Referral and Treatment for Tobacco Dependence among Hospitalized Smokers

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Background

- 6.5 million smokers hospitalized in US each year

- Hospitalization is a "teachable moment"
    - Smokers are hospitalized more than non-smokers
    - May be more receptive to intervention
    - Those admitted for smoking-related illnesses may be highly motivated to quit

- Smoking cessation with hospitalized pts works—intensive intervention with:
    - Inpatient contact
    - At least 1 month follow up
    - Sig. higher 6-12 month abstinence

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Rigotti et al 2007, McBride CM 2003,

Most hospitals fail to treat

- Across 33 hospital studies – smokers often not treated:
    - Assess smoking status - 60%
    - Advise to quit - 42%
    - Advise to use NRT 14%
    - Referrals and Follow up-12%

- Across 83 hospitals in 9 states few "core measures" smokers received any form of counseling:
    - 65% of smokers with acute myocardial infarction
    - 39% of smokers with heart failure
    - 35% of smokers with community-acquired pneumonia

- Across 400 hospitals, African Americans with AMI sig. less likely to receive smoking cessation counseling compared to Whites

- Psychiatric inpatients, who have a high prevalence of smoking rarely receive tobacco treatment

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3

Freund M et al 2008, JCAHO 2002, Sonel AF et al 2005, Prochasta JJ et al 2004

Many hospitals adopting evidence-based specialty services

- No data are available, but many are adopting specialty services
- U. Kansas Hospital=UKanQuit
- UKanQuit provides bedside counseling (15-30 minutes)
  - Assess withdrawal
  - Work with nurse and physician to adjust inpatient NRT
  - Assess patients' interest in quitting
    - Brief motivational intervention if not interested
    - Develop quit plan if interested
- Arrange meds on discharge
  - Follow up treatment after discharge
    - Provide counseling or fax-referral to quit line
    - Contact pts at 6 months to assess outcomes

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UKanQuit: referral and treatment

- Required field on EMR
    - Smoking status
    - Want to talk to UKanQuit counselor
    - Automatic email to UKanQuit
- Nurses, physicians can order consult
- UKanQuit Staff tries to visit patient within 12-24 hrs

Purpose of present study

- Effectiveness = efficacy X reach
- To examine how UKanQuit reaches smokers
  - Who gets referred?
  - Who gets treated?
- To determine rates of referral and rates of treatment - Identify variation in referral and treatment
- To identify predictors of referral and treatment
- To offer suggestions on how to improve services to underserved subpopulations

Setting and participants

- University of Kansas Hospital
  - 475 bed academic medical center
- Downloaded EMR data to examine 1st year implementation of UKanQuit
  - All patients admitted to hospital 1 year following UKanQuit

Methods : Identifying smokers for analyses

- Smokers aged 12- 89 yrs
- Identified as smokers if they responded "yes" to one of two required fields in the EMR:
  - "Have you smoked in the past year," and
  - "Have you smoked in the last 30 days"
- Included in the analysis if "yes" to both questions
- For patients who were admitted to the hospital more than once during the year, only data from the first admission in the year were included in analyses

Measures

- Main outcome measures:
    - Referral to UKanQuit
    - Treatment by UKanQuit

- Demographic measures:
    - Age
    - Gender
    - Ethnicity/race
    - Marital status
    - Language
    - Insurance coverage

- Smoking behavior measures:
    - No of years smoked
    - Cigarette packs per day
    - Living with other smokers

- Diagnosis
    - Patients' primary discharge diagnosis group by JCAHO core measures (AMI, HF, PN vs. all other diagnoses

- Hospital services
    - Medical, surgical, obstetric, psychiatric

- Admitted through emergency
    - Yes/No

- Length of stay

Data analysis

- Description of hospitalized smokers
  - Summary statistics
- Predictors of referral to UKanQuit
  - Bivariate analysis
  - Logistic regression
- Predictors of treatment by UKanQuit
  - Bivariate analysis
  - Logistic regression
    - Factors significant at .25 level in bivariate analysis were included in the multiple logistic regression model and final parsimonious model included factors significant at the 0.05 level
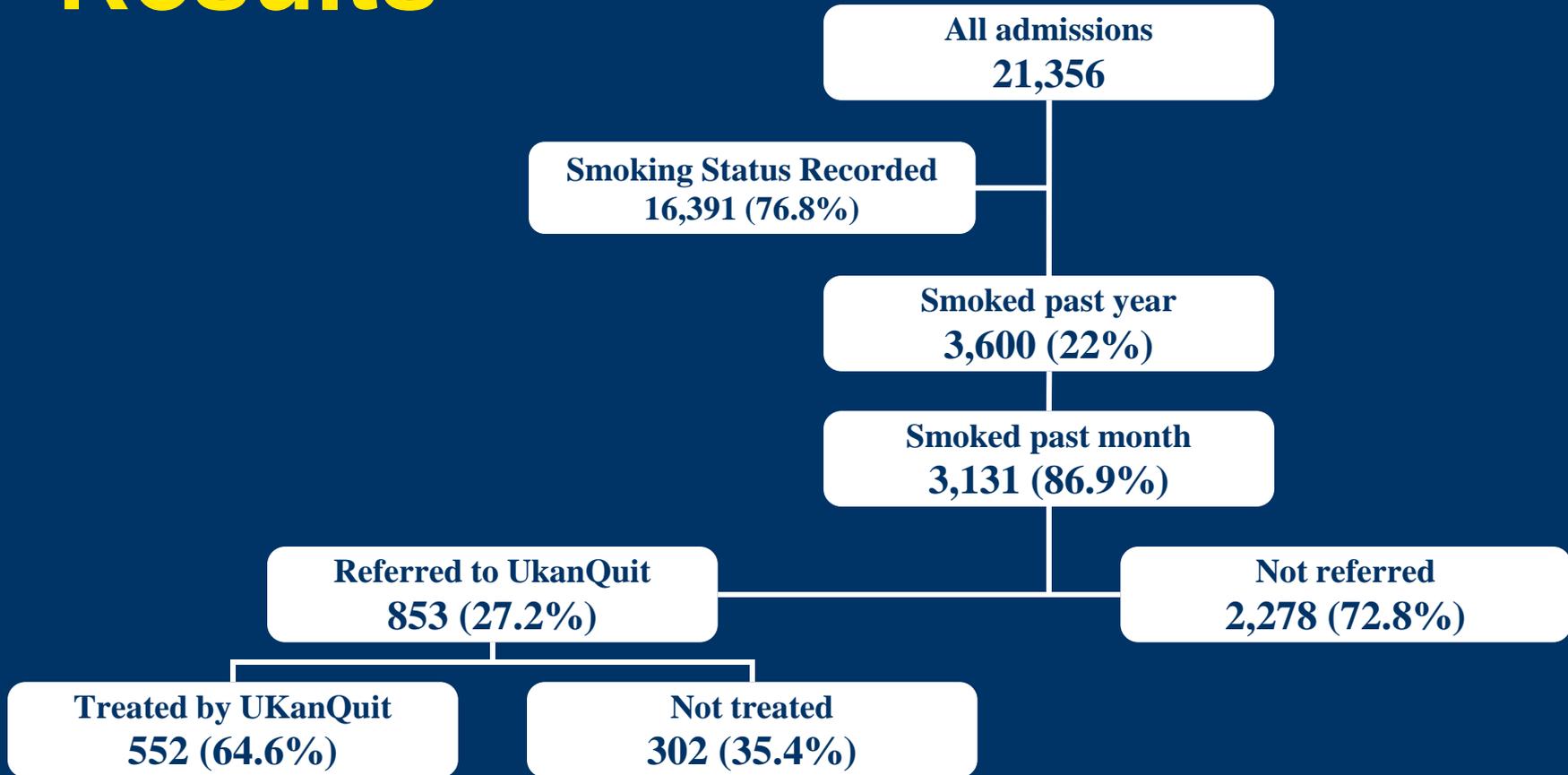
Results

Figure 1: Flow chart of patients admitted between September 1, 2006 and August 31, 2007

Descriptive statistics: current smokers

- Mainly White (71%); Male (57%)
- Mean Age 46 years
- Smoked >10 years (70%)
- Smoked > 1ppd (20%)
- Most admitted through the emergency (53%)
- Median length of stay (3 days)
- JCAHO core measure patients (6%)

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Bivariate predictors of referral to UKanQuit

Factors			Crude OR (95% CI)	P-value
Marital status n (%)	Married (ref.)	Single	0.71(0.59-0.85)	0.003
Ethnicity n (%)	White (ref.)	Hispanic	0.46 (0.28-0.74)	
		Native Americans	5.11 (1.28-20.5)	0.001
Language n (%)		Non English speaking	0.45 (0.25-0.82)	0.03
Years smoked n (%) > 10 years			2.46 (2.02-3.00)	< 0.0001
Cig packs per day n (%)		> 1 pack / day	1.40 (1.15-1.69)	0.0008
Admission service n (%)	Med (ref)	Surgical	0.39 (0.33-0.47)	
		Obstetrics	0.35 (0.23-0.52)	<0.0001
		Psychiatry	0.26 (0.19-0.37)	
Admission through the emergency			0.79 (0.67-0.93)	0.006
JCAHO core measure diagnosis			3.85 (2.85-5.19)	0.001

N= 853

Multivariate predictors of referral to UKanQuit

Factors	Adjusted OR (95% CI)	P value
JCAHO core measure diagnosis	2.34 (1.69-3.25)	<.0001
Smoked >10 years	2.10 (1.69-2.61)	<.0001
Admission through emergency	0.79 (0.66-0.95)	0.01
Admission services (ref: medical admissions)		<0.0001
Surgical	0.46 (0.38-0.56)	
Obstetrics	0.60 (0.39-0.92)	
Psychiatry	0.35 (0.25-0.50)	

Bivariate predictors of treatment by UKanQuit

Factors			Crude OR (95% CI)	P-value
Marital status n (%)	Married (ref.)	Separated	0.20 (0.05-0.77)	0.006
		Widowed	0.42 (0.21-0.86)	
Admission through the emergency			1.34 (1.00-1.80)	0.06
Length of stay ref. 0-2 days		3 days	1.54 (1.02-2.31)	
		4-6 days	2.15 (1.47-3.15)	<0.0001
		> 6 days	1.85 (1.27-2.70)	

N=552

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Multivariate predictors of treatment by UKanQuit

Factors	Adjusted OR (95% CI)	P value
Admissions through emergency	1.42 (1.05, 1.92)	0.02
Length of stay (ref. 0-2 days).		
3 days	1.48 (0.97, 2.28)	
4-6 days	2.31 (1.54, 3.46)	0.0003
> 6 days	1.78 (1.20, 2.65)	

Summary of findings

- JCAHO core measure diagnosis is the leading predictor of referral
- Smokers with shorter history of smoking less likely to be referred
- Referral varied by admission service
- Admission to emergency room affects referral and treatment
  - They are less likely to be referred
  - More likely to be treated
- Ethnicity and language do not affect referral or treatment

Strengths and limitations

- Strengths
  - This is one of the first studies to examine predictors of referral and treatment to an intensive hospital smoking cessation service
  - Program is tightly integrated into the hospital EMR and treatment systems

- Limitations
  - Single hospital study- ? Representativeness
  - Self report of smoking status
  - Missing data

Service implications

- It is possible to configure EMR to automatically refer all smokers to tobacco treatment service
- Patients with shorter history of smoking who can gain much for quitting early need special attention
- More efforts should be dedicated to involve surgical, obstetrics and psychiatric services
- Enhance treatment for emergency department patients
- Expand the hours of tobacco treatment service to reduce impact of shorter duration of stay
- Increase staff. (currently 1.0 FTE for counseling staff, .15 FTE for a program director and .05 FTE for the medical director.)

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Performance Improvement

Prevalence and Predictors of Tobacco Treatment in an Academic Medical Center

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Hospitalization is an ideal time to encourage smokers to quit. During hospitalization, smokers are not allowed to smoke, are in contact with many health professionals, and may be more willing to accept assistance in quitting.[1] Many smokers quit, unaided, following hospitalization.[2] A meta-analysis also found that those who receive intensive treatment during hospitalization and outpatient follow-up treatment for at least one month are more likely to quit than smokers receiving no treatment.[1,3]

Yet, most hospitals do not systematically address tobacco. Where treatment is provided, it is not evidence-based. A pooled analysis of 33 hospital studies found that smoking status was assessed in 60% of patients, 42% of identified smokers were advised to quit, 14% were given or advised to use nicotine replacement, and 12% received referrals or follow-up.[4] A study found that adding a tobacco treatment order set to an existing computerized order entry system increased identification, referral, and treatment of smokers, but referral and treatment rates remained low (2.1% and 2.5%, respectively).[5] Even patients with tobacco-related illnesses fail to receive tobacco treatment. A test of quality care measures conducted among 83 hospitals in nine states found that only 65% of smokers with acute myocardial infarction (AMI), 39% of smokers with congestive heart failure (CHF), and 35% of smokers with community-acquired pneumonia (CAP) had received any form of counseling for smoking cessation during hospitalization.[6] Accordingly, in 2004 The Joint Commission made smoking cessation advice and treatment a core quality measure for treating patients with these three diagnoses.[7] Moreover, hospitals fail to treat important subpopulations. Data on patients with AMI from 400 hospitals suggest that blacks are less likely than whites to receive smoking cessation counseling.[8] Psychiatric inpatients, who have a high prevalence of smoking, rarely receive tobacco treatment.[9]

Although formal surveys have not been done, anecdotal evidence from hospital associations, electronic mailing lists, and tobacco treatment specialist groups suggests that many hospitals are beginning to implement systematic treatment for

Article-at-a-Glance

Background: Hospitalized smokers are a large and important but undertreated population. Although effective strategies have been developed to enhance smoking cessation, many hospitalized smokers still fail to benefit from these services. A study was conducted to examine the reach of services within a hospital tobacco treatment program and to identify predictors of referral and treatment.

Methods: Electronic medical records were downloaded for all 3,600 smokers admitted to a 475-bed academic medical center hospital in a one-year period.

Results: More than one in four of identified smokers were referred to the specialty service and nearly one in five received treatment. Logistic regression models found that Joint Commission core measure status (heart failure, myocardial infarction, and pneumonia) was the strongest predictor of referral, followed by a history of smoking for more than 10 years. Conversely, smokers admitted for emergency medical services were less likely to be referred compared with those admitted electively. Patients treated on surgical, obstetric, and psychiatric services were less likely to be referred for tobacco treatment than those treated on medical services. Of those referred, smokers with longer lengths of stay and those admitted through the emergency department were more likely to actually receive services.

Discussion: To capitalize on hospitalization as a "teachable moment," other subpopulations, such as psychiatric and obstetric patients, deserve attention. Tobacco treatment services must be fully integrated into hospital systems, configured to deliver care to all smokers, and reimbursed to ensure sustainability. This study's identification of underserved groups, determination of potential roadblocks to delivery of services, and suggestion of ways to disseminate treatment equitably to all smokers should prove helpful to policymakers.

20

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Take home message

"For smoking cessation assistance to be effective in the hospital setting, the assistance must be intense, integrated and sustained. Providing less is simply pretending that we are making an effort"

- David M. Burns

Live fast, die young, leave a good-looking corpse
Archive of Internal medicine editorial Oct 13, 2008

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System changes:
Physician order set

		THE UNIVERSITY OF KANSAS HOSPITAL **KUMED** 3901 Rainbow Boulevard Kansas City, Kansas 66160 **PHYSICIAN'S ORDER FORM**	PATIENT LABEL	Room

DATE & TIME	#	ORDERS **TOBACCO CESSATION / RELIEF FROM NICOTINE WITHDRAWAL**
		Reference: Tobacco Use and Dependence Clinical Practice Guideline: Summary. JAMA. Vol 283; 2000:3244-3254.
		Patient Weight: _____ kg
	1.	Allergies:
	2.	**Patient education:** ☐ Provide smoking cessation educational packet.
	3.	**Counseling:** ☐ Consultation and counseling with smoking cessation therapist (Email ukanquit@kumc.edu or page 917-1220) ☐ Patient declined
	4.	**Medications: Symptom relief for all tobacco users** Transdermal nicotine patch, first dose now, replace patch daily at 6am ☐ 21 mg ($\geq$ 10 cigarettes/day or chew tobacco) ☐14 mg (<10 cigarettes/day) ☐ If patch causes sleep disturbance, remove at night ☐ Patient declined patch.
	5.	For withdrawal symptoms unrelieved by transdermal nicotine patch or for smokers unable or unwilling to use the patch: ☐ Nicotine gum 4 mg, chew and park one piece every hour as needed; provide instructions on use of gum. If not tolerated or patient unwilling to use, then write an order for nicotine lozenge (available as 2 mg or 4 mg and given every hour as needed).
	6.	Supplemental pharmacotherapy for smoking cessation (with or without nicotine replacement): ☐ Varenicline (Chantix: 0.5 mg daily (on days 1-3); then 0.5 mg BID (days 4-7); then 1 mg BID (day 8 through end of treatment) or ☐ Bupropion SR 150 mg: Days 1-3 - one tablet daily, Day 4- end of treatment - one tablet twice daily
	7.	**Other Medications:**

System changes:

EMR change- Pops up for all smokers, are required fields!

Mandatory Brief Intervention

We are a tobacco free campus, which means you can't smoke or use any other type of tobacco product anywhere on our grounds. While you are in the hospital, we will offer you the nicotine patch, nicotine lozenge, and other medications to prevent nicotine withdrawal and keep you comfortable during your stay with us. We also have in-hospital tobacco treatment specialists to help you during your stay. You should quit smoking - it's one of the best things you can do for your health. If you are interested in quitting smoking, the specialist can enroll you in a free, individualized quit-smoking program that will continue after you go home.

If it's appropriate for your medical condition, we recommend that you use a nicotine patch or another type of tobacco treatment medication to keep you comfortable while you are in the hospital and can't smoke.

Are you interested in using tobacco treatment medication during your stay?   ○ Yes   ○ No

Are you interested in talking to a tobacco treatment specialist while you are in the hospital? S/He can check on how you are feeling, and if you like, talk about our free quit smoking program.

○ Yes   ○ No

OK

Descriptive statistics:

Smokers admitted between September 1, 2006 and August 31, 2007

Characteristics **Demographics**	All current smokers (n=3131)	Referred (n=853)	Treated (n=552)
Age, mean (SD)	45.5 (15.7)	48.9 (13.7)	48.5 (13.6)
Sex, n female (%)	1355 (43.5%)	383 (45.5)	238 (62.1)
Marital Status, n (%) Single	1494 (50.1)	359 (43.6)	243 (67.7)
Ethnicity, n (%) White	2234 (71.4)	628 (73.6)	395 (62.9)
Speak English n (%)	2907 (97.1)	814 (98.4)	526 (64.6)
Commercial Insurance n (%)	982 (31.4)	267 (31.3)	164 (61.4)

Note: Subsamples were slightly different from total n = 3131 due to missing data. For sex n = 3118, Marital status n = 2979, for ethnicity n = 3130, for language n = 2994

Characteristics of hospitalized smokers (contd.)

Characteristics **Smoking behavior**	All current smokers (n=3131)	Referred (n=853)	Treated (n=552)
Smoked >10 years n (%)	2162 (69.9)	696 (82.2)	448 (64.4)
Smoked > 1 cig pack per day n (%)	611 (19.7)	201 (23.7)	134 (66.7)
Living with other smokers n (%)	1156 (37.4)	327 (38.7)	202 (61.8)

Note: Subsamples were slightly different from total n = 3131 due to missing data. For years smoked n = 3095 cig pack per day n = 3099

Characteristics of hospitalized smokers (contd.)

Characteristics **Treatment variables**	All current smokers (n=3131)	Referred (n=853)	Treated (n=552)
Admission service n (%)			
Medical	1407 (45.0)	536 (62.9)	363 (67.7)
Surgical	1242 (39.7)	243 (28.5)	143 (58.9)
Obstetrics	176 (5.6)	31 (3.6)	19 (61.3)
Psychiatry	302 (9.7)	42 (4.9)	27 (64.3)
Admission thro' Emergency room n(%)	1559 (52.8)	380 (48.5)	259 (68.2)
Length of stay, median (range)	3.0 (148)	3.0 (39)	4.0 (39)
JCAHO core measures Diagnosis n (%)	189 (6.0)	107 (12.6)	68 (63.6)

Note: Subsamples were slightly different from total n = 3131 due to missing data. For living with other smoker n = 3088,

Recoding + New variable

Old	New
Insurance Group	**Inscat**
Medicaid KS Medicaid MO Medicaid Pending/ Other Medicaid Risk	Medicaid
Medicare Medicare HMO	Medicare
Blue Cross Blue Cross HMO Blue Cross PPO HMO PPO	Commercial
Self Pay	Uninsured
Champus Other	Other
Language	**Langcat**
English	English
Spanish	Spanish
Chinese Hindi Loatian Persian Russian Other	Other
Admission service	**Admsvcat**
Cardio Vasc Emergency Dept Family Medicine Med-Endo Med- General 1 Med- General 2 Med- General 3	Medical

Med- General 4 Med-Hematology Med-ICU Med- Oncology Med- Pulmonary Med- Renal Neurology Ped-Critic/Care Ped-General Ped-Hema/Oncol Rehabilitation Medicine	
Anes- Pain Control Burns Cardiothoracic Surgery Ear Nose Throat Gynecology Surgery- General Surgery- Neuro Surgery- Ortho Surgery- Peds Surgery- Plastic Surgery- Trauma Surgery- Urology Surgery- Vascular	Surgical
OB-Fam Prac Obstetrics	Obstetrics
Psych/Adult Psych/Child	Psychiatry
Opthhalmology Radiology	Other
Admission Through Emergency Room	**Admthem**
Admission Through Emergency Room	Yes
"All others"	No

I have created another variable in order to identify those that were referred. The variable name is RefUKanQuit, To fill up this field I entered No for all the blank spots in "Met patient" and Yes in the filled fields i.e Met patient Yes or No. Did a logic check.
RefUkanQuit (Yes) = MetPatient (Yes+No)