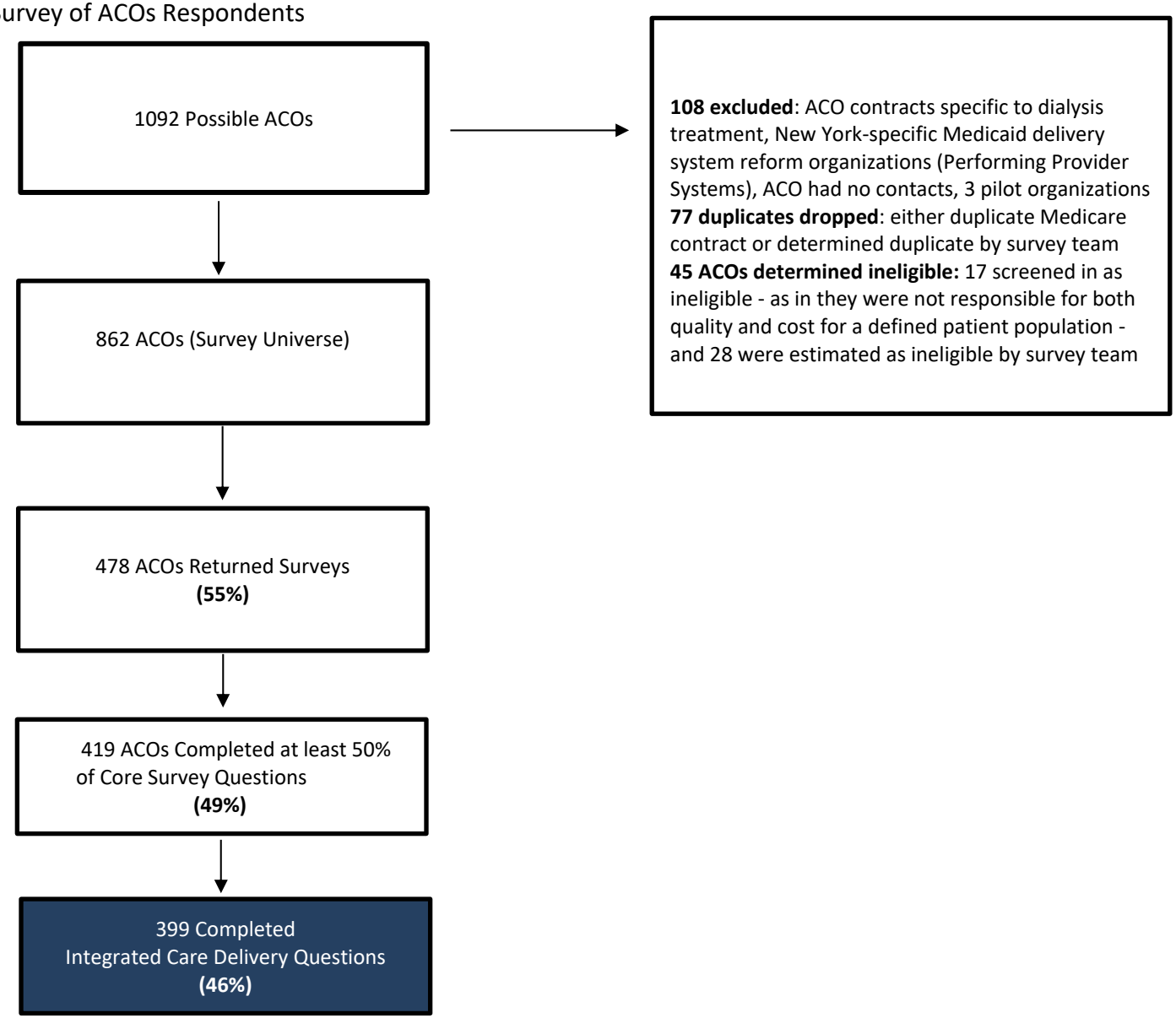
Supplemental Figure 1: 2017-2018 National Survey of ACOs Respondents



Core Survey Questions refers to the set of questions determined, in advance of data cleaning or analysis, to be essential by the research team Survey instrument available publicly at the following link: https://sites.dartmouth.edu/nsaco/. Core Questions include 6, 8, 9, 11, 12, 14, 15, 17, 19, 22, 23, 24, 25, 30, 32, 33, 35, 36, 39, 40, 64 Completion of 50% or more of this core set was defined as a "complete case", per 2016 AAPOR *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys* (9th edition) p. 15.

Supplemental Table 1: 2017-2018 National Survey of ACOs Question Text

All variables included in study analyses were derived from responses to the 2017-2018 National Survey of Accountable Care Organizations. Specific question text and information on how variables were operationalized from question responses is described in the 3 tables below. Because survey questions asked about ACO contracts in 3 different ways, tables are organized to reflect the differences in question wording : Table 1A includes questions asking about characteristics of organizations participating in ACO contracts, Table 1B includes questions asking about a respondent's largest ACO contract, and Table 1C includes questions about a respondent's largest commercial or, asked separately, a respondent's largest Medicaid ACO contract.

Supplemental Table 1A: Characteristics of organizations participating in ACO contracts

In the following questions – which include our main outcome measures and 3 covariate measures - we asked respondents to "respond on behalf of the organization most commonly participating in ACO contracts" when reading the term "ACO".

	Survey Question Text	**Survey Response Options**	**Outcome Variable**
Main Outcome Measure[1]			
	Do any providers in your ACO use the following strategies to integrate primary care and treatment for **serious mental illness,** like schizophrenia or bipolar disorder?		
Care Manager to address physical health treatment coordination or non-medical needs	a. A care manager to primarily address physical health treatment coordination	1 Yes 0 No	1 Yes (has either a care manager to primarily address physical health treatment coordination or to address non-medical needs) 0 No (no care manager)
	b. A care manager to address non-medical needs (e.g., job support, housing)	1 Yes 0 No	

Patient registry to track physical health conditions	c. Patient registries to track physical health conditions (e.g., hypertension, glucose control)?	1 Yes 0 No	1 Yes 0 No
Co-located primary care clinician in specialty mental health settings	d. A co-located primary care clinician seeing patients in specialty mental health setting	1 Yes 0 No	1 Yes 0 No
Covariates			
Any Medicare ACO Contract	Are you currently participating in any Medicare ACO program?	1Yes, MSSP Track 2Yes, MSSP Track 2 3Yes, MSSP Track 1+ 4Yes, MSSP Track 3 5Yes, Next Generation 6No	1 Yes (Has a Medicare MSSP or Next Generation ACO contract) 0 No (No Medicare contract)
Any Medicaid ACO Contract	Do you have an ACO/ACO-like contract for your **Medicaid patients** at this time?	1 Yes 0 No	1 Yes (Has a Medicaid ACO contract) 0 No (No Medicaid ACO contract)
Any Commercial ACO contract	Do you have an ACO/ACO-like contract with a commercial payer or private insurance plan at this time?	1 Yes 0 No	1 Yes (Has a commercial ACO contract, or reports being responsible for total cost of care and quality for patient population) 0 No (No commercial ACO contract, or has a commercial contract that is not jointly responsible to total cost of care and quality for a patient population)
Previous experience with risk-based contracts	Has your ACO or any of its participating providers previously joined any …? *(Participating providers are those to whom patients are attributed in the ACO.)*		1 Yes, has previous experience with at least 1 risk based contract, including to bundled or episode based payments, Medicare Advantage, Capitated Commercial contracts, or other risk-based contracts
	Bundled or episode-based payments	1 Yes	

		0 No 888 Don't Know	0 No, no experience or don't know with all listed risk-based contracts
	Medicare Advantage	1 Yes 0 No 888 Don't know	
	Capitated commercial contracts	1 Yes 0 No 888 Don't know	
	Other risk-bearing contracts?	1 Yes 0 No 888 Don't know	
Behavioral Health Collaborative Care	Do any providers in your ACO use the following strategies to integrate primary care and treatment for **depression and/or anxiety?**		We first summed responses to a-d, considering either a or b as one. Then we created a count variable: 0 No reported collaborative care strategies (No implementation) 1 1-2 reported collaborative care strategies (partial implementation) 2 3 reported collaborative care strategies (full implementation
	A care manager to primarily address mental[2] health treatment coordination	1Yes 0No	
	A care manager to address non-medical needs (e.g., job support, housing)	1Yes 0No	
	A mental health clinician (not co-located) consulting primary care clinicians	1Yes 0No	
	Patient registry to track mental health symptoms	1Yes 0No	

Notes:

1 The primary outcome in our analysis was reported use of 3 care delivery strategies to integrate primary care and treatment for serious mental illness. We derived this outcome using responses to four questions designed to capture the strategies implemented in Druss and colleagues' behavioral health home model (Druss BG, von Esenwein SA, Glick GE, et al. Randomized Trial of an Integrated Behavioral Health Home: The Health Outcomes Management and Evaluation (HOME) Study. *Am J Psychiatry*. 2017;174(3):246-255. doi:10.1176/appi.ajp.2016.16050507)

2 The term "mental" was used in paper survey while the term "physical" was erroneously substituted for mental in the online survey due to a survey vendor error. We conducted extensive sensitivity analysis suggesting that this unintentional change in question wording affected estimates of full

collaborative care implementation very little when we analyzed the data ignoring any difference between paper and web-based survey. In practice, most ACOs reported using case managers for a wide range of needs including mental and physical health, so implementation of collaborative care hinged on other dimensions (i.e. use of a patient registry to track mental health symptoms).

Supplemental Table 1b: Characteristics of respondent's largest ACO contract

In the following questions – which include 6 covariate measures – we asked respondents to report characteristics of their " largest ACO contract."

Covariate	Survey Question Text	Survey Response Options	Covariate Variable
Physician led	Which of the following best describes the leadership structure of your ACO?	1Physician-led 2Hospital-led 3Jointly led by physicians and hospital 4 Coalition-led 5 State, region, or county-led 6 Other	1 Physician-led AND no hospitals participating in ACO 0 Not physician-led (responses >1) OR physician-led ACO that has a hospital participating in the network. We combined the leadership and hospital inclusion item to create a more conservative measure of physician-led ACOs.
ACO includes hospital	Are any hospitals participating in your largest ACO contract?	1 Yes 0 No	
Size	Approximately how many full–time equivalent (FTE) **primary care clinicians** are participating in your largest ACO contract? *(For the purposes of this survey, participating primary care clinicians are those to whom patients can be attributed in the ACO, including primary care physicians [internists, family medicine, pediatrics, geriatricians], physician assistants, and nurse practitioners.)*	Free Text	When possible (i.e., for Medicare ACOs), we supplemented responses here with publicly reported numbers in the public use file.

	Approximately, how many full-time equivalent (FTE) **specialty clinicians** are participating in your largest ACO contract? *(For the purposes of this survey, participating specialty clinicians includes physician assistants and nurse practitioners.)*	Free Text	When possible (i.e. for Medicare ACOs), we supplemented responses here with publicly reported numbers in the public use file.
Providers included in ACO Network	For each type of provider organization, please identify how many of the following participating in your largest ACO contract (e.g., included on a provider roster, have ownership of ACO shares, or have board membership)?*		*Note for the paper version of the suvey, the response options were dichotomized (Yes (1)/ No (0)).
Academic Medical Center (AMC)	a. Academic Medical Center	Free Text	≥1 Yes, includes AMC 0 No, does not include AMC
Public Hospital	b. Publicly owned hospital (county or state owned)	Free Text	≥1 Yes, includes public hospital 0 No, does not include hospital
Federally Qualified Health Center (FQHC)	c. Federally Qualified Health Center (FQHC)	Free Text	≥1 Yes, includes FQHC 0 No, does not include FQHC
Specialty Behavioral Health Provider	d. Community Mental Health Center (CMHC)	Free Text	≥1 Yes, includes either CMHC OR addiction treatment facility 0 No, includes neither CMHC nor addiction treatment facility
	e. Addiction treatment facility	Free Text	

Supplemental Table 1c: Characteristics of respondents' largest commercial or largest Medicaid ACO contract

In the following questions – which include 5 covariate measures – we asked respondents to report characteristics of their "largest commercial", or separately, their "largest Medicaid ACO" contracts.

Covariate	Survey Question Text	Survey Response Options	Covariate Variable
Includes mental health services in total cost of care	For your **largest commercial** ACO contract, are mental health services included in the total cost of care calculation to determine any shared savings?	1 Yes 0 No	

calculation in non-Medicare contract		888 Don't Know	1 Yes (Includes mental health services in total cost of care for either commercial or Medicaid contract) 0 No (does not include mental health services in the total cost of care or does not know for both commercial and Medicaid contracts OR does not have a commercial or Medicaid contract)
	For your **largest Medicaid** ACO contract, are mental health services included in the total cost of care calculation to determine any shared savings?	1 Yes 0 No 888 Don't Know	
Includes any mental health quality measures in non-Medicare contract measures set	Are behavioral health quality measures included in your **largest Medicaid** ACO contract?	1Yes 0 No	1 Yes (Includes any mental health services in quality measures set for commercial or Medicaid contract) 0 No (does not any mental health quality measures in both commercial and Medicaid contracts OR does not have a commercial or Medicaid contract)
	Are mental health quality measures included in your **largest commercial** ACO contract?	1Yes 0No	
Includes SMI-relevant quality measures in non-Medicare contract measures set	Which of the following quality measures are in your **largest Medicaid** ACO Contract?		1 Yes (Includes measures of adherence and follow-up (a-h) in either commercial or Medicaid contracts) 0 No (does not include any of these measures in both commercial and Medicaid contracts OR does not have commercial or Medicaid contract).
	a. Adherence to mood-stabilizers (HEDIS or similar)	1 Yes 0 No	
	b. Adherence to antipsychotics for schizophrenia (HEDIS or similar)	1 Yes 0 No	
	c. Follow-up within 30 days after discharge from ED for psychiatric visit (HEDIS or similar)	1 Yes 0 No	
	d. Follow-up within 30 days after inpatient psychiatric hospitalization (HEDIS or similar)	1 Yes 0 No	
	Which of the following quality measures are in your **largest commercial** ACO Contract?		
	e. Adherence to mood-stabilizers (HEDIS or similar)	1 Yes 0 No	

	f. Adherence to antipsychotics for schizophrenia (HEDIS or similar)	1 Yes 0 No	
	g. Follow-up within 30 days after discharge from ED for psychiatric visit (HEDIS or similar)	1 Yes 0 No	
	h. Follow-up within 30 days after inpatient psychiatric hospitalization (HEDIS or similar)	1 Yes 0 No	
Carves out of mental health services from non-Medicare contract	In some cases, **mental health or addiction treatment** is contracted out or "carved out" to organizations like Beacon Health Strategies, New Point, or Magellan. Does this describe the arrangement for your **largest commercial** ACO contract?	1Yes 2No 888 Don't Know	1 Yes (carves out mental health services from commercial or Medicaid contract) 0 No (either reports not carving out mental health services from commercial and Medicaid contract or "don't know", or does not have a commercial or Medicaid contract)
	In some cases, **mental health or addiction treatment** is contracted out or "carved out" to organizations like Beacon Health Strategies, New Point, or Magellan. Does this describe the arrangement for your **largest Medicaid** ACO contract?	1Yes 2No 888 Don't Know	
Downside risk in any contract	What is the risk arrangement for your **largest commercial** ACO contract in the current performance year?	1Shared Losses (downside risk) 0 Only Shared Savings (no downside risk) 888 Don't Know	1 Yes response 2 = Yes MSSP Track 2, 3=Yes MSSP Track 1+, 4=Yes MSSP Track 3, or 5 =Yes, Next Generation) to Medicare ACO program question, or response 1 = "Shared Losses (downside risk)" in largest commercial or largest Medicaid contract question) 0 No (Don't know, or No to Medicaid, commercial, and 1= Yes, MSSP Track 1 or 6 = No to Medicare.)
	What is the risk arrangement for your **largest Medicaid** ACO contract in the current performance year?	1Shared Losses (downside risk) 0 Only Shared Savings (no downside risk) 888 Don't know	
	Are you currently participating in any Medicare ACO program?	1Yes, MSSP Track 1 2Yes, MSSP Track 2 3Yes, MSSP Track 1+	

		4Yes, MSSP Track 3 5Yes, Next Generation 6No	

Supplemental Table 2 (a-d): Unadjusted associations between ACO characteristics and use of integrated care

We measured the distribution of each contract and organizational characteristic using responses to the Wave 4 NSACO for the 399 respondents included in our sample. We then compared the distribution of ACO characteristics between four groups of respondents: 1) respondents using any integrated care delivery strategies (versus those not using any strategies), 2) respondents using care managers (versus those not using care managers), 3) respondents using patient registries (versus those not using patient registries), and 4) respondents using co-located primary care clinicians (versus those not using co-located primary care clinicians).

We then compared the differences in ACO characteristics among respondents who reported using any strategy versus those using no strategy (Supplemental Table 2a), those using care managers versus those not using care managers (Supplemental Table 2b), those using patient registries versus those not using patient registries (Supplemental Table 2c), and those using co-located primary care providers versus those not using co-located primary care providers (Supplemental Table 2d).

Supplemental Table 2a: Characteristics of Respondents to 2017-2018 National Survey of ACOs

	Reports Using Any Strategy				p-value
		Yes		No	
	N	%	N	%	
	303	76%	96	24%	
Payer					
(Most ACOs have contracts with 2 or more payers)					
Has a Medicare Contract	256	76 %.	79	23 %	0.61
Has a Commercial Contract	218	75 %	71	25 %	0.70
Has a Medicaid Contract	78	82%	17	18 %	0.11
Existence of Non-Medicare Contracts That:					
Include mental health services in total cost of care calculation	129	80 %	32	20 %	0.09
Include any mental health quality measures in contract measure set	113	86 %	18	14 %	<0.01
Include SMI-relevant quality measures in contract measure set	61	88 %	7	11 %	<0.01
Carves out mental health services from contract	65	78 %	18	22 %	0.59
Other Contract Characteristics					
Shares financial risk in any contract	115	78 %	33	22 %	0.52
Previous experience with risk-based contracts	192	76 %	59	24 %	0.63
Leadership					
Physician-led ACO	100	70 %	43	30 %	0.08
Providers included in ACO Network					
Public Hospital	40	89 %	5	11 %	0.03
Federally Qualified Health Center (FQHC)	79	77 **%**	23	23 **%**	0.61
Academic Medical Center (AMC)	57	80 **%**	14	20 **%**	0.31
Specialty Behavioral Health Provider	43	83 %	9	17 %	0.20
Organizational Size					0.04
Very Small (<116 FTEs)	69	68 %	32	32 %	
Small (116-358 FTEs)	73	73 %	27	28 %	
Medium (258-1059 FTEs)	77	78 %	22	22 %	
Large (>1059 FTEs)	80	85 %	14	15 **%**	
Implementation of Collaborative Care for Depression and/or Anxiety					<0.01
None (0 components)	23	35 %	42	65 %	
Partial (1-2 components)	215	82 %	46	18 %	
Full (3 components)	64	91 %	6	9 %	

Note: This table shows the **row** percentages**.**

Supplemental Table 2b: Characteristics of Respondents to 2017-2018 National Survey of ACOs

	Reports Using Care Manager				p-value
		Yes		No	
	N	%	N	%	
	281	70%	118	30%	
Payer					
(Most ACOs have contracts with 2 or more payers)					
Has a Medicare Contract	236	70 %	99	30 %	0.98
Has a Commercial Contract	201	70 %		30 %	0.53
Has a Medicaid Contract	73	77 %	22	23 %	0.12
Largest Medicaid or largest Commercial ACO contract:					
Includes mental health services in total cost of care calculation	120	75 %	41	25 %	0.12
Includes any mental health quality measures in contract measure set	106	81 %	25	19 %	<0.01
Includes SMI-relevant quality measures in contract measure set	59	88 %	9	13 %	<0.01
Carves out mental health services from contract	61	73 %	22	27 %	0.51
Other Contract Characteristics					
Shares financial risk in any contract	105	71 %	43	29 %	0.86
Previous experience with risk-based contracts	176	70 %	75	30 %	0.99
Leadership					
Physician-led ACO	95	66 %	48	34 %	0.24
Providers included in ACO Network					
Public Hospital	33	73 %	12	27 %	0.62
Federally Qualified Health Center (FQHC)	75	74 %	27	27 %	0.39
Academic Medical Center (AMC)	51	72 %	20	29 %	0.74
Specialty Behavioral Health Provider	40	77 %	12	23 %	0.25
Organizational Size					0.10
Very Small (<116 FTEs)	66	65 %	35	35 %	
Small (116-358 FTEs)	64	64 %	36	36 %	
Medium (258-1059 FTEs)	75	76 %	22	24 %	
Large (>1059 FTEs)	72	77 %	22	23 %	
Implementation of Collaborative Care for Depression and/or Anxiety					<0.01
None (0 components)	18	28 %	47	72 %	
Partial (1-2 components)	201	77 %	60	23 %	
Full (3 components)	62	89 %	8	11 %	

Note: This table shows the **row** percentages**.**

Supplemental Table 2c: Characteristics of Respondents to 2017-2018 National Survey of ACOs

	Reports Using Patient Registry				p-value
		Yes		No	
	N	%	N	%	
	253	37%	146	63%	
Payer					
(Most ACOs have contracts with 2 or more payers)					
Has a Medicare Contract	121	36 %	214	64 %	0.65
Has a Commercial Contract	110	38 %	179	62 %	0.32
Has a Medicaid Contract	43	45 %	52	55 %	0.04
Largest Medicaid or largest Commercial ACO contract:					
Includes mental health services in total cost of care calculation	68	42 %	93	58 %	0.05
Includes any mental health quality measures in contract measure set	54	41 %	77	59 %	0.15
Includes SMI-relevant quality measures in contract measure set	36	53 %	32	47 %	<0.01
Carves out mental health services from contract	39	47 %	44	53 %	0.03
Other Contract Characteristics					
Shares financial risk in any contract	64	43 %	84	57 %	0.03
Previous experience with risk-based contracts	102	41 %	149	59 %	0.02
Leadership					
Physician-led ACO	49	34 %	94	66 %	0.73
Providers included in ACO Network					
Public Hospital	23	51 %	22	49 %	0.03
Federally Qualified Health Center (FQHC)	37	36 %	65	64 %	0.96
Academic Medical Center (AMC)	30	42 %	41	58 %	0.27
Specialty Behavioral Health Provider	27	52 %	25	48 %	0.01
Organizational Size					0.04
Very Small (<116 FTEs)	29	28 %	72	71 %	
Small (116-358 FTEs)	31	31 **%**	69	69 %	
Medium (258-1059 FTEs)	39	40 %	60	60 %	
Large (>1059 FTEs)	44	47 %	50	53 %	
Implementation of Collaborative Care for Depression and/or Anxiety					<0.01
None (0 components)	6	9 %	59	91 %	
Partial (1-2 components)	80	31 %	181	69 %	
Full (3 components)	59	84 %	11	16 %	

Note: This table shows the **row** percentages**.**

Supplemental Table 2d: Characteristics of Respondents to 2017-2018 National Survey of ACOs

	Reports Co-locating PCP in Specialty Mental Health Setting				p-value
	Yes		No		
	N	%	N	%	
	118	30%	281	70%	
Payer					
(Most ACOs have contracts with 2 or more payers)					
Has a Medicare Contract	24	28 **%**	241	72 %	0.13
Has a Commercial Contract	89	31 %	200	69 %	0.39
Has a Medicaid Contract	35	37 %	60	63 %	0.08
Largest Medicaid or largest Commercial ACO contract:					
Includes mental health services in total cost of care calculation	56	35 %	105	65 %	0.05
Includes any mental health quality measures in contract measure set	51	39 %	80	61 %	<0.01
Includes SMI-relevant quality measures in contract measure set	35	52 %	33	49 %	<0.01
Carves out mental health services from contract	26	31 %	57	69%	0.68
Other Contract Characteristics					
Shares financial risk in any contract	51	35 %	97	66 %	0.10
Previous experience with risk-based contracts	79	32 %	172	69 %	0.29
Leadership					
Physician-led ACO	41	29 %	102	71 %	0.87
Providers included in ACO Network					
Public Hospital	14	31 %	31	69 %	0.81
Federally Qualified Health Center (FQHC)	39	38 %	63	62 %	0.03
Academic Medical Center (AMC)	21	30 %	50	70 %	0.99
Specialty Behavioral Health Provider	28	54 %	24	46 %	<0.01
Organizational Size					0.01
Very Small (<116 FTEs)	23	23 %	78	77 %	
Small (116-358 FTEs)	21	21 %	79	79 %	
Medium (258-1059 FTEs)	35	35 %	64	65 %	
Large (>1059 FTEs)	36	38 %	58	62 %	
Implementation of Collaborative Care for Depression and/or Anxiety					<0.01
None (0 components)	4	6 %	61	94 %	
Partial (1-2 components)	75	28 %	186	71%	
Full (3 components)	39	56 %	31	44 %	

Note: This table shows the **row** percentages**.**

Supplemental Table 3: Adjusted associations between ACO characteristics and use of any integrated care strategy

There were several approaches that we could have used to estimate the association between ACO characteristics and likelihood of using the three integrated care strategies studied. The first and simplest approach would have been to use three separate logit models – one for each care delivery strategy studied – and estimate the relationship between ACO characteristics and likelihood of using each strategy, controlling for use of the other two strategies. However, approximately 45 percent of respondents reporting using more than one strategy to integrate primary care and treatment for serious mental illness, suggesting that strategy-use could be dependent within organizations and that analysis should account for possible clustering within ACOs.

Another strategy would have been to create an 8-part outcome (each possible combination of strategies) and estimate the association between ACO characteristics and the likelihood of using each discrete combination of strategies using multinomial logistic regression. However, because relatively few respondents reported using certain combinations of strategies, we were underpowered to use this approach.

Yet another strategy would have been to create an outcome representing the number of strategies that ACO respondents reported using. However, with this approach we could not test whether there were any meaningful differences in the association between ACO characteristics and likelihood of using integrated care by strategy type.

Therefore, we decided to leverage the fact that each outcome was measured as a 0,1 variable and estimate a logit model using generalized estimating equations (GEE). This approach is similar to seemingly unrelated regressions (SUR), which estimates separate linear models but allows for the error term to be correlated across equations. This approach allowed us to naturally account for the form of the outcomes while also allowing associations between them. As with classical SUR, we assume nothing about the correlation matrix structure of the three outcomes by virtue of specifying an unstructured working correlation matrix when estimating our model. This modeling approach had the benefit of gaining additional statistical power (in comparison to the multinomial logistic regression approach) by accounting for the correlation between our 3 outcomes of interest while (in an advantage compared to SUR) respecting the binary nature of the outcomes. Additionally, this modeling approach allowed us to examine differences in the association between ACO characteristics and use of integrated care by strategy type, through creating interaction terms between each ACO characteristic and strategy type.

This meant that to form our outcomes for analysis, we created a vector of our three care delivery strategy outcomes (care manager, patient registry, co-located primary care clinician) "stacked" by strategy at the ACO-level. For example, for a respondent reporting using a care manager only, this vector would equal 1,0,0.

We estimated two specifications of the model. First, we fit a simple model (model 1.1) using generalized estimating equations (GEE) and specified an unstructured correlation matrix with robust standard errors.

$$1.1\ logit\left(p_{ij}\right) = \beta_0 + \beta_1 Strategy_j + \beta_2 Contract_{ij} + \beta_3 Organization_{ij} + \beta_4 Mode_{ij}$$

Where $p_{ij} = E\left[Y_{ij}\,\middle|\, x_{ij}\right] = \Pr\left(Y_{ij} = 1\middle|\, x_{ij}\right)$ and x represents the collection of predictors ($Strategy$, $Contract$, $Organization$, and $Mode$) shown in the model above.

Y_{ij} , our outcome of interest, is the reported use of an integrated care strategy i for each ACO respondent j . $Strategy_j$ is a vector of two indicator variables to indicate whether the observation refers to care managers, co-located primary care clinician, or patient registry (omitted category). $Contract_{ij}$ and $Organization_{ij}$ are each vectors of ACO characteristics. $Contract$ includes 8 indicator variable corresponding to the payers with whom each respondent has ACO contracts and the contract features of those contracts (described in Supplement Table 1b). $Organization$ includes 5 indicator variables referring to organizational leadership, size, provider types included in ACO contract, and reported use of collaborative care to treat depression and anxiety (also described in Supplement Table 1b). $Mode$ is an indicator variable referring to whether the respondent took the web or paper version of the survey. In the simple model, contract and organizational characteristics are restricted NOT to vary by care delivery strategy (i.e., one coefficient on each contract or organizational characteristic regardless of care delivery strategy). Model results from the simple model are shown in the second column of Supplemental Table 3.

Because the association between ACO characteristics and using integrated care could change depending on the type of care delivery strategy, we created interaction terms between each ACO characteristic and strategy-type. We then fit this full model (model 1.2) to observe whether the type of strategy meaningfully changed the associations between ACO characteristics and use of integrated care. **Results from Model 1.2 are those presented in the manuscript text and in Figure 2** and also included in this Supplement (right most columns of Supplemental Table 3).

1.2 $$logit\left(p_{ij}\right) = \beta_0 + \beta_1 Strategy_j + \beta_2 Contract_{ij} + \beta_3 Organization_{ij} + \beta_4 Mode_{ij} + \beta_5 Strategy_j * Contract_{ij} + \beta_6 Strategy_j * Organization_{ij}$$

Where again $p_{ij} = E\left[Y_{ij} \middle| x_{ij}\right] = \Pr\left(Y_{ij} = 1 \middle| x_{ij}\right)$ and x represents the collection of predictors shown in the model above. ($Strategy$, $Contract$, $Organization$, $Mode$ and also the interaction of $Strategy$ with all variables in $Contract$ vector and the interaction of $Strategy$ with all variables in $Organization$ vector)

After fitting each model, we computed the predicted probability of each contract and organizational characteristic on the likelihood of using integrated care strategies. Holding all variables at their observed values, we first obtained the vector of linear predictions from the model (the logits) to form the base vector. We then added the beta coefficient from the parameter of interest to generate a counterfactual vector and subtracted the counterfactual from the base vector to determine the difference in marginal effect. We then transformed this difference into a change in predicted probability through changing the scale from a log-odds scale into a probability scale. These differences for the full model (model 1.2) are reported in Figure 2 of the manuscript. This is a procedure that can be done manually, or by using the Stata *mimrgns* command (the *margins* command for multiply imputed data), using the following specification:

mimrgns, expression(exp(predict(xb))/(1+exp(predict(xb)))) dydx(i.var))

Supplemental Table 3: Adjusted associations between ACO characteristics and use of integrated care

	Simple Model	Full Model		
VARIABLES	Coefficient (SE)	Main Coefficient (SE)	Interaction with care manager Coefficient (SE)	Interaction with co-located PCP Coefficient (SE)
Integrated Care Strategy				
Care Manager	2.315***	3.648***	-	-
	(0.189)	(0.909)		
Patient Registry (Reference Group)	*Reference*	Reference		
Co-located Primary Care Clinician	-0.400**	0.223	-	-
	(0.159)	(0.964)		
Contract Characteristics				
Payer				
Has a Medicaid Contract	-0.139	-0.0166	-0.328	-0.195
	(0.253)	(0.379)	(0.515)	(0.455)
Has a Commercial Contract	-0.132	-0.308	0.0200	0.403
	(0.238)	(0.376)	(0.468)	(0.462)
Has a Medicare Contract	-0.0340	0.303	-0.389	-0.608
	(0.249)	(0.345)	(0.475)	(0.428)
Largest Medicaid or largest Commercial ACO Contract:				
Includes Mental Health in Total Cost of Care	0.0312	0.212	-0.219	-0.322
	(0.222)	(0.361)	(0.447)	(0.444)
Includes Mental Health Quality Measure	-0.0923	-0.392	0.793	0.183
	(0.252)	(0.402)	(0.494)	(0.543)
Includes SMI-Relevant Quality Measures	0.742***	0.691	0.482	0.313
	(0.269)	(0.432)	(0.705)	(0.608)
Carves Out Mental Health Services	-0.0302	0.402	-0.669*	-0.725*
	(0.235)	(0.339)	(0.402)	(0.428)
Other Contract Characteristics				
Shares Financial Risk in Any Contract	-0.0355	0.0760	-0.333	-0.0327
	(0.195)	(0.297)	(0.406)	(0.394)
Previous Experience in Risk-Based Contract	0.238	0.563*	-0.655*	-0.338
	(0.181)	(0.304)	(0.375)	(0.387)

Organization Characteristics				
Leadership				
Physician-Led	0.601**	0.667*	-0.772	0.466
	(0.236)	(0.377)	(0.470)	(0.496)
Providers included in ACO Network				
Specialty Behavioral Health Provider	0.542*	0.400	-0.440	0.477
	(0.285)	(0.417)	(0.532)	(0.543)
Federally Qualified Health Center	-0.0750	-0.348	-0.0799	0.766*
	(0.201)	(0.335)	(0.419)	(0.440)
Academic Medical Center (AMC)	-0.143	-0.207	0.679	-0.285
	(0.238)	(0.368)	(0.496)	(0.501)
Public Hospital	0.418*	0.928**	-0.510	-0.837
	(0.238)	(0.406)	(0.570)	(0.610)
Size (No. Physician FTEs)				
Very Small (<116 FTEs)	-0.613**	-0.427	-0.0671	-0.547
	(0.278)	(0.443)	(0.529)	(0.572)
Small (117-358 FTEs)	-0.470**	-0.404	0.0775	-0.485
	(0.224)	(0.363)	(0.476)	(0.515)
Medium (359-1058 FTEs)	*Reference*	*Reference*	*Reference*	*Reference*
Large (>1059 FTEs)	0.220	0.369	-0.575	-0.139
	(0.235)	(0.362)	(0.476)	(0.471)
Implementation of Collaborative Care for Depression and/or Anxiety				
None	*Reference*	*Reference*	*Reference*	*Reference*
Partial (1-2 Strategies)	1.741***	1.543***	0.270	0.324
	(0.280)	(0.489)	(0.558)	(0.726)
Full (All 3 Strategies)	3.278***	4.037***	-1.718***	-1.174
	(0.352)	(0.559)	(0.658)	(0.778)
Survey Mode (Paper vs. web)	0.462**	0.520**	-	-
	(0.210)	(0.222)		
Constant	-2.667***	-3.255***	-	-
	(0.457)	(0.748)		
Observations	1,197	1,197		
Number of ACOs	399	399		

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Results from the Full Model are those shown in manuscript text and in Figure 2

Supplemental Table 4: Main Effects using complete case data

We did not have complete data for each respondent due to item non-response. To account for missing covariate information among the 399 respondents included in this analysis, we used a multiple imputation through chained equations (MICE) procedure to generate a "complete" data set. Our imputation model was identical to our analytic model and we specified 10 imputed datasets. As a comparison, we also created a complete case cohort of respondents, or respondents who had no missing observations for any of the variables included in our analytic model (either our outcome variable - integrated care delivery strategies – or any explanatory variables - payer, contract characteristics, leadership, network providers, or size). This reduced the total number of observations by approximately 12%, from 399 observations to 351 observations. Using the complete case cohort did not change the prevalence of our primary outcome (use of integrated care delivery strategies) but did change the effect size for some covariates included in our model. The model results using complete case data for the simple model (model 1.1) and the full model (model 1.2) is shown in Supplemental Table 4.

Supplemental Table 4: Adjusted associations between ACO characteristics and use of integrated care using complete case data

	Simple Model	Full Model		
VARIABLES	Coefficient (SE)	Main Coefficient (SE)	Interaction with care manager Coefficient (SE)	Interaction with co-located PCP Coefficient (SE)
Integrated Care Strategy				
Care Manager	1.830***	3.063***	-	-
	(0.176)	(0.879)		
Patient Registry	*Reference*	Reference		
Co-located Primary Care Clinician	-0.337**	0.400	-	-
	(0.170)	(1.043)		
Contract Characteristics				
Payer				
Has a Medicaid Contract	-0.332	-0.216	-0.0581	-0.380
	(0.281)	(0.420)	(0.479)	(0.516)
Has a Commercial Contract	-0.240	-0.208	-0.632	0.435
	(0.246)	(0.382)	(0.460)	(0.487)
Has a Medicare Contract	-0.0770	0.425	-0.703	-0.942*
	(0.274)	(0.407)	(0.470)	(0.484)
Largest Medicaid or largest Commercial ACO Contract:				
Include Mental Health Quality Measures	-0.101	0.182	0.190	-0.192
	(0.272)	(0.356)	(0.407)	(0.441)
Include SMI-Relevant Quality Measures	0.721**	-0.566	0.833	0.518
	(0.302)	(0.440)	(0.530)	(0.579)
Include Mental Health in Total Cost of Care	0.171	0.806*	-0.119	0.125
	(0.237)	(0.489)	(0.659)	(0.660)
Carves Out Mental Health Services	0.130	0.434	-0.233	-0.628
	(0.254)	(0.362)	(0.430)	(0.458)
Other Contract Characteristics				
Shares Financial Risk in Any Contract	-0.145	0.210	-0.620	-0.501
	(0.212)	(0.325)	(0.383)	(0.424)
Previous Experience in Risk-Based Contract	0.198	0.521*	-0.547	-0.435
	(0.189)	(0.309)	(0.376)	(0.400)

Organization Characteristics				
Leadership				
Physician-Led	0.432*	0.566	-0.748	0.408
	(0.260)	(0.427)	(0.492)	(0.531)
Providers included in ACO Network				
Public Hospital	0.333	0.529	-0.380	0.574
	(0.250)	(0.450)	(0.548)	(0.559)
FQHC	-0.121	-0.136	0.503	0.754
	(0.213)	(0.372)	(0.459)	(0.473)
Academic Medical Center (AMC)	-0.143	-0.536	0.0737	-0.114
	(0.246)	(0.362)	(0.435)	(0.510)
		0.957**	-1.113*	-0.787
Specialty Behavioral Health Provider	0.645**	(0.418)	(0.598)	(0.636)
	(0.298)			
Size (No. Physician FTEs)		-0.251	0.372	-0.660
Very Small (<116 FTEs)	-0.314	(0.508)	(0.592)	(0.643)
	(0.309)	-0.202	0.00896	-0.656
Small (117-358 FTEs)	-0.360	(0.399)	(0.506)	(0.568)
	(0.236)	*Reference*	*Reference*	*Reference*
Medium (359-1058 FTEs)	*Reference*	0.563	-0.434	-0.293
Large (>1059 FTEs)	0.378	(0.395)	(0.479)	(0.514)
	(0.256)			
Implementation of Collaborative Care for Depression and/or Anxiety				
None (0 Strategies	*Reference*	*Reference*	*Reference*	*Reference*
Partial (1-2 Strategies)	1.741***	1.352***	0.761	-0.836
	(0.280)	(0.479)	(0.515)	(0.595)
Full (All 3 Strategies)	3.278***	3.571***	0.710	-0.733
	(0.352)	(0.567)	(0.756)	(0.829)
Constant	-2.614***	-3.159***	-	-
	(0.492)	(0.786)		
Observations	1,053	1,053	-	-
Number of ACOs	351	351		

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1