Call to Action

Improving Healthcare Personnel Immunization Rates

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National Foundation for Infectious Diseases®

Experts gather to discuss the importance of healthcare personnel immunization

The recommendations in this Call to Action are based on the discussions at a November 2017 Summit convened by the National Foundation for Infectious Diseases (NFID).

NFID invited subject matter experts, including representatives from professional healthcare organizations active in infection prevention and control, occupational health, and immunization to discuss how to best optimize practices that will lead to improved immunization rates among healthcare personnel.

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Overview

It is well recognized that vaccination is among the most cost-effective clinical preventive services currently available in the US.[1] In looking specifically at healthcare personnel (HCP), vaccination efforts have been shown to reduce or eliminate the spread of disease to prevent illness among patients served and to save money by reducing the need for medical visits, missed days of work, productivity loss, and medical errors.[2] Those benefits are identified throughout the 2011 US Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) recommendations for HCP immunization.[3]

It is the professional responsibility of healthcare personnel to prevent illness in themselves, which can be subsequently transmitted to others. This approach also serves to protect patients, families, visitors, and communities from illnesses and negative health outcomes that occur due to vaccine-preventable diseases. Immunization programs specifically targeting healthcare personnel are recognized as an essential component of an effective infection prevention and control program in all settings where healthcare is delivered.[4,5]

Guidelines issued by ACIP and the Healthcare Infection Control Practices Advisory Committee (HICPAC) serve to provide recommendations on both specific vaccines for HCP immunization programs, as well as guidance for implementation and incorporation of these vaccines into routine practice.[3,6] In addition, several professional organizations active in infection prevention and control, including the Association for Professionals in Infection Control and Epidemiology (APIC), the Society for Healthcare Epidemiology of America (SHEA), and the Infectious Diseases Society of America (IDSA) actively endorse these guidelines, reiterating the importance of compliance for their memberships.[7,8]

However, despite the availability of guidelines and endorsements from professional healthcare associations to follow the guidance, rates for ACIP-recommended vaccines range substantially among healthcare personnel, ranging from 46 to 79 percent.[9,10]

The call to action is clear: all healthcare personnel who work directly with patients, or who work in any capacity in a healthcare setting, should be vaccinated in accordance with CDC recommendations. This action and responsibility is an essential step that will reduce the likelihood of becoming ill or spreading vaccine-preventable diseases to others." Yet, as the fastest-growing sector of the economy, the reality is that operationalizing immunization for the more than 18 million healthcare workers[12] in the US is not simple, and a wide variation of practices lead to a critical immunization gap.

In November 2017, NFID convened an HCP Immunization Summit that included subject matter experts representing infection prevention and control, occupational health, immunization, public health, and healthcare epidemiology (see page 8 for a complete list of participating organizations). By bringing together these experts, NFID sought to better understand the key barriers to HCP immunization, and strategies to improve immunization rates and guideline adherence. The following report outlines key discussion points as well as recommendations to ensure that HCP immunization is embedded into every healthcare facility and setting.

The Problem of Healthcare Personnel Immunization

Because healthcare personnel work in an environment where contact with patients or infectious material from patients is routine, they are at-risk for exposure to contagious vaccine-preventable illnesses.[3] In addition, healthcare personnel also have interactions with family, friends, and the general community and, as such, are at risk of infection from those interactions. Without immunity to vaccine-preventable diseases, healthcare personnel can serve as vehicles of infection to their patients and colleagues. Guidelines issued by ACIP and HICPAC serve to provide recommendations on both specific vaccines for HCP immunizations, as well as guidance for implementation of these vaccines into routine practice.[3,6]

According to CDC, approximately 79 percent of healthcare personnel reported getting vaccinated against influenza (flu) during the 2016-17 season, below the national target of 90 percent coverage for healthcare workers.[9,13] In 2015, the vaccination rate for tetanus, diphtheria, and pertussis (Tdap) among healthcare personnel was 46 percent and for hepatitis B was 64 percent.[10] HCP immunization rates for measles, mumps, and rubella (MMR), varicella, and meningococcus are not well documented.

Healthcare Personnel Vaccination Recommendations[3]

CDC recommends that healthcare workers receive vaccination, or have demonstration of immunity, for the following diseases. Summit participants strongly recommend that these vaccines should be conditions of employment:

- **Hepatitis B**
- **Seasonal influenza** (flu)
- **Measles, mumps and rubella** (MMR)
- **Varicella** (chickenpox)
- **Tetanus, diphtheria and pertussis** (Tdap)
- **Meningococcal** (for HCP at increased risk, e.g., laboratory personnel)

Visit www.cdc.gov/vaccines/adults/rec-vac/hcw.html for the latest recommendations.

Additionally, a study by Carrico, et al.[14] demonstrated a lack of knowledge as well as consistency in immunization practices among experts in infection prevention and control who had full or partial responsibility for HCP immunization programs in their facility. Specifically, when immunization programs were graded according to self-reported practices, most programs scored poorly, indicating a lack of knowledge regarding recommendations, confusion regarding contraindications for immunization, and failure to adequately implement HCP vaccination programs safely, effectively, and efficiently.[14] So why does this gap exist?

HCP Immunization Challenges

A key goal of the 2017 NFID HCP Immunization Summit was to better understand underlying challenges to HCP immunization and perspectives that may improve current approaches. From the diverse challenges reported, several common issues emerged.

- **Lack of accountability**
- **No consensus on use of mandates and conditions of employment**
- **Inconsistent implementation and performance metrics**
- **Lack of targeted messaging**
- **Disproportionate emphasis between influenza and other vaccines recommended for HCP**

Issue: Lack of accountability

The current state of HCP immunization is one that is "owned" by few and monitored by none. A successful immunization program relies on a variety of individuals and organizations to ensure its effectiveness. For example, immunization programs are often run by a facility employee/occupational health professional and/or infection preventionist. State health departments and public health professionals may provide local programmatic resources. Professional medical organizations involved in infection control and occupational health may also play a role in providing perspective into guidelines and resource documents.[11]

Definition of Healthcare Personnel (HCP)[3,6]

According to CDC, healthcare personnel (HCP), also referred to as healthcare workers, are traditionally defined as all paid and unpaid persons working in healthcare settings who have the potential for exposure to patients and/or to infectious materials, including body substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air.

HCP may include, but are not limited to:

- **Physicians**
- **Advanced practice nurses**
- **Registered nurses**
- **Physician assistants**
- **Nursing assistants**
- **Therapists**
- **Technicians**
- **Emergency medical service personnel**
- **Dental personnel**
- **Pharmacists**
- **Laboratory personnel**
- **Autopsy personnel**
- **Students and trainees**
- **Contractual staff not employed by the healthcare facility**
- **Persons not directly involved in patient care, but potentially exposed to infectious agents (e.g., clerical, food services, environmental services, laundry, security, engineering and plant operations, administrative, billing, and volunteers)**

The information and recommendations included in this Call to Action apply, but are not limited to, HCP in acute-care hospitals; long-term care facilities (e.g., long-term acute care, nursing homes, and skilled nursing facilities); physician and nurse practitioner offices; rehabilitation centers; urgent care centers and outpatient clinics; as well as to persons who provide home health care and emergency medical services.

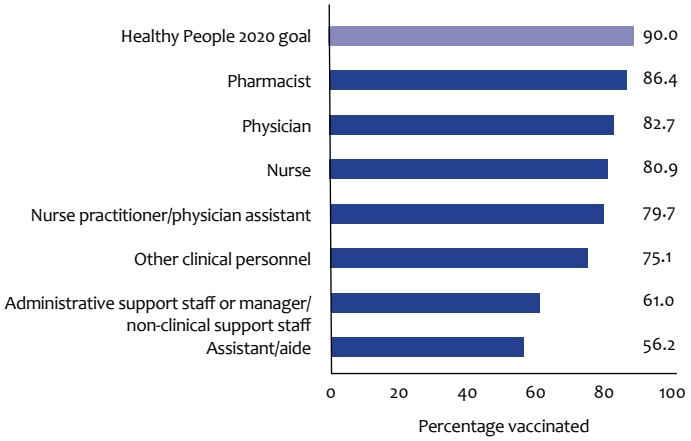
There is currently a lack of compliance in the monitoring of HCP immunization programs at state and federal levels further supporting the position that there is a distinct lack of accountability.[12] So, the question becomes, who are the leaders who are willing to drive change and hold healthcare facilities accountable?

Issue: No consensus on use of mandates and conditions of employment

There is a vast difference of opinion, and no singularly preferred mechanism, regarding mandating HCP vaccination as a condition of employment. For some healthcare facilities, mandates have had a positive impact and may be considered along with complementary strategies to increase vaccination rates.[8] Still, for others, mandates are not adopted due to ethical, civil liberty, and operational concerns. In the absence of mandates, some voluntary HCP vaccination programs have been effective when combined with strong institutional leadership and robust educational campaigns. For example, the Veterans Administration recently passed an influenza vaccination policy for its employees. Employees unwilling or unable to receive the influenza vaccine, are required to wear a mask throughout the entire flu season while at work (VA Directive 1192).

The role of health policy as a pillar in an HCP immunization program continues to garner support and was recognized as a key component in a comprehensive and sustainable approach.

Flu vaccination coverage among healthcare personnel by occupation, Internet panel survey, November 2017, United States



Source: CDC Health Care Personnel and Flu Vaccination, Internet Panel Survey, United States. 2017. www.cdc.gov/flu/fluvaxview/hcp-ips-nov2017.htm

Issue: Inconsistent implementation and performance metrics

Summit participants universally agreed that challenges remain in putting guidance into practice. There is often a lack of consistency in the application of guidelines across facilities. Participants indicated general support for HCP immunization in acute care facilities, but less support in other settings. Facilities are challenged by a variety of issues regarding implementation, including program organizational structure, staffing, tracking, adherence monitoring, and financial resources. Healthcare facilities may also need operational guidance that provides a clear roadmap for effective implementation and is consistent across all healthcare settings. In addition to implementation challenges, participants also noted the inherent difficulty in ensuring effective monitoring, performance improvement, and evaluation. The ideal scenario is one in which vaccination performance measures are standardized and clearly translate to health outcome goals. However, in practice, participants noted challenges with methods of data capture and management (e.g., information technology and systems, privacy concerns, lack of access to data); practices regarding presenteeism (e.g., healthcare personnel reporting to work ill); and confusion regarding absenteeism and human resources reporting policies.

> **"Nationwide, ongoing implementation of these vaccine recommendations through well-managed vaccination programs could substantially reduce both the number of susceptible HCP in any setting in which they interact with patients and their risks for transmitting vaccine-preventable diseases to patients, other healthcare professionals, and other contacts."**
>
> – Recommendations of the Advisory Committee on Immunization Practices (ACIP), November 2011[6]

"Immunization is prevention — you cannot wait until an outbreak to vaccinate. Reducing spread of disease in hospitals and communities by a simple vaccine is wise. Outbreaks are expensive and preventable."

Issue: Lack of targeted messaging

When it comes to communication, several challenges were cited related to vaccination messaging. While there was overall agreement that communication about the importance of HCP vaccination is critical, current messaging is not as targeted as it should be. The reality is that guidelines and recommendations alone are not enough. There needs to be varied and layered messaging that considers the motivators of the target audience (e.g., economically-driven, science-driven, safety-driven, patient impact, counter to anti-vaccination efforts, etc.) This includes, but is not limited to, messaging that is targeted to administration, employees, healthcare personnel, patients, families, policy makers, and the public.

Issue: Disproportionate emphasis between influenza and other vaccines recommended for HCP

Influenza immunization was a significant topic of conversation during the 2017 NFID HCP Immunization Summit. Several participants noted that their organizations created specific policies and programs to emphasize uptake of influenza vaccination among healthcare workers. Although this emphasis is in response to inclusion requests from regulatory bodies and accreditation standards (e.g., Centers for Medicare and Medicaid Services (CMS)[16,17] and The Joint Commission (TJC)[18]), there was consensus that the emphasis is better served on using those regulations and standards as drivers of a comprehensive HCP immunization program.

Documented outbreaks illustrate the problem of vaccine-preventable disease transmission in communities and within healthcare facilities:

$2.7–5.3M
Cost of measles outbreaks **to US public health departments in 2011**[21]

18
hepatitis B outbreaks occurred in non-hospital healthcare settings over the past 10 years[22]

16
influenza (flu) outbreaks involving:
- 1,000+ residents
- 20+ long-term care facilities[23]

$1.3M
Cost to Children's Minnesota for responding to the 2017 **measles outbreak**[24]

Overcoming Barriers to Universal HCP Immunization: Recommendations from the Summit

The challenges of HCP immunization are varied and complex. There is not a simple solution to optimize vaccination rates. However, several recommendations did emerge from the Summit that, if addressed, may help to narrow the immunization gap.

Recommendation: Enhance professional education

As evidenced in the research by Carrico, et al.,[14] there is a lack of training and resource materials about HCP vaccination requirements currently available to facilitate understanding, acceptance, training, and implementation. Although many understand influenza vaccination requirements, others such as MMR (measles, mumps, and rubella) or varicella (chickenpox) vaccination can be more difficult. Algorithms or decision trees may help drive additional comprehension about what is required, along with publications in various medical journals to promote standardized education across disciplines.

Recommendation: Establish clear accountability and buy-in

Healthcare facility management and administration must become strong advocates to ensure that HCP vaccination programs enable a more robust and inclusive patient and HCP safety approach. The result can produce broader infection prevention and reduced absenteeism. Only with a clear understanding of the benefits of immunization, and strong internal champions, will there be support for financial and personnel needs that enable effective program implementation, evaluation, and improvement. Alignment goes beyond the administration level at any specific institution. HCP immunization needs to be prioritized by thought-leading government and policy organizations including the Occupational Safety and Health Administration (OSHA), TJC, CMS, and CDC. Standards, not just recommendations, should include all vaccines targeting infection relevant to the safe provision of healthcare.

Recommendation: Publish best practices and lessons learned

The group acknowledged that while challenges exist, there are many organizations with HCP immunization success stories including those with high compliance rates from which other facilities can learn. To drive change, it is important to harness and share these best practices and lessons learned for others to follow. Use of established infrastructures for the provision of education to healthcare workers and the public, such as those provided by NFID, can drive sharing of content and modular learning to promote best practices.

Recommendation: Encourage standardization through development of a recognized set of policies/ procedures

While the National Vaccine Advisory Committee (NVAC) developed and issued a tiered set of strategies to assist healthcare facilities in achieving the Healthy People 2020 goal specific to influenza vaccination,[19] there is not a universal standard operating procedure or strategy recommendation relative to all ACIP-recommended vaccines for healthcare personnel. This type of guidance should look at all vaccinations, not just influenza, and make recommendations for increasing coverage rates. In doing so, it is important to look at a variety of elements such as tools, resources, budgets, metrics, consistent data capture, and mechanics that build effective internal champions. Because healthcare facilities greatly vary in both organization and staff structure, operational guidelines should consider these needs and provide best practices that can be effectively and efficiently used across settings. Use of standing orders, standardized policies, and procedures can be effective.

Recommendation: Consider recognition and incentives

Nearly five years ago, TJC, recognizing the importance of influenza vaccination, required accredited organizations to establish an annual influenza vaccination program for all employees including licensed and independent practitioners and non-clinical staff.[18] Additionally, and in the long-term care setting, research by Ofstead, et al.,[20] showed an ecological approach to HCP immunization to be an effective approach. This method engaged stakeholders throughout the long-term care facilities and established a new context through stronger policies, clear communication, and public accountability. One example of this approach involved visual displays of progress toward vaccination goals on large gauges in the facilities.[20] Building on Ofstead's successes, replication of public recognition and/or incentives to vaccinate may be well-received if applied more broadly. Specifically, Summit participants recommended further investigation into the benefits of facility awards, declarations, and other public recognition/incentives to drive increased HCP immunization rates.

"The inherent challenge in prevention is that few notice when things go right. Without continued public education about the value of immunization, some worry that anti-vaccination forces may reach a critical tipping point."

Recommendation: Drive increased public acceptance and demand for vaccination

The inherent challenge in prevention is that few notice when things go right. Without continued public education about the value of immunization, some worry that anti-vaccination forces may reach a critical tipping point. Participants agreed that public education campaigns about vaccine-preventable diseases, and the consequences of not vaccinating, will continue to be important. Campaigns will need to have targeted messaging to reach differing audiences at differing points in time (e.g., HCP, patients, policy makers, etc.) and leverage the influencers whom individuals trust most (e.g., nurses, physicians, public figures, private citizens).

Additionally, concerns regarding the efficacy and the need for annual vaccination against influenza represent two areas that interfere with broad acceptance of immunization. Continued emphasis on research targeting universal vaccines with long-lived immunogenicity may influence acceptance. Further, research and development of vaccines for other respiratory viruses impacting patients, HCP, and communities, such as respiratory syncytial virus (RSV), may strengthen ongoing commitments to prevention through immunization.

Summary

When it comes to improving HCP immunization, there is both common ground and a path forward. Of the themes that emerged from the 2017 NFID HCP Immunization Summit, the overarching and most important one remains: immunization of healthcare personnel is critically important to preventing disease.

While a uniform solution may not exist, the collective and collaborative efforts of public health officials, healthcare professionals, professional societies, and other interested stakeholders can, and will, continue to address barriers to HCP immunization.

Now is the time for action: professional healthcare associations and medical experts on the front lines of infection prevention, infection control, and occupational health need to take responsibility as stewards of both employee and patient safety to implement the recommendations outlined in this Call to Action. The responsibility to protect our healthcare workforce and prevent the transmission of vaccine-preventable disease to patients and communities must be shared by all.

Participating Organizations

Representatives from the following organizations participated in the 2017 NFID HCP Immunization Summit, which served as the basis for this Call to Action:

- **Association for Professionals in Infection Control and Epidemiology**
- **Association of Occupational Health Professionals in Healthcare**
- **Immunization Action Coalition**
- **Infectious Diseases Society of America**
- **National Association of Directors of Nursing Administration in Long Term Care**
- **National Foundation for Infectious Diseases**
- **Pediatric Infectious Diseases Society**
- **Society for Healthcare Epidemiology of America**
- **University of Louisville School of Medicine**
- **Veterans Health Administration**

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References

1. Healthy People 2020. Washington, DC: US Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Immunization and Infectious Diseases: Understanding Immunization and Infectious Disease Vaccination. 2018. www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases. Accessed January 2, 2018.

2. New York State Department of Health. Health Advisory: Recommendations for Vaccination of Health Care Personnel. 2016. www.health.ny.gov/prevention/immunization/toolkits/docs/health_advisory.pdf. Accessed January 2, 2018.

3. Centers for Disease Control and Prevention. Immunization of Health Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Weekly Rep*. 2011;60(RR-07):1-45.

4. Scheckler WE, Brimhall D, Buck S, et al. Requirements for Infrastructure and Essential Activities of Infection Control and Epidemiology in Hospitals: a Consensus Panel Report. Society for Healthcare Epidemiology of America. *Am J Infect Control*. 1998;26:47-60.

5. Friedman C, Barnette M, Buck AS, et al. Requirements for Infrastructure and Essential Activities of Infection Control and Epidemiology in Out-of Hospital Settings: a Consensus Panel Report. Society for Healthcare Epidemiology of America. *Infect Control Hosp Epidemiol*. 1999;20:695-705.

6. Centers for Disease Control and Prevention. Immunization of Health Care Workers: Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). *MMWR Morb Mortal Weekly Rep*. 1997;46: RR-18.

7. Association for Professionals in Infection Control and Epidemiology (APIC). APIC Position Paper: Influenza Vaccination Should Be a Condition of Employment for Healthcare Personnel, Unless Medically Contraindicated. 2011. www.apic.org/Resource_/TinyMceFileManager/Advocacy-PDFs/APIC_Influenza_Immunization_of_HCP_12711.pdf. Accessed January 2, 2018.

8. Infectious Disease Society of America, Society for Healthcare Epidemiology of America, and Pediatric Infectious Disease Society. Joint Policy Statement on Mandatory Immunization of Health Care Personnel According to the ACIP-Recommended Vaccine Schedule. 2013. www.shea-online.org/images/position-statements/IDSA_SHEA_PIDS-Policy-on-Mandatory-Immunization-of-HCP.pdf. Accessed January 2, 2018.

9. Black CL, Yue X, Ball S, et al. Influenza Vaccination Coverage Among Health Care Personnel - United States, 2016-17 Influenza Season. *MMWR Morb Mortal Wkly Rep*. 2017;66(38):1009-1015.

10. Williams WW, Lu P, O'Halloran A, et al. Surveillance of Vaccination Coverage among Adult Populations — United States, 2015. *MMWR Surveill Summ. 2017*;66 (No. SS-11):1–28.

11. Centers for Disease Control and Prevention. Vaccine Information for Adults: Recommended Vaccines for Healthcare Workers. 2017. www.cdc.gov/vaccines/adults/rec-vac/hcw.html. Accessed January 2, 2018.

12. Centers for Disease Control and Prevention. The National Institute for Occupational Safety and Health (NIOSH): Healthcare Workers. 2017. www.cdc.gov/niosh/topics/healthcare/. Accessed January 2, 2018.

13. Healthy People 2020. Washington, DC: US Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Immunization and Infectious Diseases: Objectives. 2018. www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives. Accessed January 2, 2018.

14. Carrico RM, Weimken, T, Westhusing K, et al. Health Care Personnel Immunization Programs: an Assessment of Knowledge and Practice Among Infection Preventionists in US Health Care Facilities. *Am J Infect Control*. 2013;41(7):581-584.

15. Carrico RM, Sorrells N, Westhusing K, et al. Monitoring of Health Care Personnel Employee and Occupational Health Immunization Program Practices in the United States. *Am J Infect Control*. 2014;42(1):66-68.

16. Federal Register. Rules and Regulations: Final Rule for Hospital Inpatient Prospective Payment. 2011. www.gpo.gov/fdsys/pkg/FR-2011-08-18/pdf/2011-19719.pdf. Accessed January 2, 2018.

17. Federal Register. Rules and Regulations. Final Rule for Hospital Outpatient Prospective Payment. 2017. www.federalregister.gov/documents/2017/11/13/2017-23932/medicare-program-hospital-outpatient-prospective-payment-and-ambulatory-surgical-center-payment. Accessed January 2, 2018.

18. The Joint Commission. Influenza Vaccination for Licensed Independent Practitioners and Staff. 2012. www.jointcommission.org/assets/1/18/R3_Report_Issue_3_5_18_12_final.pdf. Accessed January 2, 2018.

19. National Vaccine Advisory Committee. Strategies to Achieve the Healthy People 2020 Annual Influenza Vaccine Coverage Goal for Health-Care Personnel: Recommendations from the National Vaccine Advisory Committee. *Public Health Reports*. 2013;128(1):7-25.

20. Ofstead C, Amelang M, Wetzler HP, et al. Moving the Needle on Nursing Staff Influenza Vaccination in Long-Term Care: Results of an Evidence-Based Intervention. *Vaccine*. 2017;35(18):2390-2395.

21. Ortega-Sanchez IR, Vijayaraghavan M, Barskey AE, et al. The Economic Burden of Sixteen Measles Outbreaks on the United States Public Health Departments in 2011. *Vaccine*. 2014;32(11):1311-7.

22. Centers for Disease Control and Prevention. Healthcare-Associated Hepatitis B and C Outbreaks (> 2 cases) Reported to the Centers for Disease Control and Prevention (CDC) 2008-2016. 2018. www.cdc.gov/hepatitis/outbreaks/pdfs/healthcareinvestigationtable.pdf. Accessed January 2, 2018.

23. The Society for Healthcare Epidemiology of America. Prevention of Influenza in Long-Term Care Facilities: Position Paper. 1999. www.jstor.org/stable/pdf/10.1086/501687.pdf. Accessed January 2, 2018.

24. Modern Healthcare. How a Children's Hospital Handled a Measles Outbreak. 2017. www.modernhealthcare.com/article/20171230/NEWS/171239999. Accessed January 2, 2018.

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