

1           **Influenza Vaccine Availability at Urgent Care Centers in the State of Arizona**

2   **Keywords:** influenza vaccine, flu shot, urgent care center, public health, vaccine availability

3   **Highlights:**

- 4       • Urgent care centers are an emerging source for ambulatory healthcare in the USA.
- 5       • Influenza vaccination is not routinely available at these facilities in Arizona.
- 6       • This is the first study to look at influenza vaccination at urgent care centers.

7   **Abstract**

8           We surveyed urgent care centers (UCCs) in the state of Arizona to assess whether they  
9 offered the influenza vaccine during the 2016-2017 influenza season. Overall vaccine availability  
10 was 80.3% at these facilities. One-third of the total UCCs offered influenza vaccination to  
11 children  $\geq 6$  months and approximately two-thirds offered to children and young adults  $\geq 16$   
12 years during this season. This is the first attempt at looking at influenza vaccine availability at  
13 UCCs.

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## 21 **Background**

22 Urgent care centers (UCCs) routinely treat conditions requiring immediate but not  
23 emergent attention.<sup>1</sup> The field of urgent care medicine is rapidly growing; offering health care on  
24 a walk-in basis in urbanized and convenient locations, with extended business hours.<sup>1,2</sup> The total  
25 number of operating UCCs is estimated to be more than 7,000 throughout the United States in  
26 2016.<sup>3</sup> It is estimated that 96% of participating UCCs in 2015 had an increase in the number of  
27 patient visits compared to the year prior.<sup>3</sup> UCCs are serving an important role in our evolving and  
28 expanding health care system. Hardly any data exists regarding whether influenza vaccination is  
29 routinely available in this expanding area of ambulatory medicine.

## 30 **Methods**

31 Utilizing facility directories provided by the Urgent Care Association of America  
32 (UCAOA), and American Academy of Urgent Care Medicine (AAUCM), we gathered all the  
33 potentially operating UCCs in our state. In an attempt to capture all operating UCCs in our state  
34 not listed on these directories, we conducted additional internet searches using the term “urgent  
35 care” for each of the 15 counties located in Arizona. Utilizing industry standards provided by the  
36 UCAOA and AAUCM, an operating UCC must have met all of the following requirements  
37 listed: the facility accepts patients on a walk-in basis without an appointment, the scope of  
38 practice is to treat a broad number of acute and/or chronic disorders, the facility does not  
39 specialize in any particular field of medicine, surgery or disease-process, must have >1  
40 examination room, the facility offers extended business hours (open prior to 9am and past 5pm),  
41 and opens at least five days a week including one weekend day (Saturday or Sunday).

42           Following institutional review board approval at the University of Arizona, we conducted  
43 a cross-sectional phone survey from January 26<sup>th</sup> to February 13<sup>th</sup>, 2017. Interviewers spoke  
44 directly to clinical providers (physician, physician-assistant, or nurse practitioner) or facility  
45 operation managers to conduct the phone survey. The primary objective was to assess whether  
46 the 2016-2017 influenza vaccine was available at these facilities during that influenza season.  
47 Respondents from each facility were asked if their facility stocked the influenza vaccine for that  
48 season to be offered to patients who visited. If influenza vaccination was available, we further  
49 collected data on ages of administration, cost of vaccination, and availability at the time of the  
50 survey. Phone survey data was entered directly into a secure REDCap database during the  
51 encounter. Anonymized data was extracted from the REDCap database and analyzed with  
52 SAS/STAT® (SAS version 9.4, SAS Institute, Cary, NC).

### 53 **Results**

54           A total of 193/217 (88.9%) facilities met our inclusion criteria to be deemed an operating  
55 UCC, with 24 being excluded because they were either not open on the weekends (10/24), listed  
56 as an active facility but had not actually begun operations (8/24), did not accept walk-ins (4/24),  
57 or had closed down (2/24). All 193 UCCs (100% response rate) agreed to provide information  
58 about influenza vaccination at their facilities. According to the Qualifying Urban Areas for the  
59 2010 United States Census Bureau,<sup>4</sup> 166/193 (86.0%) UCCs in Arizona were located in  
60 urbanized areas (population > 50,000) while 26/193 (13.5%) were located in urban clusters  
61 (population between 2,500 and 50,000), and one facility was operating in a rural location. The  
62 2016-2017 influenza vaccination was available at 155/193 (80.3%) UCCs in Arizona during that  
63 influenza season. In urban areas, 138/166 (83.1%) offered the vaccine as opposed to 17/26  
64 (65.2%) UCCs found in urban clusters ( $P = 0.0329$ ). The one UCC operating in a rural location

65 did not offer the vaccine. Maricopa county, home to the greater Phoenix metropolitan, harbors  
66 nearly two-thirds of the state's population, and the majority of the UCCs (N=129) in Arizona.  
67 Maricopa, Pima, Pinal, and Yavapai counties had 83.1%, 81.3%, 85.7%, and 100% availability at  
68 these UCCs. The six least populated counties in Arizona (Apache, Gila, Santa Cruz, Graham, La  
69 Paz, and Greenlee) accounted for approximately 250,000 residents. Midst these counties, there  
70 were only three operating UCCs and none of them stocked the influenza vaccine (Table 1).  
71 Among the UCCs that offered influenza vaccination (n=155) the minimum ages of  
72 administration varied (Table 2) with only 57 (36.8%) facilities offering the vaccine to all adults  
73 and children over 6 months of age. None of the 6 pediatric-only (< 18 years) UCCs operating in  
74 Arizona offered the vaccine to children who visit. During the surveyed period, influenza  
75 vaccination was out of stock in 46/155 (29.7%) facilities; with 28/46 (60.9%) of those facilities  
76 endorsing they had no plans to restock. Only 9/155 (6.2%) UCCs billed medical insurance to  
77 cover the cost of influenza vaccination. The out-of-pocket cost per a single vaccination ranged  
78 from \$20-\$80 USD with a median price of \$25 USD (mean \$26.17 USD, SD 6.99).

## 79 **Discussion**

80 This study has demonstrated variability across UCCs in the state of Arizona to offer  
81 influenza vaccination during the 2016-2017 season. Our findings represent the first attempt at  
82 analyzing these vaccination parameters in the "urgent care" sector. Our results also showed that  
83 the influenza vaccine is not routinely available to children and young adults who may visit  
84 UCCs. Less than one-third of the total UCCs offered influenza vaccination to children  $\geq 6$   
85 months and a little over two-thirds only offered to children and young adults  $\geq 16$  years.  
86 Moreover, none of the pediatric-only UCCs (n=6) offered this vaccination to the children who  
87 visit these facilities.

88 UCCs are gaining popularity among those individuals who only seek healthcare  
89 sporadically; especially those without access to a primary care physician.<sup>1,2</sup> On average, a single  
90 UCC will see a minimum of 12,000 patient encounters in one fiscal year; typically handling 32  
91 patient care visits daily.<sup>3</sup> UCCs appear to be an ideal arena for promoting and administering  
92 influenza vaccination in our communities. The Advisory Committee on Immunization Practices  
93 has recommended that healthcare providers offer the 2016-2017 influenza vaccination to all  
94 persons (without contraindications)  $\geq 6$  months of age during routine health visits and  
95 hospitalizations to avoid any missed opportunities.<sup>5</sup> More study is needed to determine why such  
96 variability is noted among UCCs in Arizona. Expanding influenza vaccine availability at these  
97 facilities may lead to improved influenza vaccination rates in our state as well as possibly  
98 preventing at-risk populations from missing opportunities for vaccination, such as children and  
99 young adults who visit UCCs.

100 There are limitations to this study. The findings only represent the surveyed UCCs in  
101 Arizona. Researchers were limited to industry directories and internet search engines to identify  
102 these facilities, and may not embody every ambulatory clinic claiming to provide urgent care  
103 medicine. Even though it was late in the influenza season when the survey took place, the  
104 primary objective of the study was simply to determine whether this vaccine was available  
105 during the 2016-2017 influenza season.

## 106 **Conclusion**

107 We found that the influenza vaccine was not routinely available at all UCCs operating in  
108 our state. Additionally, when offered at these facilities, this vaccine is not widely available for all  
109 age groups, particularly for children.

110 **Conflicts of interest:** Author(s) as listed do not have any conflicts of interest to report.

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115 out, and that, if accepted, will not be published elsewhere in the same form, in English or in any  
116 other language, including electronically without the written consent of the copyright-holder.

## 117 **References**

- 118 1. Chang JE, Suzanne CB, Chokshi DA. Convenient Ambulatory Care – Promise, Pitfalls,  
119 and Policy. N Engl J Med 2015;374(4):382-8.
- 120 2. Weinick RM, Bristol SJ, DesRoches CM. Urgent care centers in the U.S.: findings from a  
121 national survey. BMC Health Serv Res 2009;9:79.
- 122 3. Urgent Care Association of America. Benchmarking survey headlines summary. 2016  
123 ([http://c.ymcdn.com/sites/www.ucaoa.org/resource/resmgr/benchmarking/2016Benchmark](http://c.ymcdn.com/sites/www.ucaoa.org/resource/resmgr/benchmarking/2016BenchmarkReport.pdf)  
124 [kReport.pdf](http://c.ymcdn.com/sites/www.ucaoa.org/resource/resmgr/benchmarking/2016BenchmarkReport.pdf))
- 125 4. United States of American, Department of Commerce, Bureau of the Census [Docket  
126 Number 120308168–2158–01] Qualifying Urban Areas for the 2010 Census Federal  
127 Register / Vol. 77, No. 59 / Tuesday, March 27, 2012 / Notices
- 128 5. Grohskopf LA, Sokolow LZ, Broder KR, Olsen SJ, Karron RA, Jernigan DB, Bresee JS.  
129 Prevention and Control of Seasonal Influenza with Vaccines. MMWR Recomm  
130 Rep. 2016 Aug 26;65(5):1-54.