Appendix A

Introduction

The primary outcomes relied heavily upon documentation on the medical record, which can suffer from three kinds of inaccuracies. First, clinicians can document positive intentional self-harm poorly such that it is difficult to determine if the self-harm is suicidal in nature. Second, clinicians can document a negative screening without actually asking the PSS-3 questions. Third, clinicians could have asked the PSS-3 questions but failed to document it on the medical record. The first type of inaccuracy was accounted for through interviewing positive patients to identify suicidal ideation or behavior and is described in the primary paper. To help quantify the second and third types of inaccuracies, we implemented a random fidelity interview with patients whose charts indicated a negative or absent screen. The methods and results are described below.

Methods

Fidelity Interviews were conducted during study Phases 2 and 3. Each site interviewed approximately 60 randomly selected patients per phase whose chart either indicated a negative screen or for whom no suicide screening was documented. Participants were asked to indicate whether each PSS-3 item was asked during their clinical care (Yes/No). This occurred as close to discharge as possible to ensure that the majority of contact with treating clinicians had concluded.

Each site's agreement rate for negative screens was calculated, defined as the percentage of patients with a chart documented negative screen who confirmed the screening questions had

been asked. Similarly, each site's disagreement rate for absent screenings was calculated, defined as patients with no documentation of a screening on their chart but who reported they had been asked the questions. Screening rates for each phase for each site were adjusted using these statistics. This was done by multiplying the negative screen rate derived from the Screening Log data by the negative screen agreement rate. This conservatively adjusted the screening rate to account for overestimates resulting from charting negative screenings that were not performed. Likewise, the rate of non-screening from the Screening Log data was multiplied by the disagreement rate. This adjusted the undocumented screening rate for underestimates of screenings performed but not appropriately documented.

Results

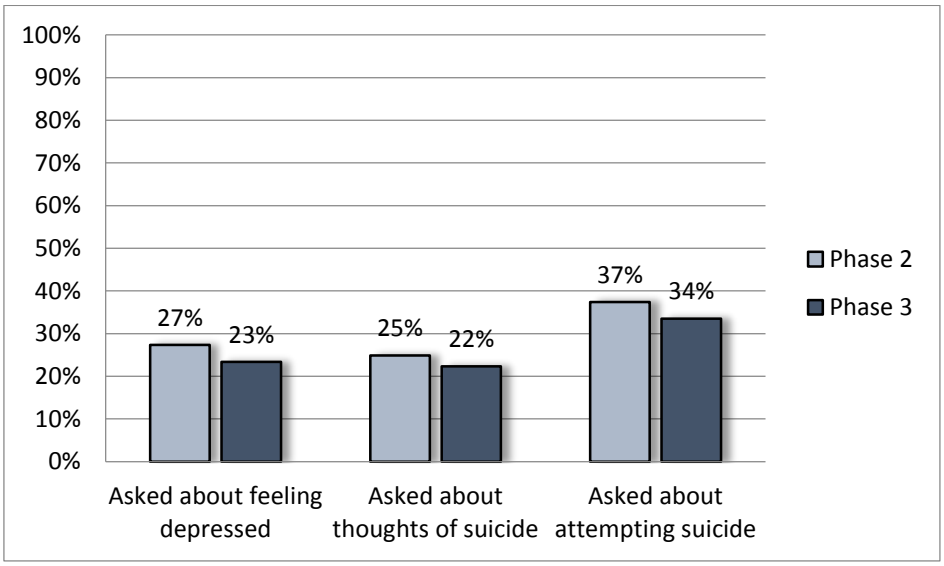
Sites completed a total of 1,196 Fidelity Interviews. Figure 1 shows that 22% to 37% of those with documented negative screens reported not being asked the suicidal ideation or behavior questions by their nurse. Conversely, Figure 2 shows that 8% to 18% of patients with no documented screening reported their nurse had asked the suicidal ideation or lifetime attempt questions. Adjusting overall screening rates using the average rate of agreement reduced the screening rates for Phase 2 to from 73% to 63% and for Phase 3 from 84% to 73%.

Discussion

Although overall documented screening rates increased, fidelity interviews with patients who had a documented negative screen suggested that, on average, 22% to 37% did not remember being asked the screening questions. Interviews with the sites revealed that some nurses simply used their "clinical judgment" despite specific training to avoid this practice. Notably, a portion

of the patients could have been screened but forgotten they were asked the questions, thereby inflating the disagreement rate. Interestingly, 11% to 18% of patients who had no screening documented nonetheless reported that they had been asked the screening questions. Investigation into this pattern revealed it may have been due to the nurse simply forgetting to document the screening. A true agreement rate obtained by direct observation or recording clinical care episodes would have improved reliability but was logistically and ethically prohibitive. Clearly, fidelity is an important issue and could impact the proportion of the nascent or incidental risk detected. More research into how to monitor and promote fidelity for suicide risk screening in clinical settings is needed.

Appendix Figure 1. Disagreement between chart documented negative screen and subsequent fidelity interview.



Columns = percentage of patients with negative screen who reported *not* being asked the individual question.

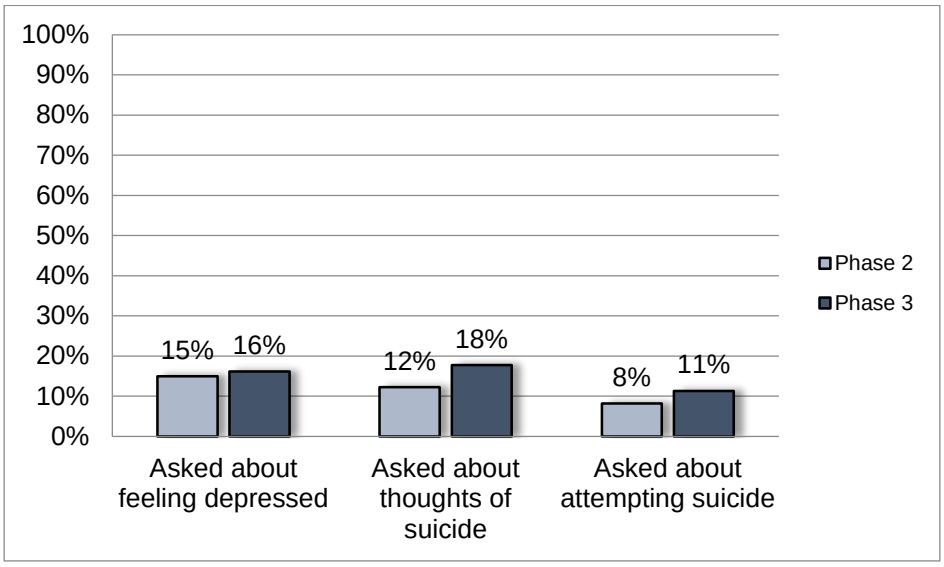
Phase 2 (*n*=486), Phase 3 (*n*=501):

Depression: χ^2 (1, N=986)=2.1, *p*=0.15

Active suicidal ideation: χ^2 (1, N=986)=0.9, *p*=0.35

Suicide attempts: *p*>0.05. χ^2 (1, N=986)=1.6, *p*=0.21

Appendix Figure A2. Disagreement between absent documentation of screening and subsequent fidelity interview.



Columns = percentage of patients with no documented screen who reported being asked the individual question.

Phase 2 (n=147), Phase 3 (n=62):

Depression: χ^2 (1, N=208)=0.05, p=0.83

Active suicidal ideation: χ^2 (1, N=208)=1.10, p=0.29

Suicide attempts: p>0.05. χ^2 (1, N=208)=0.52, p=0.47

Appendix B

Introduction

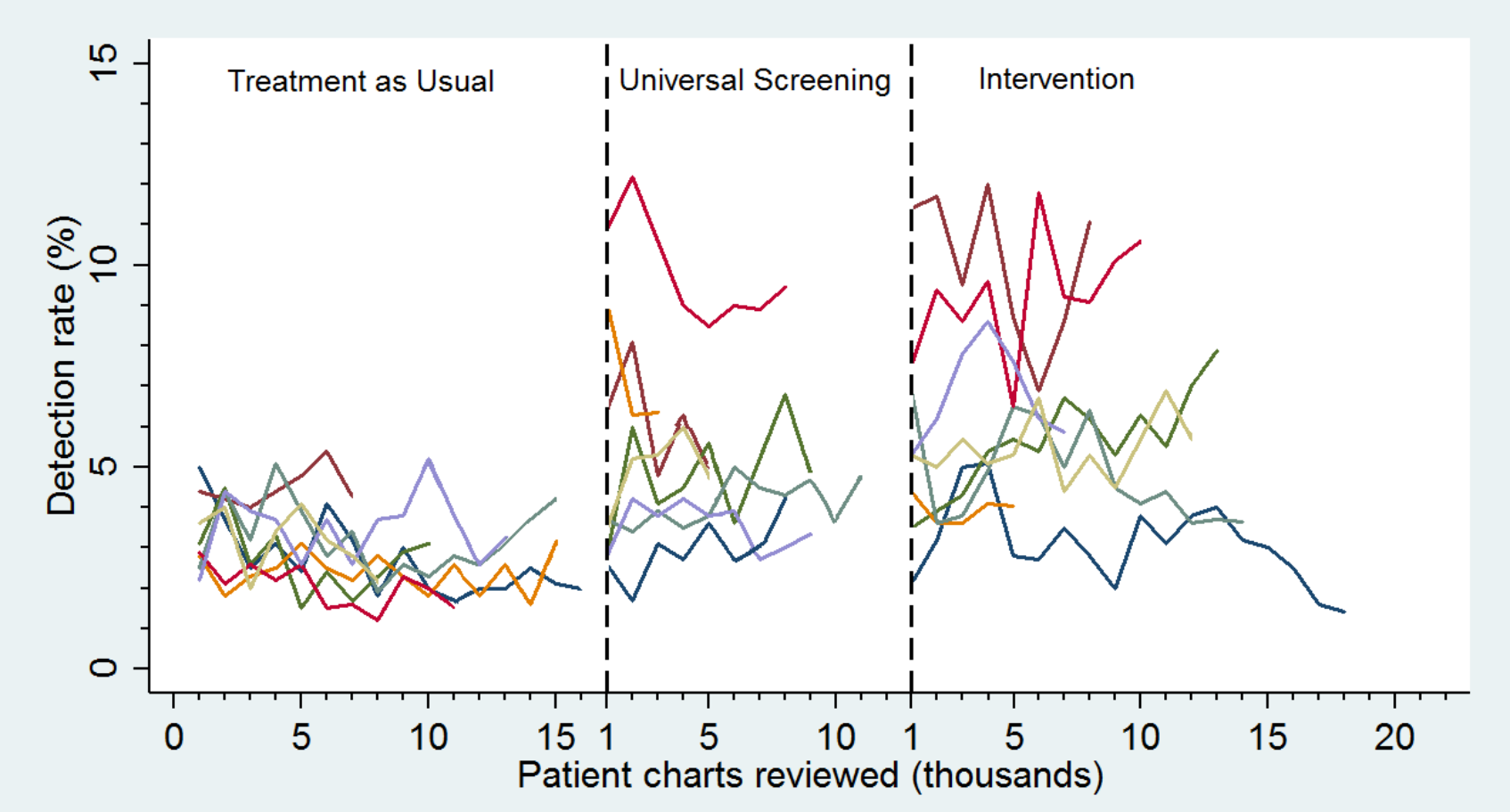
Below are supplementary materials referenced in the primary manuscript that elaborate on several analyses.

Appendix Table B1. Adjusted Models for Positive Self-harm Detection

ANY SELF-HARM DETECTED[b]												
	Unadjusted				**Only adjusted for clustering by site**				**Fully adjusted[a]**			
Models	**OR**	**95%%CI**		***p*-value**	**OR**	**95%%CI**		***p*-value**	**OR**	**95%%CI**		***p*-value**
Study phase (as continuous variable)	1.40	1.36	1.43	<0.001	1.40	1.21	1.60	<0.001	1.41	1.21	1.65	**<0.001**
Study phase												
1	1.00	reference			1.00	reference			1.00	reference		
2	1.80	1.70	1.89	<0.001	1.80	1.17	2.77	0.008	1.83	1.16	2.89	**0.010**
3	2.01	1.92	2.11	<0.001	2.01	1.46	2.77	<0.001	2.06	1.45	2.94	**<0.001**
CURRENT SELF-HARM DETECTED[c]												
	Unadjusted				**Only adjusted for clustering by site**				**Fully adjusted[a]**			
Models	**OR**	**95%%CI**		***p*-value**	**OR**	**95%%CI**		***p*-value**	**OR**	**95%%CI**		***p*-value**
Study phase (as continuous variable)	1.21	1.18	1.24	<0.001	1.21	1.13	1.29	<0.001	1.20	1.14	1.25	**<0.001**
Study phase												
1	1.00	reference			1.00	reference			1.00	reference		
2	1.23	1.15	1.30	<0.001	1.23	1.04	1.44	0.014	1.22	1.05	1.43	**0.011**
3	1.47	1.39	1.55	<0.001	1.47	1.28	1.68	<0.001	1.43	1.31	1.57	**<0.001**

[a]Controlling for: age, sex, race, ethnicity, ED visit day of week, and clustering by site
[b]Any self-harm = Any intentional self-harm ideation or behavior noted on ED medical record
[c]Current self-harm = Any intentional self-harm ideation or behavior within the past 2 weeks, including day of visit
Note: Boldface indicates statistical significance ($p<0.05$)

Appendix Figure B1. Time series plot of risk detection rates by site across the three phases.



Note: Lines represent the percentage of patients that screened positive for any intentional self-harm ideation or behavior.

Appendix Figure B2. Patient Safety Screener-3.

To be administered by primary nurse during primary nursing assessment.

Introductory script: Because some topics are hard to bring up, we ask some questions of everyone.

Over the past 2 weeks,
1. . . . have you felt down, depressed, or hopeless? ☐ **Yes** ☐ **No** ☐ **Unable to complete**
2. . . . have you had thoughts of killing yourself? ☐ Yes ☐ No ☐ **Unable to complete**
3. . . . have you ever attempted to kill yourself? ☐ Yes ☐ No ☐ **Unable to complete**
4. . . . *If Yes to item 3, ask:* when did this last happen? ☐ Within the past 24 hours (including today) ☐ Within the last month (but not today) ☐ Between 1 and 6 months ago ☐ More than a six months ago