Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. List of Medicaid Expansion and Nonexpansion States Included in Study

Expansion States	Nonexpansion States
Arkansas	Alabama
Arizona	Florida
California *	Georgia
Colorado	Kansas
Connecticut *	Louisiana†
Washington, DC	Maine
Delaware	Missouri
Iowa	Mississippi
Illinois	North Carolina
Indiana	South Carolina
Massachusetts	Tennessee
Maryland	Texas
Michigan	Utah
Minnesota *	Wisconsin
New Hampshire	Wyoming
New Jersey *	
New Mexico	
New York	
Ohio	
Oregon	
Pennsylvania	
Rhode Island	
Virginia	
Washington *	
West Virginia	

***** Early adopter of Medicaid expansion

† Adopted Medicaid expansion after study period (July 1, 2016)

eTable 2. *ICD-9* Codes Used for Inclusion in Study

Diagnosis	ICD-9 Diagnosis Codes	ICD-9 Procedure Codes
Acute Appendicitis	540.0, 540.1, 540.9, 541, 542	47.01, 47.09, 17.32, 17.39, 17.42
Acute Cholecystitis	574.00, 574.01, 574.10, 574.11, 574.30, 574.31, 574.40, 574.41, 574.60, 574.61, 574.70, 574.71, 574.80, 575.0, 575.12	N/A
Diverticular Disease	562.10, 562.11, 562.12, 562.13	N/A
Peripheral Artery Disease	440.20, 440.21, 440.22, 440.23, 440.24, 440.29	N/A
Aortic Aneurysm	441.1, 441.2, 441.3, 441.4, 441.5, 441.6, 441.7, 441.9	38.04, 38.05, 38.14, 38.15, 38.34, 38.35, 38.36, 38.44, 38.45, 38.46, 39.25, 39.71, 39.73, 39.78, 39.79, 39.90

ICD-9 International Classification of Diseases, 9th Edition

eTable 3. Coding for Early Uncomplicated Care and Optimal Care

Component of "Optimal Care"	ICD-9 Diagnosis or Procedure Codes
Early, Uncomplicated Presentation	**Absence of Below Diagnosis Codes**
Diverticulitis	567.31, 567.22, 567.38, 567.39, 569.81, 995.91, 995.92
Aortic Aneurysm	441.1, 441.3, 441.5, 441.6
Peripheral Artery Disease	440.23, 440.24
Optimal Surgical Care	**Procedure Codes**
Cholecystectomy	51.21, 51.22, 51.23, 51.24
Laparoscopic Appendectomy	47.01, 17.31, 17.39, 17.42
Laparoscopic Cholecystectomy	51.23, 51.24
Absence of Amputation	84.10, 84.11, 84.12, 84.13, 84.14, 84.15, 84.16, 84.17, 84.18

ICD-9 International Classification of Diseases, 9th Edition

eTable 4. Trends in Outcomes Before the Full Medicaid Expansion

Outcome	Pre-Reform Time Trend*	95% CI (P-Value)
Uninsured	-0.6 percentage-points	-1.1 to 0.0 (P=0.057)
Early, Uncomplicated Presentation	-0.0 percentage-points	-0.2 to 0.1 (P=0.907)
Optimal Care	+0.0 percentage-points	-0.3 to 0.4 (P=0.828)

* Interaction between dichotomous Expansion State term and continuous period term, representing quarterly trend in outcomes for expansion states compared to non-expansion states prior to 2014, controlling for patient age, sex, race, comorbidity, secular trends and clustering at hospital level

CI –Confidence Interval

eTable 5. Changes in Rates of Early Uncomplicated Presentation and Optimal Care for Select Surgical Conditions After Medicaid Expansion, by Condition and for Full Sample

Early/Uncomplicated Presentation								
	Expansion States			**Non-Expansion States**			**Difference-in-Differences**	
	Pre	Post	Diff	Pre	Post	Diff	Unadjusted	Adjusted*
Diverticulitis *(n=123,202)*	89.7	88.1	-1.6	89.3	86.0	-3.3	+1.7 (P<0.001)	**+1.6** CI 0.5 to 2.7 P=0.004
Aortic Aneurysm *(n=20,127)*	93.8	94.1	+0.3	93.7	92.7	-1.0	+1.3 (P=0.091)	**+1.3** CI -1.1 to 3.8 P=0.288
PAD *(n=46,806)*	72.1	69.1	-3.0	73.1	68.2	-4.9	+1.9 (P=0.057)	**+2.3** CI -0.2 to 4.9 P=0.072
Optimal Management								
	Expansion States			**Non-Expansion States**			**Difference-in-Differences**	
	Pre	Post	Diff	Pre	Post	Diff	Unadjusted	Adjusted*
Cholecystectomy for Cholecystitis *(n=19,093)*	73.7	70.5	-3.2	73.8	67.5	-6.3	+3.1 (P=0.048)	**+2.8** CI -0.0 to 5.7 P=0.051
MIS Appendectomy or Cholecystectomy *(n=95,500)*	78.6	83.7	+5.1	79.2	82.7	+3.5	+1.5 (P=0.024)	**+1.9** CI -0.7 to 4.5 P=0.154
Limb-sparing PAD *(n=46,806)*	84.7	82.7	-2.0	82.0	78.9	-3.2	+1.2 (P=0.128)	**+1.5** CI 0.9 to 4.0 P=0.219

Full Sample – all patients included in study (private insurance, Medicaid, and uninsured)
* Adjusted for patient age, sex, race, comorbidity, secular trends and clustering at hospital level
CI – 95% Confidence Interval

eTable 6. Changes in Rates of Early Uncomplicated Presentation and Optimal Care for Select Surgical Conditions After Medicaid Expansion, by Condition and for Medicaid and Uninsured Patients

Early/Uncomplicated Presentation								
	Expansion States			**Non-Expansion States**			**Difference-in-Differences**	
	Pre	Post	Diff	Pre	Post	Diff	Unadjusted	Adjusted*
Diverticulitis *(n=40,644)*	88.1	86.8	-1.3	86.7	83.6	-3.1	+1.7 (P=0.026)	**+1.8** CI -0.3 to 3.8 P=0.086
Aortic Aneurysm *(n=4,201)*	87.5	88.2	+0.7	87.3	86.1	-1.2	+2.1 P=0.369	**+2.2** CI -2.3 to 6.6 P=0.338
PAD *(n=22,559)*	66.6	65.3	-1.3	68.7	62.5	-6.2	+4.8 (P=0.001)	**+4.9** CI 1.7 to 8.1 P=0.003
Optimal Management								
	Expansion States			**Non-Expansion States**			**Difference-in-Differences**	
	Pre	Post	Diff	Pre	Post	Diff	Unadjusted	Adjusted*
Cholecystectomy for Cholecystitis *(n=8,308)*	68.9	65.5	-3.4	70.0	62.9	-7.1	+3.6 (P=0.140)	**+3.4** CI -1.1 to 8.0 P=0.140
MIS Appendectomy or Cholecystectomy *(n=37,574)*	76.9	84.0	+7.1	77.0	81.9	+4.9	+2.1 (P=0.050)	**+2.3** CI -1.8 to 6.4 P=0.265
Limb-sparing PAD *(n=22,559)*	80.7	80.2	-0.5	78.5	73.8	-4.7	+4.2 (P=0.001)	**+4.1** CI 0.5 to 7.7 P=0.027

* Adjusted for patient age, sex, race, comorbidity, secular trends and clustering at hospital level
CI – 95% Confidence Interval

eTable 7. Changes in Rates of Early Uncomplicated Presentation and Optimal Care for Select Surgical Conditions After Medicaid Expansion, for Hospitals Present in Database for All 6 Years

Early/Uncomplicated Presentation								
	Expansion States			**Non-Expansion States**			**Difference-in-Differences**	
	Pre	Post	Diff	Pre	Post	Diff	Unadjusted	Adjusted*
Full Sample *(n=160,475)*	85.9	84.4	-1.5	85.5	82.3	-3.2	+1.8 (P<0.001)	**+1.8** CI 0.6 to 2.9 P=0.003
Private Insurance (*n=105,192*)	88.3	86.8	-1.5	88.6	85.5	-3.1	+1.6 (P=0.001)	**+1.6** CI 0.3 to 2.8 P=0.012
Medicaid/Uninsured *(n=55,283)*	81.1	80.0	-1.1	80.3	76.1	-4.2	+3.0 (P<0.001)	**+3.0** CI 1.1 to 4.9 P=0.002
Optimal Management								
	Expansion States			**Non-Expansion States**			**Difference-in-Differences**	
	Pre	Post	Diff	Pre	Post	Diff	Unadjusted	Adjusted*
All Payers *(n=124,006)*	81.0	82.7	+1.7	81.2	80.7	-0.5	+2.2 (P<0.001)	**+2.3** CI 0.7 to 4.0 P=0.006
Private Insurance (*n=72,751*)	83.3	84.5	+1.2	84.0	83.7	-0.3	+1.5 (P=0.035)	**+1.7** CI -0.2 to 3.5 P=0.073
Medicaid/Uninsured *(n=51,255)*	77.4	80.3	+2.9	77.7	76.7	-1.0	+4.0 (P<0.001)	**+3.8** CI 1.0 to 6.5 P=0.007

Full Sample – all patients included in study (private insurance, Medicaid, and uninsured)
* Adjusted for patient age, sex, race, comorbidity, secular trends and clustering at hospital level
CI – 95% Confidence Interval

eTable 8. Changes in Admission Rates After Medicaid Expansion

Admission Rates*								
	Expansion States			**Non-Expansion States**			**Difference-in-Differences**	
	Pre	Post	Diff	Pre	Post	Diff	Unadjusted Rate	Adjusted IRR
Full Sample *(n=293,529)*	30.5	29.4	-1.1	27.8	27.0	-0.8	-0.3	**0.99** CI 0.97 to 1.00 P=0.135
Private Insurance (*n=184,269*)	36.2	34.6	-1.6	32.3	31.2	-0.9	-0.7	**0.98** CI 0.98 to 0.99 P<0.001
Medicaid/Uninsured *(n=109,260)*	20.4	20.6	-0.2	20.8	20.7	-0.1	-0.1	**1.02** CI 1.01 to 1.03 P<0.001

* Admissions per hospital per quarter
Full Sample – all patients included in study (private insurance, Medicaid, and uninsured)
IRR – admission incident rate ratio, adjusted for patient age, sex, race, comorbidity, secular trends and clustering at hospital level
CI – 95% Confidence Interval