



DEPARTMENT OF HUMAN SERVICES

Public Health Division

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Dear Church Leader:

Thank you for reaching out to ask about our public health assessment and recommendations about the use of the common Communion cup during potential community spread of germs.

Based on the 2 review articles on the topic (see summary on the two review articles and the actual articles are also attached), our assessment of common chalice use shows the following:

- Germ exposure is possible using a shared communion cup.
- There are no reported outbreaks or clusters allegedly linked to such use **AND** detecting such events might be difficult.
- The 4 authors from the Centers for Disease Control and Prevention (CDC) in 1998 concluded that the risk for germ spread through a shared communion cup was very low **AND** with safeguards would further diminish this risk.
- The review in 2013 did not find any new evidence to change the 1998 findings and recommendations.

Based on this assessment, please consider one of these recommendations:

1. If the decision is made by church leadership to use a shared communion cup with the information above, we recommend implementing the safeguards mentioned in 1998. The chalice bearers should be trained to consistently:
 - a. Wipe the interior and exterior rim between parishioners
 - b. Rotate the cloth or purificator during use
 - c. Using a clean cloth for each service
2. It is our understanding that receipt of the host or a blessing may be sufficient. If so, it may be appropriate to limit Communion to one of these during times of community-wide germ spread.

In making our assessment and recommendations, we made the following assumptions:

- Communion servers will wash their hands or use hand sanitizer before serving or blessing.
- Intinction by parishioners has been temporarily stopped as it increases the risk of germs being introduced into the wine.
- Beyond the issue of germ spread through Communion, hugging and handshaking as part of normal fellowship and at the sign/exchange of the Peace has temporarily stopped. Other options include bowing to each other, waving, or using elbow or foot bumps.

I am happy to discuss our assessment and recommendations as well as our assumptions.

Sincerely,

Reuben K. Varghese, MD, MPH
Health Director and Division Chief

Summary of findings, The American Journal of Infection Control, 1998 letter to the editor

(see attached)

- Germs can
 - Contaminate a common communion cup
 - Survive the alcohol content
- Therefore, theoretically, ill people or asymptomatic carriers with germs in their saliva who drink from a shared communion cup potentially expose congregation members to germs.
- The authors believed that the risk was so small that it was undetectable.
 - They go onto to say that the CDC had not been called on to investigate any episodes or outbreaks of infectious diseases that have been allegedly linked to the use of a common communion cup.
 - However, they also do say that outbreaks or clusters of infection related to use of a common communion cup might be difficult to detect.
 - And they also cite a study which compared people who received Communion as often as daily with persons who did not receive communion or person who did not attend Christian church services.
 - The group receiving Communion did not have a higher risk of infection compared to those who did not receive.
- At that time, the authors concluded that the risk for germ spread through a shared communion cup was very low AND with appropriate safeguards would further diminish risk.
 - The safeguards mentioned include wiping the interior and exterior rim between parishioners, rotating the cloth or purificator during use, and using a clean cloth for each service.
 - Additionally, they advised that churches using a shared communion cup to consider asking parishioners to not drink from the cup if a person had an active respiratory infection or moist or open sores on their lips (e.g., herpes).

Summary of findings, The International Journal of Infectious Diseases, 2013 review paper

(see attached)

- A review in 2013 reviewed the medical literature for religious rituals or ceremonies that have been reported to cause infection, including the Christian common communion chalice.
- They cited the 1998 consensus paper, 4 of the 6 articles cited in the consensus paper, and identified two new studies, 1 from 1967 and 1 from 2005.
- The review authors concluded that “there is experimental evidence suggesting that sharing a communion cup contaminates the wine and cup. However, there has never been a documented case of illness caused by sharing a chalice reported in the literature.”
- They cite the safeguards mentioned in the consensus paper, with no new additions.



Review

Infections associated with religious rituals

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SUMMARY

This review evaluates the medical literature for religious rituals or ceremonies that have been reported to cause infection. These include an ultra-orthodox Jewish circumcision practice known as metzitzah b'peh, the Christian common communion chalice, Islamic ritual ablution, and the Hindu 'side-roll'. Infections associated with participation in the Islamic Hajj have been extensively reviewed and will not be discussed.

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1. Introduction

Rituals are part of every religion and are defined as a behavior that is repeated in a precise order and frequently involves performing an action to the body or mind to fulfill a religious obligation.¹ Often, rituals involve breaching the body's innate defenses, such as the skin, sinus, respiratory, gastrointestinal, or genitourinary systems, which can be potentially harmful.

This paper reviews the medical literature for religious practices that have been associated with infection. Several rituals were identified, including an ultra-orthodox Jewish circumcision called metzitzah b'peh, the Christian communion chalice, the Hindu side roll, and Islamic ritual ablution. Infections associated with the Islamic Hajj have been extensively reviewed and will not be discussed.^{2–5}

2. Neonatal herpes simplex infection following Jewish ritual circumcisions

Jewish tradition dictates that when a male child is 8 days old they should undergo ritual circumcision, which is performed on 60–90% of the Jewish population in the USA.⁶ Evidence suggests that circumcision reduces the incidence of sexually transmitted

diseases, urinary tract infections, and inflammation of the prepuce; however, there have been at least 22 reports of infection with herpes simplex virus (HSV) type 1 when a method called metzitzah or metzitzah b'peh is used.⁶

Ritual circumcision has three parts: the 'milah' or excision of the external prepuce, the 'peri'ah' or slitting of the inner foreskin, and finally the 'metzitzah' or sucking of blood from the wound.⁶ The metzitzah originated in the 5th century Babylonian Talmud where it states metzitzah should be performed "so as not to bring on risk," although what the risk is, is not explicitly stated. Historically, if the mohel failed to perform the metzitzah he was barred from performing future circumcisions.⁶ During metzitzah, the mohel sips wine and applies his lips to the involved portion of the penis and then spits the wine into a receptacle, which may be repeated until hemostasis is achieved. Metzitzah with direct oral–genital suction was commonplace until the 19th century when Rabbi Moses Schreiber ruled that an instrument, such as a glass pipette, could be used as an interface between the mohel and the infant.⁶ This led most to abandon direct suction in favor of sterile suction devices; however, some mohelim have resisted this change and continue to perform the ritual with direct oral–genital contact. Metzitzah has been scrutinized by the New York City Department of Health, and in 2012, the city passed a law requiring mohelim to obtain informed consent from parents prior to performing metzitzah. The mohelim have brought a law suit against the city citing violations of religious freedoms. The law was not being enforced until January 2013, when Judge Naomi Buchwald denied

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a request for an injunction against the consent form.^{7,8} Failure of mohelim to produce the relevant signed consent forms can result in penalties and fines up to US \$2000.⁸ There is also concern that certain hospitals have been under-reporting cases of neonatal herpes because of fear of losing Hasidic patients.⁹

When neonatal HSV infection is transmitted it occurs during delivery 85% of the time, congenitally 5% of the time, and from adult care givers including hospital workers in the remaining 10%.¹⁰ The clinical manifestations can be isolated to the mucocutaneous surfaces or disseminated to the visceral organs and the central nervous system.¹⁰

There have been 22 cases of HSV-1 infection associated with metzitzah described in three case series and one case report. In 2000 Rubin and Lanzkowsky reported two cases of infants delivered via vaginal birth in New York City, who underwent metzitzah by the same mohel 10 years apart.¹¹ The first case, from 1988, presented 4 days after metzitzah with fevers and vesiculo-pustular lesions on the genital and gluteal areas. In 1998, the second infant presented 3 days after metzitzah, with fevers and vesiculo-bullous lesions on the penis, buttocks, and ankles. In both cases, a Tzanck preparation of the lesions showed inclusion bodies consistent with herpes virus, and viral culture grew HSV type 1 in the second infant. Both were treated with intravenous acyclovir with subsequent resolution of the lesions. After 10 years of follow-up, infant 1 had no recurrence of symptoms; however, at 8 months of age infant 2 had recurrence of cutaneous lesions. The mohel who performed both procedures claimed to have completed over 1000 circumcisions and, personally, never had labial or genital herpes.¹¹

In 2003 Distel et al. reported that a boy who had metzitzah was hospitalized 10 days later for pustular lesions, edema, and dorsal deviation of the penis and vesicles on the buttocks and thigh.¹² Cultures from the lesions grew HSV type 1 and *Klebsiella pneumoniae*, and serology showed high IgM titers to HSV-1 and HSV-2. He was treated with intravenous acyclovir and antibiotics for 10 days with improvement over 4 days. Unfortunately, there was recurrence of lesions on the penis and thighs over the subsequent month.

Gesundheit et al. reported eight cases of HSV-1 infection after metzitzah in Israel and Canada from 1994 to 2002.⁶ The patients presented 4–11 days after metzitzah, with fevers and/or vesicular lesions on the penis and scrotum. Seven of the eight patients had disease limited to the integument, however one of the eight patients had encephalitis with long-term neurological consequences, including seizures. Four had recurrence of cutaneous lesions and received long-term prophylaxis with acyclovir. Six of the eight patients received intravenous or oral acyclovir, while two received supportive care with resolution of symptoms. There were six mohels involved, because two had performed multiple circumcisions; however, only three were tested for HSV, all of whom had positive HSV serologies. Also notable, the mother of the infant who had encephalitis was the only mother who had positive serology for HSV type 1 at 1:16, although it was not specified which subclass of immunoglobulin was isolated. While the methods of delivery were not reported, none of the mothers had active oral or genital herpes.

The largest case series by the Centers for Disease Control and Prevention (CDC) was published in 2012, wherein they highlighted 11 cases of HSV-1 after confirmed or probable oral–genital suction from 2000 to 2011 in New York City.¹³ Ten of 11 cases were hospitalized and unfortunately two cases were fatal. Six patients had mucocutaneous lesions, two had central nervous system involvement, and three had dissemination to visceral organs. In 2004 twin boys born via cesarean to a mother without evidence of HSV infection during childbirth underwent metzitzah on the eighth day of life. Afterwards, both neonates developed fever and vesicles on their abdomen, buttocks, and genitalia that contained

HSV. One of these infants later developed disseminated infection and died. These cases prompted an investigation by the New York City Health Department, which discovered that a year prior, a case of neonatal HSV infection after metzitzah by the same mohel had also led to vesicular lesions. After these cases were reported the New York City Health Department set up surveillance, which uncovered eight more cases of HSV-1 after probable or confirmed oral–genital suction. The discovery of these cases was facilitated by a 2006 mandate in the New York City Health Code that infants less than 60 days old with a diagnosis of herpes infection be reported.¹³ When laboratory confirmation of HSV-1 or untyped HSV was obtained there was further investigation to determine if ritual oral–genital suction was performed. The authors calculated the estimated relative risk of neonatal herpes to be 3.4 times greater after direct oral–genital suction compared to those who did not.¹³

These 22 cases provide evidence that metzitzah with direct oral–genital contact can transmit HSV-1 infection. The temporal relationship where all infants presented within 2 weeks of the ceremony is consistent with the typical incubation period of HSV; the isolation of HSV-1, a pathogen typically transmitted via oral contact, and negative serologies or clinical manifestations of herpes in most of the mothers all suggest an association.¹¹ Additionally, the finding that some of the mohels' saliva tested negative for HSV is not surprising since shedding of HSV is sporadic and can be found in asymptomatic individuals, as demonstrated by Hatherley et al.¹⁴ and Douglas and Couch.¹⁵ Finally the location of HSV-1 on genitalia suggests that it was likely transmitted via direct contact.

This review focuses on the transmission of HSV-1 from the mohel to the infant. However, it is also plausible that the reverse could occur and the infant could spread pathogens such as HIV and hepatitis B or C viruses to the mohel if vertical transmission occurred in utero or during delivery.

3. Cutaneous larva migrans associated with ritual side roll

The Lord Murugan Temple of Nallur in Jaffna, Sri Lanka is a place of devotion for Tamil Hindus. A festival occurs there annually between August and September where icons of deities are marched around temple grounds and devotees gather for prayer and penance. The most devout penance that a devotee may perform is known as the 'side roll' or angapradakshinam where the night prior they engage in a ritual fast, soak in the temple water tank, then lie on the ground and side-roll in the same path that the icons previously traversed. For the comfort of the participants the local government ships in sand from coastal areas and waters the sand twice daily to keep dust down.

An increase in the incidence of cutaneous larva migrans (CLM) in 2003 prompted an investigation by Kannathasan and colleagues. The study found that out of 1014 devotees studied, 26.8% had a creeping eruption.¹⁶ These findings prompted a follow-up cross-sectional study by the same authors in 2010 on a random sample of 194 devotees who performed the side-roll. They issued a questionnaire and performed microscopic examination of soil samples on the sand brought in from the shore prior to spreading around the temple grounds and then 10 days after distribution. They also examined five canine fecal samples found on the temple grounds with saline and iodine wet smears. They found that 58.2% of the 194 devotees surveyed had lesions characteristic of CLM, with a positive correlation ($R^2 = 0.446$) between frequency of side-roll and number of lesions. Thirty-two percent of participants had evidence of a secondary bacterial infection, presumably from pruritus and scratching. The soil and fecal examination provided additional evidence that the side roll led to CLM. Of the 20 sand samples tested prior to spreading around the temple ground, none had evidence of hookworm larvae, whereas 10% (2/20) of samples

studied 10 days after being spread had hookworm eggs and three out of five samples of dog feces tested positive for hookworm eggs.¹⁶ The authors of the study speculated that the increased incidence of CLM was a result of a ban on killing stray dogs in 2004. The risk factors they identified with statistical significance were side roll frequency and time of day side roll was performed (prior to 5 a.m., increased risk).

CLM is caused by dog and cat hookworm larvae that remain in soil and can remain infectious for months.¹⁷ If larvae sense soil vibrations or an increase in temperature, they will respond by moving towards the stimulus. After locating a human, which is a dead-end host, the larvae penetrate the skin and typically do not disseminate, causing a self-limiting disease that lasts months and rarely years. Patients will typically present within 5 days after penetration with pruritus or pain. Treatment regimens include single-dose ivermectin, oral albendazole given over 5–7 days, or topical thiabendazole for 2–4 days. To reduce the risk of infection, travelers to endemic areas or where stray dogs or cats are present should wear shoes or sandals.

4. The common communion chalice

Holy Communion is a Christian practice that consists of a group gathered to share bread and wine from a minister or priest.¹⁸ The wine is frequently shared from a cup or by dipping the bread into wine, a practice called intinction. After each participant drinks from the cup, the minister wipes the rim prior to the next communicant drinking from the cup. Also, in some churches, communion wafers are placed into the cup containing wine, and a spoon (known as a cochlear) is used to retrieve a communion wafer from the chalice and placed into the recipient's mouth. The common spoon is not wiped between recipients.

The capability of the chalice to spread infection has been debated in the medical literature since the 19th century when Forbes and Anders hypothesized that contamination from the mouth may lead to bacteria in the wine.¹⁹ Since then four experimental studies, a review, and several opinion pieces including one from the CDC have been published that discuss the infection risk of the chalice.

The risk of infection depends on several factors including the bacterial or viral load in the communicants' saliva, the ability of the organism to withstand the antimicrobial properties of the gold/silver chalice and the alcohol content of the wine, the linen cloth used to wipe the rim, and the recipient's ability to destroy any pathogenic organism. Examples of potential pathogens are those that are transmitted via saliva, oral/labial skin lesions, fecal-orally, or droplet and airborne routes.^{18–24}

In 1946 Burrows demonstrated that when human volunteers shared a communion cup, with instructions to get as much saliva as possible on the rim, bacteria were recovered in small numbers.¹⁸ In 1967 Gregory showed that in a more realistic simulation of a communion service, various species of bacteria could be recovered from the cup, including staphylococci, *Neisseria* species, beta-hemolytic and non-hemolytic streptococci, and *Micrococcus* species.¹⁸ In 1967 Hobbs and colleagues performed experiments that concluded that silver and wine may have antimicrobial properties. However, the time interval between each communicant drinking from the cup, which is typically less than five seconds, is not sufficient to cause a significant decrease in bacterial counts. They also found that rotating the chalice was ineffective at decreasing colonization; however wiping the rim with the linen cloth decreased bacterial counts by 90%. All studies concluded that the risk of spreading disease cannot be excluded but is extremely low.¹⁹

In 1993 Furlow and Dougherty swabbed silver and pottery chalices before and after eight services. They cultured potentially

pathogenic organisms, such as *Staphylococcus aureus*, *Haemophilus parainfluenzae*, and *Moraxella catarrhalis*. They concluded that individual cups (chalices) should be used to eliminate infection risk.²⁰

Finally, in 1998 the CDC reported there had never been an outbreak of infection related to the communion cup.²³ They referenced a study from 1997 in which 681 participants who drank daily from a common cup were at no higher risk of infection than those who participated less frequently or who completely abstained from Christian services. They concluded that it is probably safe to participate in services where a common cup is used, with the caveat that any member of the congregation with active respiratory illness or open labial or mouth sores abstain from partaking.²³

In conclusion, there is experimental evidence suggesting that sharing a communion cup contaminates the wine and cup. However, there has never been a documented case of illness caused by sharing a chalice reported in the literature.

5. Primary amoebic meningoencephalitis after ritual ablution

Ritual ablution, as performed by the Muslim community, involves cleansing the body prior to prayer multiple times daily. While not required, some worshippers may forcefully irrigate the sinuses during ablution.²⁵

Naegleria fowleri, *Acanthamoeba* species, *Balamuthia mandril-laris*, and *Sappinia diploidea* are the four species of free-living amoebae that cause disease in humans and are found worldwide in soil and freshwater. *N. fowleri* is unique among the amoebae because it causes an almost universally fatal, acute hemorrhagic necrotizing meningoencephalitis in immunocompetent individuals, known as primary amoebic meningoencephalitis (PAME). In most reported cases, including the USA, PAME is associated with recreational fresh water use during warmer months when water is nasally aspirated. Once aspirated, the sustentacular cells supporting the olfactory cells phagocytose the amoebae, which then pass through the cribriform plate to the olfactory bulb, into the subarachnoid space and ultimately invade the brain parenchyma leading to rapid destruction.²⁶

Recently Shakoor and colleagues reported a relative surge of cases in Pakistan, wherein they reported 13 cases from 2008 through 2009 in Karachi, with a 100% case fatality rate despite prompt recognition and treatment.^{25,27} The patients ranged in age from 16 to 64 years, and they were treated with amphotericin (1.5 mg/kg/day), rifampin (600 mg/day), and most also received fluconazole or itraconazole. Of the 13 cases, 12 reported no contact with freshwater recreational activities. Since ritual ablution was the common risk factor for all patients, the investigators tested tap water from two of the patients' homes and were able to culture and identify *N. fowleri* DNA via real-time PCR; they concluded that ablution likely led to the infection. The authors speculated that there are several explanations for the rise in PAME, including the use of water storage tanks, under-filtered and under-chlorinated water, possibly sewage contamination of the water supply, and global warming, since the organism survives in temperatures up to 45 °C. The authors speculated that this phenomenon is under-reported across Pakistan because of under-recognition.²⁷

Their case series was not the first time that ritual cleansing was suspected of causing PAME. In 1980 Lawande et al. published a report of a 35-year-old previously healthy Muslim Nigerian farmer who died of PAME after performing nasal irrigation five times per day using water from a man-made pond on his farm.²⁸ The authors speculated that the inoculum of *N. fowleri* was higher than normal in the pond because high rainfall in the days leading up to his presentation may have washed higher loads of the amoeba from surrounding soil into the pond.

Table 1
Religious rituals associated with infection

Ritual	Religion	Associated pathogen(s)	Frequency of ritual	Number of cases reported
Metzitzah b'peh	Judaism	Herpes simplex type 1	Once per child	22
Side-roll (Angapradakshinam)	Hinduism	Hookworm	Annually	384
Holy Communion	Christianity	None have been reported (potentially many – see text)	As often as daily	0
Ritual ablution	Muslim	<i>Naegleria fowleri</i>	Multiple times daily	14
Hajj/Umrah	Muslim	<i>Neisseria meningitidis</i> , <i>Klebsiella pneumoniae</i> , <i>Haemophilus influenzae</i> , <i>Streptococcus pneumoniae</i> , influenza, <i>Mycobacterium tuberculosis</i> , <i>Vibrio cholerae</i> , poliovirus, <i>Plasmodium spp</i> , hepatitis A, B, C, Tick-borne encephalitis, and others	Annually	Unavailable

Since many Muslims perform ritual ablution many times daily, it is important to ensure that a clean water supply is used that is free of amoebae, or at a minimum boiling the water to decrease the risk of PAME.²⁷

6. Conclusions

This review has consolidated case reports and series that are based upon four prominent religions that endorse rituals that have the potential to cause infection.

Table 1 is a summary of the rituals that were covered in this review. The sensitive features of religious rituals make it probable that many infections have been unrecognized and under-reported. Notably, no infections have ever been reported as a consequence of a religious ritual from Africa or South America.

Religious ceremonies serve a valuable function in daily human life by providing self-identification, structure, and community support. In general, most practices are safe and have been practiced for generations. However, as this review has highlighted, every action has consequences and these must be considered when participating in rituals that bypass natural barriers to infection.

Conflict of interest: There are no financial or personal conflicts of interest to report. There was no funding source for this study.

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LETTERS TO THE EDITOR

PSEUDOMONAS AERUGINOSA ARTERIAL LINE INFECTION

To the Editor:

Percutaneous arterial cannulation is one of the most frequently performed invasive monitoring procedures used in critical care, but arterial lines are rarely infected.¹⁻¹⁰ Although rare, arterial line-related bacteremia is usually a result of *Flavobacterium*, *Serratia*, or *Enterobacter*.^{4,8,9}

A 79-year-old man was admitted to the hospital with diffuse abdominal pain, nausea, and vomiting for 2 days. His medical history was significant for noninsulin-dependent diabetes mellitus, multiple amputations, end-stage renal disease, peritoneal dialysis, coronary bypass, aortic valve replacement, and permanent pacemaker placement. During the hospital course, gallstone ileus was diagnosed, and the patient underwent an operation. After the operation, a 22-gauge teflon catheter was inserted percutaneously into the right radial artery. Eight days after insertion, the site appearance was red, tender, and oozing. Blood cultures were negative, but the catheter tip grew ≥ 15 colonies of *Pseudomonas aeruginosa*. Two days after catheter removal, the redness and pain were gone.

Colonization/infection of arterial lines is rare but directly related to the duration of cannulation. Maki and Hassamer⁶ reported that 2 days is the upper limit of safety for arterial lines. In their study, Maki and Hassamer⁶ reported only 3 contaminated intra-arterial lines and no related septicemia within 53 patients monitored by intra-arterial catheter. Arterial catheter-related bacteremia is also a rare complication of arterial lines. Maki et al⁷ also reported that 4% of all intra-arterial infusions that cause bacteremia and septicemia and 20% of all bacteremias that occur in monitored patients originated from contaminated infusions.

Band and Maki³ reported that arterial lines remaining in place for more than 4 days cause a significant risk for infection. In this study, the local infection rate was 18%, sepsis caused by

arterial catheters was 4%, and 12% of all nosocomial bacteremias occurring in the critical care unit originated from arterial lines. Systemic antibiotic therapy does not protect against catheter-related infections or colonization.

The case described in this letter is the first case of *P aeruginosa* insertion site infection directly related to arterial cannulation. We conclude that *P aeruginosa* is a rare cause of arterial line infection in intensive care units.

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RISK OF INFECTIOUS DISEASE TRANSMISSION FROM A COMMON COMMUNION CUP

To the Editor:

For more than 2 decades, the Centers for Disease Control and Prevention (CDC) has stated an official position to inquirers (eg, lay public, physicians, nurses, and other health care professionals) about the risk of infectious disease trans-

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mission from a common communion cup. Although no documented transmission of any infectious disease has ever been traced to the use of a common communion cup, a great deal of controversy surrounds this issue; the CDC still continues to receive inquiries about this topic. In this letter, the CDC strives to achieve a balance of adherence to scientific principles and respect for religious beliefs.

Within the CDC, the consensus of the National Center for Infectious Diseases and the National Center for Human Immunodeficiency Virus, Sexually Transmitted Diseases, and Tuberculosis is that a theoretic risk of transmitting infectious diseases by using a common communion cup exists,¹⁻⁴ but that the risk is so small that it is undetectable.⁵⁻⁸ The CDC has not been called on to investigate any episodes or outbreaks of infectious diseases that have been allegedly linked to the use of a common communion cup. However, outbreaks or clusters of infection might be difficult to detect if: (1) a high prevalence of disease (eg, infectious mononucleosis, influenza, herpes, strep throat, common cold) exists in the community, (2) diseases with oral routes of transmission have other modes of transmission (ie, fecal-oral, hand-to-mouth/nose, airborne), (3) the length of the incubation period for the disease is such that other opportunities for exposure cannot be ruled out unequivocally, and (4) no incidence data exist for comparison purposes (ie, the disease is not on the reportable disease list and therefore is not under public health surveillance).

Experimental studies have shown that bacteria and viruses can contaminate a common communion cup and survive despite the alcohol content of the wine.¹⁻³ Therefore, an ill person or asymptomatic carrier drinking from the common cup could potentially expose other members of the congregation to pathogens present in saliva. Were any diseases transmitted by this practice, they most likely would be common viral illnesses, such as the common cold. However, a recent study of 681 persons found that people who receive Communion as often as daily are not at higher risk of infection compared with persons who do not receive communion or persons who do not attend Christian church services at all.⁸

In summary, the risk for infectious disease transmission by a common communion cup is very low, and appropriate safeguards—that is, wiping the interior and exterior rim between communicants, use of care to rotate the cloth during use, and use of a clean cloth for each service—

would further diminish this risk. In addition, churches may wish to consider advising their congregations that sharing the communion cup is discouraged if a person has an active respiratory infection (ie, cold or flu) or moist or open sores on their lips (eg, herpes).

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IN-HOUSE VERSUS CONTRACT MANAGEMENT OF ENVIRONMENTAL SERVICES: A MATTER OF COST AND QUALITY

To the Editor:

Because of ongoing complaints and concerns by patients, visitors, and health care workers, in 1992 we studied the environmental service department of our 350-bed, acute-care, community teaching hospital located in Virginia. Our goal was to increase the efficacy of the department.

The department of environmental services physically removes microorganisms from various surfaces within the hospital. This service is necessary and important to the well-being of patients, visitors, and health care workers but produces no revenue. Environmental services management can be done either in-house or by external contractors. A contract management company is a company that provides contract service and supervision and manages