, and social factors that drive acute care use in community-dwelling older adults.^{10-12,37} Acute care use was based on self-report. However, self-reported acute care use is validated in older adults and has been used to describe preincarceration acute care use in jail inmates.³⁸⁻⁴⁰ Important next steps include determining rates and appropriateness of acute care use longitudinally, understanding the association between plans to use acute care and actual use, and identifying the causes of acute care use in diverse populations of former jail inmates.

This study was conducted in 1 urban jail system, which could limit its generalizability to other settings. However, as jail populations are aging nationwide and acute care use in this population has not been described, this study

constitutes a critical first step to quantifying the high rates of acute care use in older inmates and the complex factors associated with that use.

As criminal justice populations age, jails increasingly represent critical health care delivery sites where medically vulnerable older adults can be reached. New ACA provisions address this opportunity by specifically targeting jail inmates for insurance enrollment upon their release. Our findings support previous studies showing that interventions that extend beyond access to insurance are also an important means of improving care for vulnerable populations. These include primary care homes, patient navigation for vulnerable populations, and case management–based transitional care programs.^{41–43} As the number of older jail inmates grows, ACA programs used to enhance insurance enrollment, such as patient navigation, should also be applied to directly facilitate use of nonacute care following release. ■

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Contributors

All authors had full access to all the data in the study and take full responsibility for the integrity of the data and the accuracy of the data analysis. A. H. Chodos, C. Ahalt, and B. A. Williams contributed to the study concept and design, and drafted the article. C. Ahalt and B. A. Williams also acquired the data. A. H. Chodos, C. Ahalt, I. Stijacic Cenzer, J. Myers, J. Goldenson, and B. A. Williams analyzed and interpreted data and performed critical revision of the article for important intellectual content. I. Stijacic Cenzer also performed statistical analysis. B. A. Williams also obtained funding and supervised the study. C. Ahalt and I. Stijacic Cenzer also provided administrative, technical, and material support.

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Human Participant Protection

The study was approved by the Committee on Human Research at the Human Research Protection Program at the University of California, San Francisco.

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