SCREENING FOR SUBSTANCE USE & MISUSE IN THE ED: DIFFERENCES IN COMPUTER PROMPTED VS. PHYSICIAN FACE-TO-FACE INTERVIEW

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BACKGROUND: EMERGENCY SETTING

- Estimated 115.3 million ED visits per year in U.S. in 2005 (Nawar, 2007)

- 110.2 million in 2004 (McCaig, 2006)

- Emergency medical system is "overburdened and underfunded" (IOM, 2006)

http://www.cdc.gov/nchs/data/ad/ad372.pdf
http://www.iom.edu/?id=35025

BACKGROUND:
DRUG AND ALCOHOL ABUSE COST

- **Early estimates (NIDA/NIAAA, 1992)**
  - **Alcohol: $148 billion**
  - **Drugs: $98 billion**

- **More recent estimates**
  - Alcohol: $184.6 billion in 1998 (NIAAA, 2000)
  - Drugs: $180.9 billion in 2002 (ONDCP, 2004)
    - **Includes health, crime, and productivity losses**

BACKGROUND: SCREENING

- US Preventive Services Task Force recommends routine screening for alcohol misuse (USPSTF, 2004)

- Recommendation for routine drug abuse screening in progress (USPSTF, 2007 & 1996)

http://www.ahrq.gov/clinic/uspstf/uspsdrug.htm
http://www.ahrq.gov/clinic/uspstf/uspsdrin.htm

BACKGROUND:
FACE-TO-FACE VS. COMPUITER

- ## Face-to-face

  - **Zun & Downey, 2006**
    - Face-to-face using CAGE in ED
    - Found large population of ED patients with unmet health needs including drug and alcohol abuse
    - No comparison to other screening modes

  - **Stone & Latimer, 2005**
    - Adolescent population, non-ED setting
    - Self-administered vs. face-to-face interview
    - Reported higher frequency of alcohol and marijuana use during face-to-face interview

  - **Neumann, 2004**
    - ED setting
    - No comparison to other method
    - Found computerized alcohol screening using AUDIT feasible.

  - **Aquilino, 1994**
    - Compared 3 modes of screening: self-administered, face-to-face interviewer-administered, & telephone
    - Self-administered and face-to-face had highest alcohol and drug admission rates
    - Not ED setting, did not compare to computer

FACE-TO-FACE VS. COMPUTER (CONT.)

- Computer
  - **Turner (1998)**
    - Patients disclosed more to the computer compared to paper, but not as significant for alcohol.
    - Adolescent population
    - Not ED setting

  - **Lucas, Mullin, Luna, & McInroy, 1977**
    - Psychiatrists vs computer in alcohol-problems screening
    - Computer better in terms of alcohol consumption reports
    - Alcohol-clinic setting
  - **Cummings, Francescutti, Predy, & Cummings, 2006**
    - Computerized health risk survey
    - ED setting
    - Found computer-based screening feasible and did not increase wait time
    - No method comparison group
  - **Gerbert, Bronstone, Pantilat, McPhee, Allerton, & Moe, 1999**
    - Written, face-to-face, audio-based, computerized, & video-based
    - Health-risk behavior questionnaire
    - Primary care patients
    - Computer, audio, and video methods had significantly higher disclosure for alcohol risks and computer and video were higher for drug risks.

CURRENT STUDY: OBJECTIVE

Evaluate differences in computer elicited and physician elicited alcohol and drug screening methods in an emergency department setting.

VS.

METHODS

- Setting
  - **Parkland Memorial Hospital, Dallas, TX**
  - **Urban teaching hospital with average of 400 ED visits a day**

- Population
  - **Inclusion criteria**
    - All adult (>18 yrs)
    - Non-psychiatric ED patients who passed a mini mental status exam and provided informed consent
  - **Exclusion criteria**
    - Incomplete survey
    - Psychiatric primary complaint
    - Previously enrolled in study

METHODS (CONT.)

- Design
  - **Enrolled during randomized time blocks over 2 month periods in 2003 & 2006.**
  - **Computerized interview**
    - Shedler Quick PsychoDiagnostics (QPD) Panel (Shedler, 2000) and NIAAA quantity-frequency
  - **Face-to-face interview**
    - By ED physicians using dichotomous Y/N drug questions and alcohol questions in NIAAA format
      - Alcohol: Do you sometimes drink alcoholic beverages? How many times in the past year have you had... 5 or more drinks in a day? (for men) ...4 or more drinks in a day? (for women).
    - Data collected via chart review

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ANALYSIS

- Descriptives

- Frequencies

- Chi-squares

- Sensitivity
    - **True positive / True positive + False negative**

- Negative Predictive Values
    - **True negative/ False negative + True negative**

GENDER

	Total N=2230 (%)	Heavy Drinker Y (n=659, 29.6%)	Substance Abuse Y (n=707, 31.7%)
Gender			
Male	1163 (52.2)	431 (65.4)	463 (65.5)
Female	1067 (47.8)	228 (34.6)	244 (34.5)

AGE

Mean age: 39 (SD = 13)

	Total N=2230 (%)	Heavy Drinker Y (n=659, 29.6%)	Substance Abuse Y (n=707, 31.7%)
Age			
18-29	579 (26.0)	200 (30.3)	200 (28.3)
30-39	561 (25.2)	186 (28.2)	198 (28.0)
40-49	599 (26.9)	186 (28.2)	210 (29.7)
50-59	338 (15.2)	65 (9.9)	71 (10.0)
60+	153 (6.9)	22 (3.3)	28 (4.0)

RACE/ETHNICITY

	Total N=2230 (%)	Heavy Drinker Y (n=659, 29.6%)	Substance Abuse Y (n=707, 31.7%)
Race/ethnicity			
White & other	667 (30.5)	230 (35.6)	238 (34.4)
Black	872 (39.8)	228 (35.3)	296 (42.8)
Hispanic	650 (29.7)	188 (29.1)	157 (22.7)

INSURANCE STATUS

	Total N=2230 (%)	Heavy Drinker Y (n=659, 29.6%)	Substance Abuse Y (n=707, 31.7%)
Insurance Status			
No insurance	1049 (52.8)	378 (63.1)	372 (58.1)
Medicaid	635 (32.0)	146 (24.4)	177 (27.7)
Medicare	118 (5.9)	23 (3.8)	32 (5.0)
PVT Insurance	184 (9.3)	52 (8.7)	59 (9.2)

EMPLOYMENT

	Total N=2230 (%)	Heavy Drinker Y (n=659, 29.6%)	Substance Abuse Y (n=707, 31.7%)
Employment			
Unemployed	1286 (65.3)	375 (62.8)	422 (66.6)
Employed	683 (34.7)	222 (37.2)	212 (33.4)

LANGUAGE SURVEY TAKEN

	Total N=2230 (%)	Heavy Drinker Y (n=659, 29.6%)	Substance Abuse Y (n=707, 31.7%)
Language survey taken			
English	1817 (83.1)	548 (84.6)	624 (90.3)
Spanish	369 (16.9)	100 (15.4)	67 (9.7)

ER VISITS WITHIN PAST YEAR

	Total N=2230 (%)	Heavy Drinker Y (n=659, 29.6%)	Substance Abuse Y (n=707, 31.7%)
# ER visits past year			
1	1168 (52.5)	334 (50.8)	342 (48.6)
2-4	789 (35.4)	243 (37.0)	259 (36.8)
5+	269 (12.1)	80 (12.2)	102 (14.5)

SUBSTANCE ABUSE

Total N = 2230	Computer elicited	
	616 (27.6%)	1612 (72.4%)
Physician elicited	Yes	No
Yes 167 (7.5%)	76	91
No 2061 (92.5%)	540	1521

Chi-square p-value <0.001

Substance Abuse	Computer	Physician
Sensitivity	87.1%	23.6%
NPV	94.3%	73.8%

HEAVY DRINKING
(5+ PER OCCASION, PAST YEAR)

	Computer elicited	
Total N=2230	484 (21.7%)	1746 (78.3%)
Physician elicited	Yes	No
Yes 237 (10.6%)	62	175
No 1993 (89.4%)	422	1571

Chi-square p-value = 0.078

Alcohol Abuse	Computer	Physician
Sensitivity	73.4%	36.0%
NPV	90.0%	78.8%

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DEMOGRAPHICS: DRUG ABUSE ENDORSERS

Table 2. *Characteristics of patients who screen positive for drug abuse by screening method.*

N=2230	Total Positives n=707	Computer Only n=540 (76.4%)	Physician Only n=91 (12.9%)	Both Only n=76 (10.7%)
Age				
18-29	200	151 (75.5)	25 (12.5)	24 (12.0)
30-39	198	145 (73.2)	29 (14.6)	24 (12.1)
40-49	210	159 (75.7)	28 (13.3)	23 (11.0)
50-59	71	60 (84.5)	6 (8.5)	5 (7.0)
60+	28	25 (89.2)	3 (10.7)	0
Race/ethnicity				
White & other	238	181 (76.0)	29 (12.2)	28 (11.8)
Black	296	213 (72.0)	51 (17.2)	32 (10.8)
Hispanic	157	131 (83.4)	11 (7.0)	15 (9.6)
Gender				
Male	463	353 (76.2)	57 (16.1)	53 (11.4)
Female	244	187 (76.6)	34 (13.9)	23 (9.4)
Insurance Status				
No insurance	372	264 (71.0)	58 (22.0)	50 (13.4)
Medicaid	177	140 (79.1)	23 (13.0)	14 (7.9)
Medicare	32	27 (84.4)	3 (9.4)	2 (6.2)
PVT Insurance	59	42 (71.2)	7 (11.9)	10 (16.9)
Employment				
Unemployed	422	307 (72.7)	65 (15.4)	50 (11.8)
Employed	212	160 (75.5)	26 (12.3)	26 (12.2)
Marital Status				
Single	378	269 (71.2)	60 (15.9)	49 (13.0)
Married or Cohabiting	177	142 (80.2)	17 (9.6)	18 (10.2)
Divorced	76	55 (72.4)	12 (15.8)	9 (11.8)
Widowed	8	7 (87.5)	1 (12.5)	0
Language survey taken				
English	624	470 (75.3)	84 (13.5)	70 (11.2)
Spanish	67	57 (85.0)	6 (9.0)	4 (6.0)

DEMOGRAPHICS: ALCOHOL ABUSE ENDORSERS

Table 3. *Characteristics of patients who screen positive for alcohol abuse by screening method.*

Total (N=2230)	Total Positives n=659	Computer Only n=422 (64.0%)	Physician Only n=175 (26.6%)	Both n=62 (9.4%)
Age				
18-29	200	159 (79.5)	28 (14.0)	13 (6.5)
30-39	186	117 (62.9)	53 (28.5)	16 (8.6)
40-49	186	110 (59.1)	56 (30.1)	20 (10.8)
50-59	65	28 (43.1)	29 (44.6)	8 (12.3)
60+	22	8 (36.4)	9 (40.9)	5 (22.7)
Race/ethnicity				
White & other	230	133 (57.8)	67 (29.1)	30 (13.0)
Black	228	129 (56.6)	77 (33.8)	22 (9.6)
Hispanic	188	152 (80.9)	26 (13.8)	10 (5.3)
Gender				
Male	431	280 (65.0)	117 (27.1)	34 (7.9)
Female	228	142 (62.3)	58 (25.4)	28 (12.2)
Insurance Status				
No insurance	378	243 (64.3)	96 (25.4)	39 (10.3)
Medicaid	146	81 (55.5)	52 (35.6)	13 (8.9)
Medicare	23	12 (52.2)	8 (34.8)	3 (13.0)
Private Insurance	52	29 (55.8)	18 (34.6)	5 (9.6)
Employment				
Unemployed	375	223 (59.5)	109 (29.1)	43 (11.5)
Employed	222	139 (62.6)	64 (28.8)	19 (8.6)
Marital Status				
Single	360	229 (63.6)	100 (27.8)	31 (8.6)
Married or Cohabiting	164	97 (59.1)	48 (29.3)	19 (11.6)
Divorced	65	32 (49.2)	23 (35.4)	10 (15.4)
Widowed	7	3 (42.9)	3 (42.9)	1 (14.3)
Language survey taken				
English	548	335 (61.1)	156 (28.5)	57 (10.4)
Spanish	100	83 (83.0)	15 (15.0)	2 (2.0)

ALCOHOL & DRUGS

	Physician elicited	Computer elicited
Heavy drinkers	10.6%	21.7%
Drug abuse past month	7.5%	27.6%

n=2230

LIMITATIONS

- One site
- No audio/videotape of face-to-face interviews
- Provider heterogeneity
- No known gold standard

DISCUSSION

- Skinner & Allen, 1983
  - Addiction center setting
  - Compared computerized interview, self-report, and face-to-face interview
  - Found no significant differences in reliability or levels of report
  - Also asked clients about their assessment experience
- Bernadt, Daniels, Blizard, & Murray, 1989
  - Computer vs. face-to-face, found good agreement
  - Patients interviewed via both methods
  - Alcohol history
  - Psychiatric ward
- Rhodes et al (2001)
  - Patients disclose health risks via computerized assessment
  - ED setting, no method comparison group

CONCLUSIONS

- Both the face-to-face methods and computerized screening are imperfect, but may be complementary when used together.

- In this sample computerized screening captured the largest proportion of positive drug and alcohol abusers among Hispanics, Spanish speakers, and younger age groups

- The face-to-face method captured more among older age groups, English language survey, and Blacks.

- Future work will need to better determine how to tailor screening methods to particular groups at risk

THANK YOU

Questions?