Loehrer AP, Leech MM, Weiss JE, et al. Association of cost sharing with delayed and complicated presentation of acute appendicitis or diverticulitis. *JAMA Health Forum*. 2021;2(9):e212324. doi:10.1001/jamahealthforum.2021.2324

**eTable 1.** *ICD-9* and *ICD-10* Diagnosis Codes Used for Inclusion in Study

**eTable 2.** *ICD-9* and *ICD-10* Diagnosis and Procedure Codes for Early Uncomplicated Presentation, Optimal Surgical Care and Minimally Invasive Surgery

**eTable 3.** Total Cost Sharing by Patient Characteristics Among 151,852 Patients (2013-2017)

This supplementary material has been provided by the authors to give readers additional information about their work.
**eTable 1. ICD-9 and ICD-10 Diagnosis Codes Used for Inclusion in Study**

| Diagnosis         | ICD-9 Diagnosis Codes | ICD-10 Diagnosis Codes                      |
|-------------------|-----------------------|---------------------------------------------|
| Acute Appendicitis| 540.0, 540.1, 540.9, 541, 542 | K35.2, K35.20, K35.21, K35.3, K35.30, K35.31, K35.32, K35.33, K35.8, K35.80, K35.891, K36, K37 |
| Acute Diverticulitis | 562.10, 562.11, 562.12, 562.13 | K57.2, K57.20, K57.21, K57.3, K57.30, K57.31, K57.32, K57.33 |

Abbreviations: ICD-9 International Classification of Diseases, 9th Edition. ICD-10 International Classification of Diseases, 10th Edition
**eTable 2. ICD-9 and ICD-10 Diagnosis and Procedure Codes for Early Uncomplicated Presentation, Optimal Surgical Care and Minimally Invasive Surgery**

| Early Uncomplicated Presentation | Optimal Surgical Care | Minimally Invasive Surgery* |
|----------------------------------|-----------------------|-----------------------------|
| Absence of Diagnosis Codes       | 1Presence of Procedure Codes | a Open vs b Laparoscopic Surgical Procedure Codes |
| 540.0, 540.1, 567.22, 567.29,    | 47.09, 47.01          | a: 47.09, 0DTJ0ZZ            |
| 567.31, 567.38, 569.5, 785.50,   |                       | b: 47.01, 0DTJ4ZZ           |
| 785.52, 995.91, 995.92          |                       |                             |
| K35.2, K35.20, K35.21,          |                       |                             |
| K35.32, K63.2, K63.20, K65.0,   |                       |                             |
| K65.1, K68.12, K68.19, R65.2,   |                       |                             |
| R65.20, R65.21, A41.4, A41.50,  |                       |                             |
| A41.51, A41.52, A41.53, A41.59,|                       |                             |
| A41.81, A41.89, A41.9, R57.9,   |                       |                             |
| R65.20, R65.21                  |                       |                             |

**1Acute Appendicitis**

| Absence of Procedure Codes       | 1Presence of Procedure Codes | a Open vs b Laparoscopic Surgical Procedure Codes |
| 567.31, 567.22, 567.38, 567.39, | 46.01, 46.03, 46.10, 46.11, 46.13, 46.14, 46.20, 46.21, 46.22, 46.23, 46.24 | a: 45.75, 45.76, 45.79, 0DTM0ZZ, 0DTN0ZZ, 0DBM0ZZ, 0DBN0ZZ |
| 569.5, 569.81, 569.83, 785.50,   | 0DSB0ZZ, 0DSB4ZZ, 0DSB7ZZ,  | b: 17.35, 17.36, 17.39, 0DTM4ZZ, 0DTN4ZZ, 0DBM4ZZ, 0DBN4ZZ |
| 785.52, 995.91, 995.92          | 0DSB8ZZ, 0DSBXXZ, 0D1B0Z4, |                             |
| K57.20, K57.21, K63.2, K65.1,   | 0D1B4Z4, 0D1B8Z4           |                             |
| K68.12, K68.19, N32.1, N32.2,   | 0DSH0ZZ, 0DSK0ZZ, 0DSL0ZZ, |                             |
| N82.3, N82.4                    | 0DSM0ZZ, 0DSN0ZZ, 0DSP0ZZ, |                             |
|                                | 0DSQ0ZZ, 0DSH4ZZ, 0DSK4ZZ, |                             |
|                                | 0DSL4ZZ, 0DSM4ZZ, 0DSN4ZZ, |                             |
|                                | 0DSP4ZZ, 0DSQ4ZZ, 0DSH7ZZ, |                             |
|                                | 0DSK7ZZ, 0DSL7ZZ, 0DSM7ZZ, |                             |
|                                | 0DSN7ZZ, 0DSP7ZZ, 0DSQ7ZZ, |                             |
|                                | 0DSH8ZZ, 0DSK8ZZ, 0DSL8ZZ, |                             |
|                                | 0DSM8ZZ, 0DSN8ZZ, 0DSP8ZZ, |                             |
|                                | 0DSQ8ZZ, 0DSHXZZ, 0DSKXXZ, |                             |
|                                | 0DSLXZZ, 0DSMXZ, 0DSNXZZ,  |                             |
|                                | 0DSPXZZ, 0DSQXZZ, 0D1H0Z4, |                             |
|                                | 0D1K0Z4, 0D1L0Z4, 0D1M0Z4,  |                             |
|                                | 0D1N0Z4, 0D1H4Z4, 0D1K4Z4,  |                             |
|                                | 0D1L4Z4, 0D1M4Z4, 0D1N4Z4,  |                             |
|                                | 0D1H8Z4, 0D1K8Z4, 0D1L8Z4,  |                             |
|                                | 0D1M8Z4, 0D1N8Z4           |                             |

**Abbreviations:** ICD-9 International Classification of Diseases, 9th Edition. ICD-10 International Classification of Diseases, 10th Edition

*Among those with an appendectomy or colectomy*
**eTable 3. Total Cost Sharing by Patient Characteristics Among 151 852 Patients (2013-2017)**

| Characteristic                  | Total Cost Sharing Quartiles |   |   |   |   |
|---------------------------------|-----------------------------|---|---|---|---|
|                                 | N (Col %)                   | N (Row %) |
| **Diagnosis**                   |                             |           |
| Acute Appendicitis              | 65,424 (43.1)               | 14,240 (21.8) | 14,929 (22.8) | 17,040 (26.0) | 19,215 (29.4) |
| Acute Diverticulitis            | 86,428 (56.9)               | 23,717 (27.4) | 23,052 (26.7) | 20,914 (24.2) | 18,745 (21.7) |
| **Age Group (years)**           |                             |           |
| 18 – 24                         | 11,281 (7.4)                | 2,757 (24.4) | 2,601 (23.1) | 2,850 (25.3) | 3,073 (27.2) |
| 25 – 34                         | 18,459 (2.2)                | 3,778 (20.5) | 4,228 (22.9) | 5,019 (27.2) | 5,346 (29.4) |
| 35 – 44                         | 27,637 (18.2)               | 6,054 (21.9) | 6,938 (25.1) | 7,227 (26.1) | 7,418 (26.8) |
| 45 – 54                         | 43,770 (28.8)               | 10,873 (24.8) | 11,079 (25.3) | 11,059 (25.3) | 10,759 (24.6) |
| 55 - 64                         | 50,705 (33.4)               | 14,495 (28.6) | 13,135 (25.9) | 11,799 (23.3) | 11,276 (22.2) |
| **Gender**                      |                             |           |
| Male                            | 79,517 (52.4)               | 18,643 (23.4) | 19,288 (24.3) | 20,330 (25.6) | 21,256 (26.7) |
| Female                          | 72,335 (47.6)               | 19,314 (26.7) | 18,693 (25.8) | 17,624 (24.4) | 16,704 (23.1) |
| **Calendar Year**               |                             |           |
| 2013                            | 35,407 (23.3)               | 8,905 (25.1) | 9,899 (28.0) | 9,185 (25.9) | 7,418 (20.9) |
| 2014                            | 30,414 (20.0)               | 7,344 (24.1) | 8,120 (26.7) | 7,891 (25.9) | 7,059 (23.2) |
| 2015                            | 28,542 (18.8)               | 6,980 (24.5) | 7,126 (25.0) | 7,201 (25.2) | 7,235 (25.3) |
| 2016                            | 30,204 (19.9)               | 7,769 (25.7) | 7,081 (23.4) | 7,013 (23.2) | 8,341 (27.6) |
| 2017                            | 27,285 (18.0)               | 6,959 (25.5) | 5,755 (21.1) | 6,664 (24.4) | 7,907 (29.0) |
| **Calendar Quarter**            |                             |           |
| Jan-Mar                         | 36,585 (24.1)               | 6,802 (18.6) | 8,752 (23.9) | 10,288 (28.1) | 10,743 (29.4) |
| Apr-Jun                         | 39,471 (26.0)               | 9,336 (23.6) | 10,077 (25.5) | 9,978 (25.3) | 10,080 (25.5) |
| Jul-Sep                         | 39,056 (25.7)               | 10,338 (26.5) | 10,026 (25.7) | 9,525 (24.4) | 9,167 (23.5) |
| Oct-Dec                         | 36,740 (24.2)               | 11,481 (31.2) | 9,126 (24.8) | 8,163 (22.2) | 7,970 (21.7) |
| **Elixhauser Comorbidity Index**|                             |           |
| 0                               | 22,549 (41.3)               | 5,018 (22.2) | 4,914 (21.8) | 5,589 (24.8) | 7,028 (31.2) |
| 1                               | 15,311 (28.1)               | 3,931 (25.7) | 3,556 (23.2) | 3,658 (24.0) | 4,143 (27.1) |
| 2                               | 9,230 (16.9)                | 2,656 (28.8) | 2,185 (23.7) | 2,127 (23.0) | 2,262 (24.5) |
| 3+                              | 7,498 (13.7)                | 2,818 (37.6) | 1,635 (21.8) | 1,494 (19.9) | 1,551 (20.7) |

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| Q1 (1 - 25) | 49,536 (33.7) | 12,515 (25.3) | 12,914 (26.1) | 12,340 (24.9) | 11,767 (23.7) |
| Q2 (26 - 50) | 38,850 (26.5) | 9,504 (24.5) | 9,840 (25.3) | 9,726 (25.0) | 9,780 (25.2) |
| Q3 (51 - 75) | 32,226 (22.0) | 7,482 (23.2) | 7,944 (24.6) | 8,359 (25.9) | 8,441 (26.2) |
| Q4 (76 - 100) | 26,181 (17.8) | 6,350 (24.2) | 6,263 (23.9) | 6,542 (25.0) | 7,026 (26.8) |

**Rural**

| Urban | 134,341 (91.5) | 32,901 (24.5) | 33,727 (25.1) | 33,780 (25.1) | 33,933 (25.3) |
| Rural | 12,458 (8.5) | 2,956 (23.7) | 3,236 (26.1) | 3,185 (25.6) | 3,081 (24.7) |

**Census Bureau Geographic Divisions**

| Division | New England | Middle Atlantic | East North Central | West North Central | South Atlantic | East South Central | West South Central | Mountain | Pacific |
|----------|-------------|-----------------|-------------------|-------------------|----------------|-------------------|-------------------|----------|---------|
|          | 5,489 (3.7) | 21,886 (14.9)  | 20,556 (14.0)    | 9,264 (6.3)      | 34,614 (23.6) | 7,069 (4.8)      | 26,302 (17.9)    | 9,546 (6.5) | 12,065 (8.2) |
|          | 1,654 (30.1)| 7,966 (36.4)   | 5,217 (25.4)     | 2,344 (25.3)     | 8,047 (23.3)  | 1,470 (20.8)     | 4,397 (16.7)     | 1,967 (20.6) | 2,788 (23.1) |
|          | 1,473 (26.8)| 5,683 (26.0)   | 5,328 (25.9)     | 2,277 (24.6)     | 8,166 (25.5)  | 1,946 (27.5)     | 6,242 (23.7)     | 2,144 (22.5) | 2,888 (23.1) |
|          | 1,313 (23.9)| 4,533 (20.7)   | 5,041 (24.5)     | 2,391 (25.8)     | 8,421 (24.3)  | 1,870 (26.4)     | 7,754 (29.5)     | 2,429 (25.4) | 3,052 (25.3) |
|          | 1,049 (19.1)| 3,704 (25.6)   | 4,970 (24.2)     | 2,252 (24.3)     | 9,330 (26.9)  | 1,783 (25.2)     | 7,909 (30.1)     | 3,006 (31.5) | 3,214 (26.6) |

**High Deductible Plan**

| Plan | No  | Yes |
|------|-----|-----|
|      | 113,186 (74.9) | 37,959 (25.1) |
|      | 30,782 (27.2)  | 6,938 (18.3)  |
|      | 30,569 (27.0)  | 7,302 (19.2)  |
|      | 28,157 (24.9)  | 9,594 (26.3)  |
|      | 23,678 (20.9)  | 14,125 (37.2) |

**Benefit Plan Type**

| Plan | No  | Yes |
|------|-----|-----|
|      | 104,737 (69.0) | 17,804 (11.7) |
|      | 22,808 (21.8)  | 4,724 (26.5)  |
|      | 27,256 (26.0)  | 4,112 (23.1)  |
|      | 29,218 (27.9)  | 3,627 (20.4)  |
|      | 25,455 (24.3)  | 5,341 (30.0)  |

| Plan | No  | Yes |
|------|-----|-----|
|      | 19,200 (12.6) | 8,926 (5.9)  |
|      | 6,820 (35.5)  | 3,022 (33.9) |
|      | 4,255 (22.2)  | 2,154 (24.1) |
|      | 3,227 (16.8)  | 1,735 (19.4) |
|      | 4,898 (25.5)  | 2,015 (22.6) |

1 Missing (N); SDI (5,059); Rurality (5,053); Census Bureau Geographic Divisions (5,061); High Deductible Plan (707)
2 Study cohort (36.0%) for ECI (N = 54,588); High Deductible Plan (707)
3 Other includes Indemnity, Short Term and Other