TABLE 2. (*Continued*) Percentage of postpartum (2–9 months) contraceptive use among nonpregnant, sexually active women who delivered live infants, by contraceptive effectiveness and selected characteristics — Pregnancy Risk Assessment Monitoring System, 12 states and New York City, 2004–2006

	Moderately effective*		Less effective*			
	Condoms		Other methods††		No method*	
Characteristic	%	(95% CI)	%	(95% CI)	%	(95% CI)
Maternal age (yrs)						
<20	15.0	(13.4–16.7)	2.3	(1.7–3.1)	9.9	(8.6–11.4)
20–24	16.8	(15.7–18.0)	3.7	(3.1–4.3)	10.9	(9.9–11.9)
25–29	20.8	(19.5–22.0)	7.6	(6.8–8.4)	11.2	(10.3–12.2)
30–34	23.3	(22.0–24.8)	8.6	(7.8–9.6)	12.0	(10.9–13.1)
≥35	22.1	(20.4–24.0)	8.0	(6.9–9.2)	16.8	(15.3–18.5)
Race						
Black	15.2	(14.1-16.4)	3.3	(2.8-4.0)	10.2	(9.3-11.3)
White	20.4	(19.6–21.1)	7.1	(6.6–7.6)	12.2	(11.6–12.9)
American Indian/Alaska Native	13.5	(8.8–20.1)	2.4¶¶	(0.9–6.3)	12.6	(7.5–20.4)
Asian/Pacific Islander	36.4	(32.3–40.5)	11.1	(8.7–14.1)	17.2	(14.2–20.8)
Other***	22.0	(19.0-25.4)	4.4	(3.1–6.2)	11.1	(8.9–13.7)
Hispanic						
Yes	22.6	(20.9–24.4)	5.5	(4.6–6.6)	10.9	(9.6–12.3)
No	19.4	(18.8–20.1)	6.6	(6.1–7.0)	12.2	(11.6–12.8)
Maternal education (yrs)						
<12	16.6	(15.3–18.1)	3.6	(2.9–4.5)	13.5	(12.3–14.9)
12	16.7	(15.6–17.8)	4.7	(4.1–5.3)	12.6	(11.7–13.6)
>12	23.1	(22.2–24.1)	8.5	(7.9–9.1)	10.9	(10.3–11.7)
Marital status						
Married	22.7	(21.9–23.6)	7.9	(7.3–8.4)	13.3	(12.7–14.0)
Other	15.4	(14.5–16.4)	3.9	(3.4–4.5)	9.7	(8.9–10.5)
Parity						
0	22.5	(21.5–23.5)	6.3	(5.7–6.9)	12.8	(12.0–13.6)
1–2	19.0	(18.2–19.9)	6.6	(6.0–7.2)	10.9	(10.2–11.6)
>2	14.5	(12.7–16.4)	5.9	(4.7–7.3)	13.7	(12.0–15.5)
Prepregnancy insurance coverage						
Yes	22.2	(21.4–23.1)	7.7	(7.1–8.2)	12.4	(11.7–13.1)
No	16.9	(16.0–17.9)	4.6	(4.0–5.1)	11.4	(10.6–12.2)
Prepregnancy Medicaid coverage						
Yes	14.0	(12.8–15.4)	3.5	(2.8–4.3)	14.7	(13.4–16.2)
No	21.1	(20.4–21.8)	6.9	(6.5–7.4)	11.4	(10.9–12.0)
Pregnancy intendedness†††						
Wanted sooner	21.8	(20.2–23.4)	8.5	(7.4–9.6)	19.9	(18.4–21.6)
Wanted as occurred	22.3	(21.3–23.4)	7.8	(7.1–8.5)	12.8	(12.0–13.7)
Wanted later	18.2	(17.2–19.3)	4.2	(3.7–4.8)	8.2	(7.4–9.0)
Never wanted	13.5	(11.9–15.3)	3.8	(2.9–5.0)	6.8	(5.7–8.0)
Prenatal care entry						
Early (first trimester)	20.9	(20.2–21.7)	6.9	(6.4–7.4)	11.7	(11.1–12.3)
Late (second or third trimester)	16.5	(15.2–17.8)	4.7	(3.9–5.5)	12.4	(11.2–13.6)
No prenatal care	19.0	(13.7–25.7)	—§§§	—§§§	23.1	(16.4–31.5)

* Percentages based on weighted data. Effectiveness determined by percentage of women who experience pregnancy during first year of typical use and categorized as highly effective (<10%), moderately effective (10%–15%), and less effective (>15%). Totals might not equal 100% because of rounding.
† Based on unweighted data, N = 43,887; subcategories might not equal sample total because of missing data on maternal characteristics.
§ Includes permanent and reversible methods.
¶ Includes tubal ligation or vasectomy.
** Includes shot, pill, patch, ring, or intrauterine device.
†† Includes diaphragm, cervical cap, sponge, rhythm, or withdrawal.
§§ Confidence interval.
¶¶ <60 respondents; might not be reliable.
*** Excludes data from Louisiana and Mississippi, which reported no respondents in this category.
††† Pregnancy intention of recent pregnancy that ended in a live birth.
§§§ Not reported (<30 respondents).

76.4%. However, the findings indicate substantial variation in use of highly effective contraceptive methods by reporting area and maternal characteristics. For example, some subgroups with the lowest rates of highly effective contraceptive method use included Asian/Pacific Islanders (35.3%), women who reported that their most recent pregnancy was wanted sooner (49.9%), women aged ≥35 years (53.0%), and women who had no prenatal care (54.5%). Additional analyses and research are needed to determine reasons for the variations found in the use of highly effective methods by reporting area and maternal characteristics.

These findings point to possible missed opportunities for promoting healthy birth spacing and reducing unintended pregnancies. Women who do not receive prenatal care, for example, might benefit from more consultation about postpartum contraceptive options. This population likely does not routinely access preventive health-care services. Therefore, for these women the period after delivery and before hospital discharge might constitute an especially opportune time for health-care providers to promote the use of effective contraception postpartum and adequate birth spacing.

Although use of condoms for protection against sexually transmitted diseases was not a focus of the study, 13% of the women reported use of condoms along with a highly effective method. All women not using condoms should be counseled regarding the use of condoms for the prevention of sexually transmitted diseases, including human immunodeficiency virus infection.†

The findings in this report are subject to at least four limitations. First, although population based, these findings are not nationally representative and are generalizable only to mothers with recent live births in the 13 reporting areas. Second, because PRAMS data are self-reported, prevalence rates of desirable behaviors might be overestimated and those for undesirable behaviors might be underestimated. Third, the survey did not ascertain use of some additional contraceptive methods, such as spermicides, emergency contraception, and lactational amenorrhea. Finally, because of the survey skip pattern, information was not obtained about contraceptive methods used by women who might have incorrectly reported they were not doing anything currently to keep from getting pregnant. If this occurred, particularly among respondents who had a tubal ligation or whose partners had a vasectomy, the use of highly effective contraceptive methods might have been underestimated.

Knowing the characteristics associated with low rates of effective contraceptive use during the postpartum period will better enable health-care providers to target interventions. Health-care providers should consider encouraging postpartum women to use highly effective contraceptive methods to increase the proportion of pregnancies that are intended and promote healthy birth spacing.

† Additional information on sexually transmitted disease prevention and treatment available at http://www.cdc.gov/std/treatment.

Acknowledgments

The findings in this report are based, in part on contributions by members of the PRAMS Working Group; the CDC PRAMS Team, Div of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

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Evaluation of Rapid Influenza Diagnostic Tests for Detection of Novel Influenza A (H1N1) Virus — United States, 2009

The recent appearance and worldwide spread of novel influenza A (H1N1) virus (*1,2*) has highlighted the need to evaluate commercially available, widely used, rapid influenza diagnostic tests (RIDTs) for their ability to detect these viral antigens in

respiratory clinical specimens. As an initial assessment, CDC conducted an evaluation of multiple RIDTs. Sixty-five clinical respiratory specimens collected during April–May 2009* that had previously tested positive either for novel influenza A (H1N1) or for seasonal influenza A (H1N1) or A (H3N2) viruses by real-time reverse transcription–polymerase chain reaction (rRT-PCR) assay were used in the evaluation. The results showed that, although the RIDTs were capable of detecting novel A (H1N1) virus from respiratory specimens containing high levels of virus (as indicated by low cycle threshold [Ct] values), the overall sensitivity was low (40%–69%) among all specimens tested and declined substantially as virus levels decreased (and Ct values increased). These findings indicate that, although a positive RIDT result can be used in making treatment decisions, a negative result does not rule out infection with novel influenza A (H1N1) virus. Patients with illnesses compatible with novel influenza A (H1N1) virus infection but with negative RIDT results should be treated empirically based on the level of clinical suspicion, underlying medical conditions, severity of illness, and risk for complications. If a more definitive determination of infection with influenza virus is required, testing with rRT-PCR or virus isolation should be performed. Additional evaluations of the accuracy of RIDTs in detecting novel influenza A (H1N1) virus should be conducted.

Original clinical materials (e.g., specimens from nasopharyngeal swabs and oropharyngeal swabs) collected from patients with confirmed novel influenza A (H1N1) or seasonal influenza A (H1N1) or (H3N2) virus infection and provided largely by state health laboratories were used in the study. The presence of novel or seasonal influenza A virus was confirmed by rRT-PCR assay developed by CDC and approved as a Section 501(k) device by the Food and Drug Administration. Detailed data regarding sensitivity (99.3%) and specificity (92.3%) for the seasonal influenza A CDC rRT-PCR assay compared with viral culture are available.† The original clinical specimens were tested using RIDTs from three companies: Inverness Medical BinaxNOW Influenza A&B (Binax, Inc., Scarborough, Maine); Becton Dickinson Directigen EZ Flu A+B (Becton, Dickinson and Company, Sparks, Maryland); and Quidel QuickVue Influenza A+B (Quidel Corporation, San Diego, California). RIDTs from four other companies were tested with limited numbers of specimens; those results are not presented in this report.

Each clinical specimen was characterized by the Ct value demonstrated in the universal influenza type A rRT-PCR assay with the M gene used as the target.§ The numbers of specimens positive using each of the three RIDTs were determined within four intervals of Ct values: <20, 20 to <25, 25–30, and >30.¶ Ct values are indicators of the amount of virus in a specimen, with lower values indicating higher viral titers (i.e., greater amounts of viral material in the specimen). Sensitivity of each rapid test was determined as the percentage of RIDT-positive specimens among the number of specimens that tested positive by rRT-PCR.

A total of 65 original clinical specimens were tested. Forty-five of the specimens were positive for novel influenza A (H1N1) virus, five were positive for seasonal influenza A (H1N1), and 15 were positive for seasonal influenza A (H3N2), all by CDC rRT-PCR assay.

For the nine specimens with high viral titers (Ct values <20), one RIDT had nine positive results, and the other two had eight positives, demonstrating 89%–100% sensitivity in detecting novel influenza A (H1N1) virus when compared with rRT-PCR. However, among the 36 specimens with Ct values ≥20 that had tested positive for novel influenza A (H1N1) by rRT-PCR, the sensitivity of the three RIDT tests declined substantially (Table 1). Overall, for the 45 specimens that had tested positive for novel influenza A (H1N1) by rRT-PCR, the sensitivity of the three RIDT tests was 40% for BinaxNOW Influenza A&B, 49% for Directigen EZ Flu A+B,** and 69% for QuickVue Influenza A+B.

Sensitivity of the RIDTs was generally greater for seasonal influenza A (H1N1) and (H3N2) than for novel influenza A (H1N1), although the number of specimens tested was small, especially for seasonal influenza A (H1N1). None of the specimens had a Ct value <20. Compared with rRT-PCR, the three tests demonstrated sensitivity ranging from 60% to 80% for seasonal A (H1N1) and from 80% to 83% for seasonal A (H3N2) (Table 1).

To evaluate approximate viral titers in clinical specimens positive for novel influenza A (H1N1) virus, serial 10-fold dilutions (from 10^{-1} through 10^{-5}) of the virus isolate A/California/4/2009, an early representative strain of novel H1N1, was prepared. This virus was grown in Madin-Darby canine kidney (MDCK) cells and had a titer of $10^{7.5}$ 50% tissue culture infectious dose ($TCID_{50}$/mL). Each virus dilution was tested in duplicate using the three RIDTs. Only specimens that tested positive for both test runs were considered positive. Limits of detection were measured as Ct values for

* One H3N2 specimen was collected in March.

† Additional information available at http://www.accessdata.fda.gov/cdrh_docs/pdf8/k080570.pdf.

§ CDC protocol of rRT-PCR testing for influenza A (H1N1) virus is available at http://www.who.int/csr/resources/publications/swineflu/realtimeptpcr/en/index.html.

¶ A Ct value of 37 or lower is considered a positive rRT-PCR result.

** Only 43 of the 45 specimens positive for novel influenza A (H1N1) by rRT-PCR were tested using this RIDT.

TABLE 1. Comparison of the number of positive influenza A test results from three RIDTs* with the number of positive results from rRT-PCR† assay, by influenza A type and cycle threshold (Ct) interval — United States, 2009

RIDT	Influenza A virus type	No. of specimens positive by RIDT/ No. positive by rRT-PCR, Ct interval§ (<20)	(20 to <25)	(25–30)	(>30)	Total no. of specimens positive by RIDT/ Total no. positive by rRT-PCR	(%)
BinaxNOW Influenza A&B	Novel H1N1	8/9	7/17	2/13	1/6	18/45	(40)
	Seasonal H1N1	—¶	2/3	1/2	—	3/5	(60)
	Seasonal H3N2	—	10/10	2/4	0/1	12/15	(80)
Directigen EZ Flu A+B	Novel H1N1	8/9	10/16	2/12	1/6	21/43**	(49)
	Seasonal H1N1	—	2/2	1/2	—	3/4**	(75)
	Seasonal H3N2	—	8/8	2/3	0/1	10/12**	(83)
QuickVue A+B	Novel H1N1	9/9	13/17	6/13	3/6	31/45	(69)
	Seasonal H1N1	—	2/3	2/2	—	4/5	(80)
	Seasonal H3N2	—	10/10	2/4	0/1	12/15	(80)

* Rapid influenza A diagnostic tests.
† Real-time reverse transcription–polymerase chain reaction.
§ A Ct value of 37 or lower is considered a positive rRT-PCR result.
¶ No data available.
** For this RIDT, insufficient material was available to test two specimens that were rRT-PCR positive for novel H1N1, one for seasonal H1N1, and three for seasonal H3N2

the three RIDTs. The limit of detection of MDCK-grown A/California/4/2009 was the same for QuickVue A+B and Directigen EZ Flu A+B, but BinaxNOW Influenza A&B was 10-fold higher (10^{-2} versus 10^{-3}) (Table 2).

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Editorial Note: The sensitivity of RIDTs to detect seasonal influenza viruses compared with virus isolation or rRT-PCR varies among commercial kits and has been shown to be low in some reports (*3–5*). In this evaluation, the sensitivity of three RIDTs to detect novel influenza A (H1N1) viral antigen in clinical specimens ranged from 40% to 69% and declined substantially with lower viral titers (as determined by Ct values). These findings are compatible with other recent studies, which reported that the sensitivity of some RIDTs to detect novel influenza A (H1N1) in clinical specimens ranged from 10% to 51% (*6,7*). Overall, the findings in this report demonstrate that these RIDTs are capable of detecting novel influenza A (H1N1) in respiratory specimens, but that many infections will be missed, especially in specimens with low viral titers.

RIDTs do not distinguish among influenza A virus subtypes, and RIDT sensitivity might vary by subtype of influenza A (*4,6,8*). Therefore, when using a positive RIDT result to help determine the appropriate course of clinical treatment or other action, the result should always be interpreted in the context of currently circulating strains. Conversely, as indicated by the results of this and other studies, a negative RIDT result should not be interpreted as indicating the absence of infection. In this analysis, the sensitivity of all three assays evaluated declined as the viral titer in the specimen decreased. The amount of virus found in respiratory specimens can be affected by timing of the specimen collection; viral titers are highest in the first 3 days of illness. Other factors that can affect the amount of virus in the specimen include age (e.g., children generally shed more virus and for longer periods than adults), type of specimen collected, and transportation and storage of the specimen before testing. Testing with rRT-PCR or virus isolation should be performed if a more definitive determination of the presence of influenza virus is required. In the titered cultured virus results presented in this report, all three RIDTs detected the cultured novel H1N1 influenza A/California/4/2009 virus with a lower limit of detection between $10^{4.5}$ and $10^{5.5}$ $TCID_{50}$, slightly higher $TCID_{50}$ levels than for detection of seasonal influenza viruses. These findings are consistent with the analytical sensitivities of RIDTs to detect novel influenza A (H1N1) virus described in one report (*9*), but higher than those described in another report (*10*).

The findings in this report are subject to at least three limitations. First, relatively few clinical specimens were tested for each RIDT across the range of Ct values, limiting the ability to compare results between different RIDTs, particularly for seasonal influenza A (H1N1). Second, clinical specimens were not tested immediately after collection but were stored and shipped to CDC under varying conditions. The clinical materials used in this evaluation were prepared and shipped in different (often unknown) transport media that might not be optimal for some of the RIDTs. Finally, the data used to estimate virus load in clinical materials obtained by comparing with different dilutions of influenza A/California/4/2009

TABLE 2. Limits of detection of Madin-Darby canine kidney (MDCK)–grown influenza A/California/4/2009 (H1N1) for three rapid influenza diagnostic tests (RIDTs), by selected measurement values — United States, 2009

	Values		
RIDT	Lowest dilution with positive result	$TCID_{50}$/mL*	Ct†
BinaxNOW Influenza A&B	10^{-2}	$10^{5.5}$	22.15
Directigen EZ Flu A+B	10^{-3}	$10^{4.5}$	26.05
QuickVue A+B	10^{-3}	$10^{4.5}$	26.05

* $TCID_{50}$ = 50% tissue culture infectious dose.
† Ct (cycle threshold) values reported as an average of three reactions each of duplicate dilution series.

grown in MDCK cells should be viewed with caution, because the limit of detection values for cultured viruses can vary with the virus strain, its passage history, and the substrate used for propagation (e.g., MDCK cells or chicken embryos). Optimizing specimen collection, transportation, and testing practices to ensure that specimens have the highest amount of virus possible would be expected to increase the likelihood of detecting influenza virus, when present, using RIDTs and other diagnostic tests.

The results described in this report should be viewed as preliminary. More data are needed on the clinical performance of all RIDTs to detect novel influenza A (H1N1) virus in different respiratory specimens. Because of the limitations of RIDTs and until additional data are available, all results from RIDTs, both positive and negative, when used for clinical decision-making in a patient with suspected novel influenza A (H1N1) virus infection, should be interpreted in the context of circulating influenza virus strains in the patient's community, level of clinical suspicion, severity of illness, and risk for complications. Additional CDC guidance on interpretation of RIDTs for testing of patients with suspected novel influenza A (H1N1) virus infection is available at http://www.cdc.gov/h1n1flu/guidance/rapid_testing.htm.

Acknowledgments

This report is based, in part, on contributions from national and international laboratories participating in the Global Influenza Surveillance Network.

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Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP) Regarding Routine Poliovirus Vaccination

This report updates Advisory Committee on Immunization Practices (ACIP) recommendations for routine poliovirus vaccination. These updates aim to 1) emphasize the importance of the booster dose at age ≥4 years, 2) extend the minimum interval from dose 3 to dose 4 from 4 weeks to 6 months, 3) add a precaution for the use of minimum intervals in the first 6 months of life, and 4) clarify the poliovirus vaccination schedule when specific combination vaccines are used.

On June 17, 1999, ACIP recommended that all poliovirus vaccine administered in the United States be an inactivated poliovirus vaccine (IPV) beginning January 1, 2000. This policy was implemented to eliminate the risk for vaccine-associated paralytic poliomyelitis, a rare condition that has been associated with use of the live oral poliovirus vaccine (OPV). Since 1999, no OPV has been distributed in the United States. Under these ACIP recommendations, the routine IPV vaccination schedule in the United States consists of 4 doses administered at ages 2 months, 4 months, 6–18 months, and 4–6 years with the minimum interval between all IPV doses as 4 weeks (*1,2*).

Since the ACIP recommendation was made 10 years ago, three different combination vaccines containing IPV have been licensed for routine use in the United States (Table). Because of potential confusion in using different vaccine products for routine and catch-up immunization, ACIP recommends the following:

TABLE. Currently licensed vaccines containing inactivated poliovirus vaccine (IPV) — United States, 2009*

Vaccine composition	Trade name	Manufacturer	Approved use in ACIP† routine schedule	Comments
IPV	Ipol (Poliovax§)	Sanofi Pasteur	2, 4, 6–18 mos, and 4–6 yrs	Approved for use in infants, children, and adults¶
DTaP-HepB-IPV**	Pediarix	GlaxoSmithKline	2, 4, and 6 mos	Approved for first 3 doses of IPV through age 6 yrs††
DTaP-IPV/Hib§§	Pentacel	Sanofi Pasteur	2, 4, 6, and 15–18 mos	Approved for 4 doses of IPV through age 4 yrs¶¶
DTaP-IPV***	Kinrix	GlaxoSmithKline	4–6 yrs	Approved for booster dose at age 4–6 yrs†††

* As of August 5, 2009.
† Advisory Committee on Immunization Practices. Full schedule available at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5751a5.htm.
§ Not currently distributed in the United States.
¶ Package insert available at http://www.fda.gov/downloads/biologicsbloodvaccines/vaccines/approvedproducts/ucm133479.pdf.
** Diphtheria and tetanus toxoids and acellular pertussis adsorbed, hepatitis B (recombinant), and inactivated poliovirus vaccine combined.
†† Package insert available at http://www.fda.gov/downloads/biologicsbloodvaccines/vaccines/approvedproducts/ucm168055.pdf.
§§ Diphtheria and tetanus toxoids and acellular pertussis adsorbed, inactivated poliovirus, and *Haemophilus* b conjugate (tetanus toxoid conjugate) vaccine.
¶¶ Package insert available at http://www.fda.gov/downloads/biologicsbloodvaccines/vaccines/approvedproducts/ucm109810.pdf.
*** Diphtheria and tetanus toxoids and acellular pertussis adsorbed, and inactivated poliovirus vaccine.
††† Package insert available at http://www.fda.gov/downloads/biologicsbloodvaccines/vaccines/approvedproducts/ucm107220.pdf.

- The 4-dose IPV series should continue to be administered at ages 2 months, 4 months, 6–18 months, and 4–6 years.
- The final dose in the IPV series should be administered at age ≥4 years regardless of the number of previous doses.
- The minimum interval from dose 3 to dose 4 is extended from 4 weeks to 6 months.
- The minimum interval from dose 1 to dose 2, and from dose 2 to dose 3, remains 4 weeks.
- The minimum age for dose 1 remains age 6 weeks.

ACIP also is making a new recommendation concerning the use of minimum age and minimum intervals for children in the first 6 months of life. Use of the minimum age and minimum intervals for vaccine administration in the first 6 months of life are recommended only if the vaccine recipient is at risk for imminent exposure to circulating poliovirus (e.g., during an outbreak or because of travel to a polio-endemic region). ACIP is making this precaution because shorter intervals and earlier start dates lead to lower seroconversion rates (*3–5*).

In addition, ACIP is clarifying the poliovirus vaccination schedule to be used for specific combination vaccines. When DTaP-IPV/Hib* (Pentacel) is used to provide 4 doses at ages 2, 4, 6, and 15–18 months, an additional booster dose of age-appropriate IPV-containing vaccine (IPV [Ipol] or DTaP-IPV† [Kinrix]) should be administered at age 4–6 years. This will result in a 5-dose IPV vaccine series, which is considered acceptable by ACIP. DTaP-IPV/Hib is not indicated for the booster dose at age 4–6 years. ACIP recommends that the minimum interval from dose 4 to dose 5 should be at least 6 months to provide an optimum booster response. In accordance with existing recommendations, if a child misses an IPV dose at age 4–6 years, the child should receive a booster dose as soon as feasible (*2*).

* Diphtheria and tetanus toxoids and acellular pertussis adsorbed, inactivated poliovirus, and *Haemophilus* b conjugate (tetanus toxoid conjugate) vaccine.
† Diphtheria and tetanus toxoids and acellular pertussis adsorbed, and inactivated poliovirus vaccine.

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Notice to Readers

Publication of *HIV Testing Algorithms: a Status Report*

In the past 20 years, advances in human immunodeficiency virus (HIV) diagnostics have resulted in approval by the Food and Drug Administration of 1) rapid tests for screening at the point of contact, 2) immunoassays that are more sensitive earlier during seroconversion, and 3) HIV-1 RNA assays for the diagnosis of acute infection and for confirmation of reactive antibody tests. As a result of these developments, CDC and the Association of Public Health Laboratories (APHL) convened a panel of HIV diagnostic subject matter experts to examine alternatives to the two-test HIV confirmatory algorithm that has been recommended for use in the United States since 1989 (*1*). That panel's efforts culminated in publication of *HIV Testing Algorithms: a Status Report*, which describes

proposed alternative combinations of tests that might be used for diagnosing HIV infection.

The status report does not contain formal guidelines or recommendations but reviews the supporting evidence and limitations regarding the proposed algorithms, and the additional data needed to substantiate each of them. The report is intended to solicit performance data from laboratories to validate the proposed algorithms and feedback regarding operational parameters associated with the algorithms.

The report is available online at http://www.aphl.org/hiv/statusreport and http://hivtestingconference.org. Inquiries, comments, and descriptions of pertinent performance data should be directed to APHL via e-mail at hiv.algorithm@aphl.org.

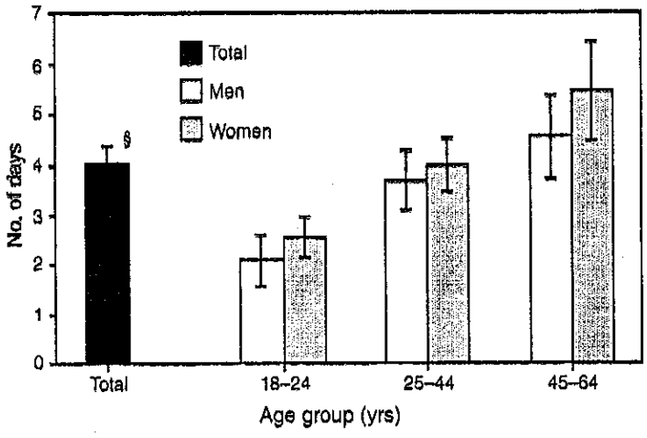
Reference

1. CDC. Interpretation and use of the Western blot assay for serodiagnosis of human immunodeficiency virus type 1 infections. MMWR 1989;38 (No. SU-7).

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Average Number of Work-Loss Days During the Preceding 12 Months Among Persons Aged 18–64 Years,* by Age Group and Sex — National Health Interview Survey, United States, 2007†



* Based on responses to the question, "In the past 12 months...about how many days did you miss work at a job or business because of illness or injury (do not include maternity leave)?" Only respondents who had worked in the past week were asked this question.

† Estimates are based on household interviews of a sample of the civilian, noninstitutionalized U.S. population and are derived from the National Health Interview Survey sample adult component.

§ 95% confidence interval.

In 2007, U.S. adults who had worked in the past week missed 4.0 days of work on average during the 12 months preceding the interview. Work-loss days increased with age for both men and women. Men aged 18–24 years missed 2.1 days of work, aged 25–44 years missed 3.7 days, and aged 45–64 years missed 4.5 days. Women aged 18–24 years missed 2.6 days of work, aged 25–44 years missed 4.0 days, and aged 45–64 years missed 5.5 days.

SOURCES: National Health Interview Survey 2007 data. Available at http://www.cdc.gov/nchs/nhis.htm. Pleis JR, Lucas JW. Summary health statistics for U.S. adults: National Health Interview Survey, 2007. Vital Health Stat 2009;10(240). Available at http://www.cdc.gov/nchs/data/series/sr_10/sr10_240.pdf.

TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending August 1, 2009 (30th week)*

Disease	Current week	Cum 2009	5-year weekly average†	Total cases reported for previous years 2008	2007	2006	2005	2004	States reporting cases during current week (No.)
Anthrax	—	—	—	—	1	1	—	—	
Botulism:									
foodborne	—	10	0	17	32	20	19	16	
infant	—	29	2	109	85	97	85	87	
other (wound and unspecified)	—	13	1	19	27	48	31	30	
Brucellosis	—	53	2	80	131	121	120	114	
Chancroid	—	22	1	25	23	33	17	30	
Cholera	—	2	0	5	7	9	8	6	
Cyclosporiasis§	2	69	6	139	93	137	543	160	NY (1), FL (1)
Diphtheria	—	—	—	—	—	—	—	—	
Domestic arboviral diseases§,¶:									
California serogroup	—	2	4	62	55	67	80	112	
eastern equine	—	—	0	4	4	8	21	6	
Powassan	—	—	0	2	7	1	1	1	
St. Louis	—	4	0	13	9	10	13	12	
western equine	—	—	—	—	—	—	—	—	
Ehrlichiosis/Anaplasmosis§,**:									
Ehrlichia chaffeensis	9	317	28	1,137	828	578	506	338	NY (1), OH (1), MO (2), NC (2), GA (1), TN (1), AR (1)
Ehrlichia ewingii	—	—	0	9	—	—	—	—	
Anaplasma phagocytophilum	6	227	30	1,026	834	646	786	537	NY (3), WI (2), FL (1)
undetermined	2	69	6	180	337	231	112	59	WI (1), TN (1)
Haemophilus influenzae,††									
invasive disease (age <5 yrs):									
serotype b	—	13	0	30	22	29	9	19	
nonserotype b	—	124	3	244	199	175	135	135	
unknown serotype	2	137	3	183	180	179	217	177	NY (1), FL (1)
Hansen disease§	—	34	1	80	101	66	87	105	
Hantavirus pulmonary syndrome§	—	6	1	18	32	40	26	24	
Hemolytic uremic syndrome, postdiarrheal§	4	103	7	330	292	286	221	200	NY (2), TN (2)
Hepatitis C viral, acute	6	952	16	878	845	766	652	720	PA (2), MI (2), FL (1), TN (1)
HIV infection, pediatric (age <13 years)§§	—	—	3	—	—	—	380	436	
Influenza-associated pediatric mortality§,¶¶	1	99	0	90	77	43	45	—	NYC (1)
Listeriosis	12	329	21	759	808	884	896	753	PA (2), OH (1), MI (1), WV (1), FL (1), TX (3), CA (3
Measles***	3	46	1	140	43	55	66	37	TN (1), CA (2)
Meningococcal disease, invasive†††:									
A, C, Y, and W-135	1	167	4	330	325	318	297	—	TX (1)
serogroup B	—	95	3	188	167	193	156	—	
other serogroup	1	16	1	38	35	32	27	—	WV (1)
unknown serogroup	6	293	9	616	550	651	765	—	PA (1), OH (1), FL (2), TX (1), CA (1)
Mumps	1	189	14	454	800	6,584	314	258	PA (1)
Novel influenza A virus infections	—	§§§	—	2	4	N	N	N	
Plague	—	4	0	2	7	17	8	3	
Poliomyelitis, paralytic	—	—	—	—	—	—	1	—	
Polio virus infection, nonparalytic§	—	—	—	—	—	N	N	N	
Psittacosis§	—	7	0	8	12	21	16	12	
Q fever total§,¶¶¶:	—	46	3	124	171	169	136	70	
acute	—	41	1	110	—	—	—	—	
chronic	—	5	0	14	—	—	—	—	
Rabies, human	—	1	0	2	1	3	2	7	
Rubella****	—	2	0	16	12	11	11	10	
Rubella, congenital syndrome	—	1	—	—	—	1	1	—	
SARS-CoV§,††††	—	—	—	—	—	—	—	—	
Smallpox§	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome§	1	92	2	157	132	125	129	132	CT (1)
Syphilis, congenital (age <1 yr)	—	101	8	434	430	349	329	353	
Tetanus	—	6	0	19	26	41	27	34	
Toxic-shock syndrome (staphylococcal)§	—	48	2	71	92	101	90	95	
Trichinellosis	—	11	0	39	5	15	16	5	
Tularemia	1	33	5	123	137	95	154	134	AR (1)
Typhoid fever	7	190	6	449	434	353	324	322	OH (1), MN (1), MD (1), FL (1), TX (1), CA (2)
Vancomycin-intermediate *Staphylococcus aureus*§	—	40	0	63	37	6	2	—	
Vancomycin-resistant *Staphylococcus aureus*§	—	—	—	—	2	1	3	1	
Vibriosis (noncholera *Vibrio* species infections)§	12	182	11	492	549	N	N	N	MD (1), NC (1), FL (1), AZ (1), WA (2), CA (5), HI (1)
Yellow fever	—	—	—	—	—	—	—	—	

See Table I footnotes on next page.

TABLE I. (*Continued*) Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending August 1, 2009 (30th week)*

—: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts.

* Incidence data for reporting year 2008 and 2009 are provisional, whereas data for 2004, 2005, 2006, and 2007 are finalized.

† Calculated by summing the incidence counts for the current week, the 2 weeks preceding the current week, and the 2 weeks following the current week, for a total of 5 preceding years. The total sum of incident cases is then divided by 25 weeks. Additional information is available at http://www.cdc.gov/epo/dphsi/phs/files/5yearweeklyaverage.pdf.

§ Not reportable in all states. Data from states where the condition is not reportable are excluded from this table, except starting in 2007 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at http://www.cdc.gov/epo/dphsi/phs/infdis.htm.

¶ Includes both neuroinvasive and nonneuroinvasive. Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (ArboNET Surveillance). Data for West Nile virus are available in Table II.

** The names of the reporting categories changed in 2008 as a result of revisions to the case definitions. Cases reported prior to 2008 were reported in the categories: Ehrlichiosis, human monocytic (analogous to *E. chaffeensis*); Ehrlichiosis, human granulocytic (analogous to *Anaplasma phagocytophilum*), and Ehrlichiosis, unspecified, or other agent (which included cases unable to be clearly placed in other categories, as well as possible cases of *E. ewingii*).

†† Data for *H. influenzae* (all ages, all serotypes) are available in Table II.

§§ Updated monthly from reports to the Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Implementation of HIV reporting influences the number of cases reported. Updates of pediatric HIV data have been temporarily suspended until upgrading of the national HIV/AIDS surveillance data management system is completed. Data for HIV/AIDS, when available, are displayed in Table IV, which appears quarterly.

¶¶ Updated weekly from reports to the Influenza Division, National Center for Immunization and Respiratory Diseases. Ninety-eight influenza-associated pediatric deaths occurring during the 2008–09 influenza season have been reported.

*** Of the three measles cases reported for the current week, two were indigenous, and one was imported.

††† Data for meningococcal disease (all serogroups) are available in Table II.

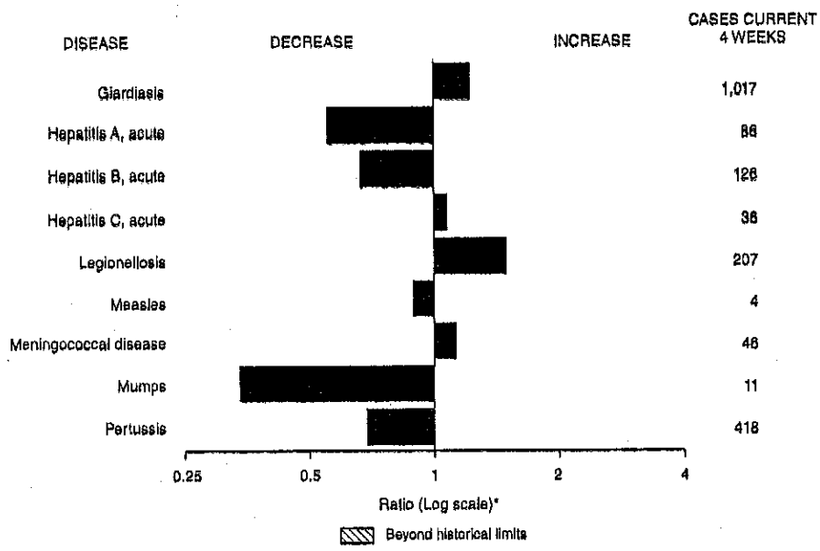
§§§ CDC discontinued reporting of individual confirmed and probable cases of novel influenza A (H1N1) viruses infections on July 24, 2009. CDC will report the total number of novel influenza A (H1N1) hospitalizations and deaths weekly on the CDC H1N1 influenza website (http://www.cdc.gov/h1n1flu).

¶¶¶ In 2008, Q fever acute and chronic reporting categories were recognized as a result of revisions to the Q fever case definition. Prior to that time, case counts were not differentiated with respect to acute and chronic Q fever cases.

**** No rubella cases were reported for the current week.

†††† Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases.

FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals August 1, 2009, with historical data



* Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

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TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Chlamydia† Current week	Chlamydia† Previous 52 weeks Med	Chlamydia† Previous 52 weeks Max	Chlamydia† Cum 2009	Chlamydia† Cum 2008	Coccidioidomycosis Current week	Coccidioidomycosis Previous 52 weeks Med	Coccidioidomycosis Previous 52 weeks Max	Coccidioidomycosis Cum 2009	Coccidioidomycosis Cum 2008	Cryptosporidiosis Current week	Cryptosporidiosis Previous 52 weeks Med	Cryptosporidiosis Previous 52 weeks Max	Cryptosporidiosis Cum 2009	Cryptosporidiosis Cum 2008
United States	11,145	22,842	26,700	629,265	673,280	284	149	474	5,932	3,816	101	124	482	3,133	2,797
New England	747	761	1,665	22,776	20,856	—	0	1	1	1	1	5	23	130	201
Connecticut	203	228	1,306	6,740	5,864	N	0	0	N	N	—	0	16	16	41
Maine§	31	49	72	1,416	1,410	N	0	0	N	N	—	0	6	14	14
Massachusetts	489	323	946	11,202	10,146	N	0	0	N	N	—	1	13	38	72
New Hampshire	3	32	63	814	1,151	—	0	1	1	1	—	1	4	26	36
Rhode Island§	—	60	244	1,941	1,625	—	0	0	—	—	—	0	3	4	4
Vermont§	21	21	53	663	670	N	0	0	N	N	1	1	7	33	32
Mid. Atlantic	2,081	2,887	6,734	88,063	84,433	—	0	0	—	—	15	13	35	363	337
New Jersey	—	429	846	12,363	12,804	N	0	0	N	N	—	0	4	6	19
New York (Upstate)	533	571	4,563	16,888	15,500	N	0	0	N	N	12	4	17	93	98
New York City	1,110	1,137	3,130	34,476	32,458	N	0	0	N	N	—	1	8	39	55
Pennsylvania	438	816	1,072	24,336	23,671	N	0	0	N	N	3	7	17	223	165
E.N. Central	1,495	3,479	4,382	94,178	110,357	—	0	4	22	32	15	31	126	793	741
Illinois	411	1,094	1,356	29,082	33,415	N	0	0	N	N	—	2	13	69	76
Indiana	273	413	713	12,981	12,353	N	0	0	N	N	—	5	18	182	95
Michigan	569	849	1,332	26,158	28,029	—	0	3	11	25	3	5	13	132	128
Ohio	56	782	1,300	16,100	26,206	—	0	2	11	7	11	9	59	226	140
Wisconsin	186	368	494	9,857	12,354	N	0	0	N	N	1	8	46	184	302
W.N. Central	321	1,324	1,551	37,126	38,011	—	0	1	4	1	26	18	68	465	399
Iowa	93	192	256	5,491	4,972	N	0	0	N	N	6	4	30	107	102
Kansas	20	178	548	5,173	5,229	N	0	0	N	N	2	1	8	47	30
Minnesota	—	268	338	6,881	8,245	—	0	0	—	—	11	4	19	133	91
Missouri	89	500	833	14,723	13,899	—	0	1	4	1	5	3	13	73	86
Nebraska§	85	96	219	2,581	3,025	N	0	0	N	N	2	2	8	45	57
North Dakota	—	23	60	552	1,060	N	0	0	N	N	—	0	10	6	2
South Dakota	54	58	85	1,724	1,581	N	0	0	N	N	—	2	9	54	31
S. Atlantic	2,462	4,331	5,730	110,633	135,318	—	0	1	5	2	18	21	49	525	443
Delaware	68	81	180	2,747	2,139	—	0	1	1	—	—	0	1	2	8
District of Columbia	—	128	227	3,849	3,991	—	0	0	—	—	—	0	2	—	9
Florida	723	1,399	1,597	41,724	41,139	N	0	0	N	N	9	8	35	173	189
Georgia	—	755	1,909	15,914	23,570	N	0	0	N	N	5	6	20	212	125
Maryland§	347	436	772	12,252	13,133	—	0	1	4	2	1	1	5	22	17
North Carolina	—	0	1,309	—	16,847	N	0	0	N	N	3	1	16	58	17
South Carolina§	612	534	1,425	14,008	15,181	N	0	0	N	N	—	1	6	23	27
Virginia§	649	616	924	17,985	17,501	N	0	0	N	N	—	1	4	28	38
West Virginia	63	69	101	2,154	1,817	N	0	0	N	N	—	0	3	7	13
E.S. Central	1,083	1,712	2,180	50,826	47,249	—	0	0	—	—	3	3	10	95	75
Alabama§	—	473	624	12,605	14,632	N	0	0	N	N	1	1	6	30	31
Kentucky	—	248	458	6,825	6,481	N	0	0	N	N	1	1	4	26	16
Mississippi	433	454	841	14,026	10,930	N	0	0	N	N	—	0	2	5	7
Tennessee§	650	570	809	17,370	15,206	N	0	0	N	N	1	1	5	34	21
W.S. Central	422	2,941	5,187	85,765	85,899	—	0	1	—	2	8	10	271	178	138
Arkansas§	268	275	418	8,068	8,203	N	0	0	N	N	1	1	10	20	18
Louisiana	—	428	1,134	12,980	12,507	—	0	1	—	2	—	1	5	12	26
Oklahoma	154	177	2,737	8,027	7,511	N	0	0	N	N	4	2	16	49	23
Texas§	—	1,959	2,527	56,690	57,678	N	0	0	N	N	3	7	258	97	71
Mountain	1,047	1,272	2,145	33,593	42,591	213	98	368	4,479	2,547	6	9	38	242	241
Arizona	53	395	627	7,106	14,133	213	96	364	4,418	2,481	—	1	9	22	33
Colorado	425	326	729	9,244	10,240	N	0	0	N	N	3	2	12	69	48
Idaho§	41	67	314	1,999	2,208	N	0	0	N	N	1	1	7	39	35
Montana§	27	56	88	1,712	1,782	N	0	0	N	N	—	0	4	21	30
Nevada§	284	171	366	5,596	5,675	—	1	3	35	33	2	0	4	11	8
New Mexico§	182	159	540	4,278	4,341	—	0	2	6	22	—	2	23	55	53
Utah	33	109	251	2,490	3,408	—	0	2	18	9	—	0	6	10	21
Wyoming§	2	34	97	1,166	804	—	0	1	—	2	—	0	2	15	13
Pacific	1,487	3,666	4,763	106,306	106,566	71	39	172	1,421	1,231	9	11	19	342	222
Alaska	—	116	233	4,784	2,703	N	0	0	N	N	—	0	2	5	2
California	1,282	2,844	3,599	83,001	84,356	71	39	172	1,421	1,231	4	6	15	196	124
Hawaii	—	118	247	3,323	3,332	N	0	0	N	N	—	0	1	1	1
Oregon§	—	198	631	5,219	5,868	N	0	0	N	N	1	2	10	97	48
Washington	225	377	557	9,979	12,307	N	0	0	N	N	4	1	7	43	47
American Samoa	—	0	0	—	73	N	0	0	N	N	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	3	8	—	103	—	0	0	—	—	—	0	0	—	—
Puerto Rico	182	130	333	4,505	4,090	N	0	0	N	N	N	0	0	N	N
U.S. Virgin Islands	—	8	17	205	408	—	0	0	—	—	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.
U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional. Data for HIV/AIDS, AIDS, and TB, when available, are displayed in Table IV, which appears quarterly.
† Chlamydia refers to genital infections caused by *Chlamydia trachomatis*.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Giardiasis					Gonorrhea					*Haemophilus influenzae*, invasive All ages, all serotypes†				
	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008
		Med	Max				Med	Max				Med	Max		
United States	222	318	641	8,685	9,082	2,857	5,548	7,164	148,919	189,909	14	53	124	1,686	1,780
New England	2	22	64	564	791	81	97	301	2,798	2,916	—	3	16	96	99
Connecticut	—	6	14	141	180	31	46	275	1,290	1,305	—	0	12	37	22
Maine§	2	4	12	103	79	2	2	9	78	52	—	0	2	14	8
Massachusetts	—	9	27	150	337	45	37	112	1,158	1,273	—	1	5	32	48
New Hampshire	—	3	10	69	73	1	2	6	62	66	—	0	2	7	8
Rhode Island§	—	1	8	32	48	—	5	19	184	199	—	0	7	3	6
Vermont§	—	3	15	59	74	2	1	4	26	21	—	0	1	3	7
Mid. Atlantic	38	60	116	1,600	1,710	428	591	1,138	17,436	18,737	6	11	25	364	328
New Jersey	—	7	21	108	280	—	91	127	2,541	3,103	—	2	7	62	54
New York (Upstate)	21	24	81	664	564	89	104	664	2,949	3,483	5	3	20	84	92
New York City	3	16	30	413	460	231	210	577	6,507	5,816	—	2	11	82	58
Pennsylvania	14	16	46	415	406	108	188	267	5,439	6,335	1	4	10	136	124
N. Central	21	44	90	1,166	1,372	576	1,108	1,627	29,196	39,264	—	8	27	251	289
Illinois	—	9	32	207	374	171	356	499	8,875	11,480	—	3	9	88	89
Indiana	N	0	11	N	N	106	149	256	4,315	5,020	—	1	22	74	52
Michigan	6	12	22	320	294	221	290	493	8,512	9,659	—	0	3	15	17
Ohio	14	16	31	434	446	22	251	482	4,960	9,435	—	1	6	65	90
Wisconsin	1	8	19	205	258	56	94	149	2,534	3,670	—	0	4	9	41
W.N. Central	21	25	143	842	929	94	290	393	7,829	9,632	—	3	15	97	130
Iowa	7	6	18	164	166	10	31	53	906	888	—	0	0	—	2
Kansas	—	3	11	67	70	42	36	83	1,149	1,267	—	0	2	11	15
Minnesota	—	0	106	250	259	—	44	67	1,110	1,850	—	0	10	30	37
Missouri	12	7	22	217	255	24	138	184	3,715	4,585	—	1	4	33	50
Nebraska§	2	3	10	93	108	11	22	51	703	813	—	0	4	18	18
North Dakota	—	0	16	8	10	—	2	7	33	68	—	0	4	5	8
South Dakota	—	2	11	43	61	7	8	20	213	161	—	0	0	—	—
S. Atlantic	68	67	108	2,046	1,515	694	1,203	2,042	31,246	47,471	8	12	30	460	459
Delaware	—	0	3	17	26	20	16	37	530	663	—	0	1	3	6
District of Columbia	—	0	5	—	38	—	50	88	1,524	1,474	—	0	2	—	4
Florida	60	35	57	1,093	644	247	415	507	12,059	13,886	4	4	10	160	117
Georgia	—	13	67	515	375	1	251	876	5,377	8,602	2	3	9	100	93
Maryland§	4	5	10	135	140	122	118	212	3,253	3,554	2	1	6	56	72
North Carolina	N	0	0	N	N	—	0	542	—	7,508	—	1	17	48	45
South Carolina§	—	2	6	50	68	184	163	414	4,337	5,600	—	1	5	30	39
Virginia§	2	8	31	210	188	114	152	308	3,864	5,742	—	1	6	42	66
West Virginia	2	1	5	26	36	6	11	26	302	442	—	0	3	21	17
E.S. Central	7	8	22	189	238	270	510	771	14,565	17,092	—	3	9	100	92
Alabama§	2	4	12	85	137	—	148	216	3,465	5,748	—	0	4	24	18
Kentucky	N	0	0	N	N	—	80	153	1,962	2,540	—	0	5	15	6
Mississippi	N	0	0	N	N	129	145	253	4,392	4,035	—	0	1	—	11
Tennessee§	5	4	13	104	101	141	182	301	4,746	4,771	—	2	6	81	60
W.S. Central	7	8	22	208	198	340	895	1,356	24,990	29,688	—	2	22	74	84
Arkansas§	—	2	8	68	65	87	83	134	2,483	2,689	—	0	2	13	11
Louisiana	—	2	10	61	74	—	157	420	4,220	5,568	—	0	1	11	8
Oklahoma	7	3	18	79	59	253	69	614	2,861	2,783	—	1	20	49	59
Texas§	N	0	0	N	N	—	563	725	15,426	18,648	—	0	1	1	6
Mountain	26	27	62	709	756	92	170	313	4,076	6,821	—	5	11	153	202
Arizona	4	3	10	101	64	4	47	82	832	2,025	—	1	7	53	82
Colorado	13	9	27	238	272	12	56	152	1,419	2,071	—	1	6	50	39
Idaho§	7	3	14	83	90	1	2	13	53	94	—	0	2	2	10
Montana§	—	2	10	64	43	—	2	6	45	65	—	0	1	1	2
Nevada§	1	2	8	53	63	52	30	86	983	1,391	—	0	2	12	11
New Mexico§	—	1	8	48	52	21	23	52	581	807	—	0	3	15	30
Utah	1	6	18	91	152	2	5	15	115	303	—	1	2	19	27
Wyoming§	—	1	4	31	20	—	2	8	48	65	—	0	2	1	1
Pacific	32	54	130	1,371	1,573	282	561	775	16,783	18,288	—	2	8	91	97
Alaska	—	2	10	80	43	—	17	40	768	299	—	0	4	20	13
California	23	35	59	936	1,074	251	472	658	14,013	15,047	—	0	3	20	35
Hawaii	—	0	4	8	23	—	13	19	361	345	—	0	3	18	12
Oregon§	—	7	17	166	252	—	20	48	546	714	—	1	3	30	35
Washington	9	7	74	181	181	31	46	81	1,095	1,883	—	0	2	3	2
American Samoa	—	0	0	—	—	—	0	0	—	3	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	1	15	—	45	—	0	0	—	—
Puerto Rico	—	3	15	49	100	3	4	24	156	159	—	0	1	1	—
U.S. Virgin Islands	—	0	0	—	—	—	2	7	63	79	N	0	0	N	N

C.N.M.I.: Commonwealth of Northern Mariana Islands.
U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional.
† Data for *H. influenzae* (age <5 yrs for serotype b, nonserotype b, and unknown serotype) are available in Table I.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Hepatitis (viral, acute), by type† A: Current week	A: Previous 52 weeks Med	A: Previous 52 weeks Max	A: Cum 2009	A: Cum 2008	B: Current week	B: Previous 52 weeks Med	B: Previous 52 weeks Max	B: Cum 2009	B: Cum 2008	Legionellosis: Current week	Legionellosis: Previous 52 weeks Med	Legionellosis: Previous 52 weeks Max	Legionellosis: Cum 2009	Legionellosis: Cum 2008
United States	21	36	89	1,027	1,558	19	68	197	1,768	2,161	43	60	110	1,297	1,486
New England	2	1	8	37	76	—	1	4	17	46	4	2	18	48	89
Connecticut	2	0	4	14	14	—	0	3	7	17	2	1	5	29	16
Maine§	—	0	5	1	4	—	0	2	7	9	—	0	2	2	4
Massachusetts	—	0	2	14	40	—	0	2	1	13	—	0	6	6	36
New Hampshire	—	0	2	3	6	—	0	2	2	3	1	0	4	5	14
Rhode Island§	—	0	2	3	10	—	0	1	—	3	—	0	14	4	12
Vermont§	—	0	1	2	2	—	0	1	—	1	1	0	1	2	5
Mid. Atlantic	1	6	13	122	171	—	6	17	173	274	14	14	55	479	444
New Jersey	—	1	5	21	39	—	1	5	31	79	—	2	14	69	80
New York (Upstate)	—	1	4	29	37	—	1	11	37	36	9	5	24	145	120
New York City	—	2	6	34	57	—	1	4	36	61	—	2	18	91	60
Pennsylvania	1	1	4	38	38	—	2	8	69	98	5	6	24	174	204
E.N. Central	—	5	12	134	213	3	10	21	258	283	8	8	29	208	344
Illinois	—	1	9	51	78	—	2	7	29	105	—	1	13	9	45
Indiana	—	0	3	13	12	—	1	18	70	23	—	1	5	18	32
Michigan	—	1	5	39	77	—	3	8	78	77	—	2	10	47	101
Ohio	—	1	4	26	26	3	1	13	60	65	8	4	17	129	152
Wisconsin	—	0	3	5	20	—	0	4	21	13	—	0	6	5	14
W.N. Central	—	2	16	69	190	—	2	16	80	48	—	2	8	41	70
Iowa	—	0	3	17	88	—	0	3	15	13	—	0	2	12	9
Kansas	—	0	1	7	12	—	0	2	4	6	—	0	1	2	1
Minnesota	—	0	12	13	26	—	0	11	14	4	—	0	3	6	8
Missouri	—	0	3	15	23	—	1	5	36	19	—	1	5	14	37
Nebraska§	—	0	2	15	39	—	0	2	10	5	—	0	1	6	14
North Dakota	—	0	2	—	—	—	0	1	—	1	—	0	3	1	—
South Dakota	—	0	1	2	2	—	0	1	1	—	—	0	1	—	1
S. Atlantic	11	7	15	238	203	7	16	31	552	536	9	9	22	257	245
Delaware	—	0	1	3	5	U	0	1	U	U	—	0	5	8	6
District of Columbia	U	0	0	U	U	U	0	0	U	U	—	0	2	—	8
Florida	5	4	8	112	78	3	8	11	179	187	4	3	7	89	79
Georgia	3	1	4	39	29	3	3	9	88	101	—	1	5	32	20
Maryland§	1	1	4	25	25	—	1	5	43	49	—	2	10	58	68
North Carolina	2	1	7	24	35	—	1	19	128	51	4	0	7	36	12
South Carolina§	—	0	3	20	7	—	1	4	24	43	—	0	1	3	6
Virginia§	—	1	6	15	21	—	2	10	45	62	1	1	5	29	30
West Virginia	—	0	1	—	3	1	1	19	45	43	—	0	3	2	16
E.S. Central	—	1	5	25	46	—	7	11	168	215	1	2	5	55	74
Alabama§	—	0	2	6	7	—	2	7	53	56	—	0	1	6	10
Kentucky	—	0	2	4	16	—	2	7	45	56	—	1	3	23	37
Mississippi	—	0	1	7	4	—	0	3	8	22	—	0	1	1	1
Tennessee§	—	0	4	8	19	—	2	6	62	81	1	1	4	25	26
W.S. Central	2	3	43	98	154	7	11	99	254	438	—	1	21	42	44
Arkansas§	—	0	1	4	4	—	1	5	23	32	—	0	2	3	6
Louisiana	—	0	2	2	8	—	1	4	23	55	—	0	1	2	8
Oklahoma	—	0	6	1	7	2	2	17	52	59	—	0	6	3	3
Texas§	2	3	37	91	135	5	6	78	156	292	—	1	19	34	27
Mountain	1	3	8	92	144	—	3	9	76	115	—	2	8	57	44
Arizona	1	2	6	44	75	—	1	4	28	46	—	0	3	24	12
Colorado	—	0	5	27	26	—	0	3	15	18	—	0	2	6	3
Idaho§	—	0	1	2	14	—	0	2	4	4	—	0	1	—	2
Montana§	—	0	1	4	—	—	0	1	—	—	—	0	2	4	4
Nevada§	—	0	3	6	5	—	0	3	16	27	—	0	2	8	6
New Mexico§	—	0	1	5	14	—	0	2	5	7	—	0	2	—	3
Utah	—	0	2	4	7	—	0	3	5	8	—	0	4	14	14
Wyoming§	—	0	0	—	3	—	0	2	3	5	—	0	1	1	—
Pacific	4	8	18	212	361	2	7	36	190	206	7	3	12	110	132
Alaska	—	0	1	6	3	—	0	2	5	6	—	0	1	3	1
California	4	6	17	162	295	1	5	28	142	143	5	3	9	85	100
Hawaii	—	0	2	4	8	—	0	1	3	4	—	0	1	1	5
Oregon§	—	0	2	12	21	—	0	3	20	28	—	0	2	7	12
Washington	—	1	4	28	34	1	1	8	20	25	2	0	4	14	14
American Samoa	—	0	0	—	—	—	0	0	—	—	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	0	2	15	18	—	0	5	10	31	—	0	0	—	—
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.
U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional.
† Data for acute hepatitis C, viral are available in Table I.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Lyme disease					Malaria					Meningococcal disease, invasive† All groups				
	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008
		Med	Max				Med	Max				Med	Max		
United States	578	539	1,637	10,999	17,202	25	22	46	584	604	8	17	48	571	795
New England	42	66	552	1,080	6,864	—	0	5	15	31	—	0	4	18	23
Connecticut	—	0	136	—	2,562	—	0	4	4	6	—	0	1	2	1
Maine§	33	8	73	300	92	—	0	1	1	1	—	0	1	3	4
Massachusetts	—	11	203	117	3,010	—	0	4	6	15	—	0	3	9	15
New Hampshire	—	15	98	452	962	—	0	1	1	3	—	0	1	1	2
Rhode Island§	—	0	78	54	113	—	0	1	1	2	—	0	1	2	1
Vermont§	9	5	41	157	125	—	0	1	2	4	—	0	1	1	—
Mid. Atlantic	428	238	1,401	7,098	6,844	—	5	17	130	149	1	2	5	62	84
New Jersey	4	37	211	1,817	2,378	—	0	4	—	34	—	0	2	8	11
New York (Upstate)	272	87	1,368	1,951	1,804	—	1	10	27	15	—	0	2	16	22
New York City	—	1	54	7	380	—	3	11	75	77	—	0	2	9	17
Pennsylvania	152	53	407	3,323	2,062	—	1	4	28	23	1	1	4	29	34
N. Central	5	21	149	778	1,355	1	3	6	81	94	1	3	9	109	140
Illinois	—	1	5	30	80	—	1	4	31	48	—	1	6	25	50
Indiana	—	0	6	15	19	—	0	2	11	4	—	0	6	35	17
Michigan	1	1	10	30	23	—	0	3	13	10	—	0	5	17	23
Ohio	2	1	6	20	13	1	1	5	23	20	1	0	3	26	32
Wisconsin	2	17	135	683	1,220	—	0	2	3	12	—	0	1	6	18
W.N. Central	14	5	336	107	257	—	1	7	32	35	—	1	9	42	72
Iowa	—	1	8	43	75	—	0	3	5	3	—	0	1	4	14
Kansas	—	0	4	13	6	—	0	2	3	3	—	0	2	8	3
Minnesota	14	1	326	39	168	—	0	7	13	16	—	0	4	9	21
Missouri	—	0	2	4	2	—	0	2	7	7	—	0	2	14	22
Nebraska§	—	0	3	7	3	—	0	1	3	6	—	0	1	5	10
North Dakota	—	0	10	—	—	—	0	0	—	—	—	0	3	—	1
South Dakota	—	0	1	1	3	—	0	1	1	—	—	0	1	2	1
S. Atlantic	88	65	223	1,782	1,923	11	6	15	193	160	3	2	9	104	112
Delaware	18	12	56	531	504	—	0	1	2	1	—	0	1	2	1
District of Columbia	—	0	5	—	38	—	0	2	—	2	—	0	0	—	—
Florida	1	1	6	23	24	7	1	7	57	27	2	1	4	39	40
Georgia	3	0	6	29	25	—	1	4	38	37	—	0	2	20	14
Maryland§	66	30	163	861	926	1	1	8	48	44	—	0	1	5	12
North Carolina	—	1	7	37	6	3	0	5	21	17	—	0	5	16	10
South Carolina§	—	0	3	14	14	—	0	1	1	6	—	0	1	8	16
Virginia§	—	12	61	223	294	—	1	4	24	25	—	0	2	9	15
West Virginia	—	1	17	64	92	—	0	1	2	1	1	0	2	5	4
E.S. Central	—	0	3	11	29	1	0	3	21	11	—	0	3	19	38
Alabama§	—	0	1	2	8	—	0	3	6	3	—	0	1	5	5
Kentucky	—	0	1	1	4	1	0	2	8	3	—	0	1	4	7
Mississippi	—	0	0	—	1	—	0	0	—	1	—	0	1	1	9
Tennessee§	—	0	3	8	16	—	0	3	7	4	—	0	1	9	17
W.S. Central	—	1	21	18	49	7	1	10	25	29	2	1	12	49	81
Arkansas§	—	0	0	—	—	—	0	1	1	—	—	0	2	5	13
Louisiana	—	0	1	—	1	—	0	1	1	2	—	0	3	9	18
Oklahoma	—	0	2	—	—	1	0	2	2	2	—	0	3	4	10
Texas§	—	1	21	18	48	6	1	10	21	25	2	1	9	31	40
Mountain	1	1	13	21	26	—	0	4	13	16	—	1	4	44	42
Arizona	—	0	2	2	4	—	0	2	3	6	—	0	2	10	5
Colorado	—	0	1	2	2	—	0	3	6	3	—	0	2	13	9
Idaho§	1	0	2	8	4	—	0	1	1	—	—	0	1	5	4
Montana§	—	0	13	1	2	—	0	1	1	—	—	0	2	4	4
Nevada§	—	0	2	7	5	—	0	1	—	4	—	0	2	4	7
New Mexico§	—	0	2	—	6	—	0	1	—	1	—	0	1	3	6
Utah	—	0	1	—	2	—	0	2	2	2	—	0	1	1	5
Wyoming§	—	0	1	1	1	—	0	0	—	—	—	0	2	4	2
Pacific	—	3	13	104	55	5	3	10	74	79	1	4	14	124	203
Alaska	—	0	2	3	3	—	0	1	3	3	—	0	2	2	5
California	—	3	7	91	32	3	2	8	55	59	1	2	8	80	150
Hawaii	N	0	0	N	N	—	0	1	1	2	—	0	1	3	4
Oregon§	—	0	3	7	16	—	0	2	6	4	—	0	7	26	25
Washington	—	0	12	3	4	2	0	3	9	11	—	0	6	13	19
American Samoa	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	2	—	1	—	0	0	—	—
Puerto Rico	N	0	0	N	N	—	0	1	1	2	—	0	1	—	2
U.S. Virgin Islands	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—

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U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional.
† Data for meningococcal disease, invasive caused by serogroups A, C, Y, and W-135; serogroup B; other serogroup; and unknown serogroup are available in Table I.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Pertussis					Rabies, animal					Rocky Mountain spotted fever				
	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008
		Med	Max				Med	Max				Med	Max		
United States	104	260	1,697	6,981	4,704	37	67	138	1,970	2,342	28	30	179	747	1,007
New England	—	15	33	254	548	9	8	15	193	214	—	0	2	4	3
Connecticut	—	0	4	18	33	6	3	10	85	102	—	0	0	—	—
Maine†	—	1	10	63	16	1	1	5	33	31	—	0	2	4	—
Massachusetts	—	8	26	105	432	—	0	0	—	—	—	0	1	—	1
New Hampshire	—	1	7	49	19	1	1	7	23	23	—	0	0	—	1
Rhode Island†	—	0	5	11	41	—	0	3	21	18	—	0	2	—	1
Vermont†	—	0	2	8	7	2	1	4	31	40	—	0	0	—	—
Mid. Atlantic	11	23	64	602	554	13	15	30	347	503	—	1	29	35	74
New Jersey	—	4	12	92	115	—	0	0	—	—	—	0	6	—	51
New York (Upstate)	1	5	41	108	195	13	8	20	229	263	—	0	29	4	10
New York City	—	0	21	48	48	—	0	2	—	11	—	0	4	20	8
Pennsylvania	10	11	33	354	196	—	6	17	118	229	—	0	2	11	7
E.N. Central	32	50	238	1,511	812	4	2	28	103	101	—	2	15	41	74
Illinois	—	14	45	255	126	2	1	20	40	36	—	1	10	26	56
Indiana	—	5	158	188	28	—	0	12	12	3	—	0	3	2	2
Michigan	3	10	21	326	118	1	1	9	31	37	—	0	2	4	2
Ohio	29	18	57	665	475	1	0	7	20	25	—	0	3	9	14
Wisconsin	—	4	10	77	65	N	0	0	N	N	—	0	0	—	—
W.N. Central	21	33	872	1,057	391	6	5	17	151	160	2	4	25	108	250
Iowa	—	5	21	107	64	—	0	5	9	12	—	0	1	2	6
Kansas	—	4	12	118	33	2	1	6	55	44	—	0	1	1	—
Minnesota	—	0	808	165	110	—	0	11	29	26	—	0	0	—	—
Missouri	21	15	51	546	132	4	1	8	27	25	2	3	24	99	233
Nebraska†	—	4	32	92	36	—	0	2	—	23	—	0	4	6	8
North Dakota	—	0	24	15	1	—	0	9	4	16	—	0	1	—	—
South Dakota	—	0	10	14	13	—	0	4	27	14	—	0	0	—	3
S. Atlantic	12	26	71	903	452	1	25	111	893	1,051	10	14	54	315	299
Delaware	—	0	3	8	6	—	0	0	—	—	—	0	3	5	20
District of Columbia	—	0	2	—	1	—	0	0	—	—	—	0	0	—	6
Florida	10	8	32	308	126	—	0	95	100	138	—	0	3	5	5
Georgia	—	3	11	106	48	—	4	71	225	229	2	1	5	24	45
Maryland†	1	3	10	61	58	—	6	13	184	264	—	1	7	26	38
North Carolina	—	0	65	199	77	N	2	4	N	N	8	9	36	203	106
South Carolina†	—	3	16	118	63	—	0	0	—	—	—	0	9	14	17
Virginia†	—	4	24	94	67	—	10	24	315	359	—	2	15	35	56
West Virginia	1	0	2	9	6	1	2	6	69	61	—	0	1	3	6
E.S. Central	6	13	33	429	170	1	2	7	65	104	1	4	19	132	166
Alabama†	4	3	19	164	23	—	0	0	—	—	—	1	6	28	43
Kentucky	1	4	15	126	37	1	1	4	31	24	—	0	0	—	1
Mississippi	—	1	4	30	69	—	0	2	—	2	—	0	1	5	7
Tennessee†	1	3	14	109	41	—	2	6	34	78	1	3	17	99	115
W.S. Central	1	54	389	1,260	647	—	0	7	31	61	15	2	161	94	120
Arkansas†	—	4	38	123	46	—	0	5	23	34	13	0	61	41	13
Louisiana	—	2	7	62	40	—	0	0	—	—	—	0	2	2	3
Oklahoma	1	0	45	18	19	—	0	6	7	25	2	0	96	40	80
Texas†	—	44	304	1,057	542	—	0	1	1	2	—	0	6	11	24
Mountain	12	16	31	476	501	—	2	9	52	38	—	1	3	16	19
Arizona	1	3	8	107	140	N	0	0	N	N	—	0	2	3	6
Colorado	10	5	12	170	65	—	0	0	—	—	—	0	1	—	—
Idaho†	1	1	5	45	21	—	0	2	—	4	—	0	1	—	—
Montana†	—	0	4	11	63	—	0	4	15	3	—	0	2	8	3
Nevada†	—	0	3	7	21	—	0	5	2	3	—	0	2	1	—
New Mexico†	—	1	10	30	28	—	0	2	15	19	—	0	1	1	2
Utah	—	4	19	105	133	—	0	6	3	2	—	0	1	1	3
Wyoming†	—	0	2	1	10	—	0	4	17	7	—	0	2	2	5
Pacific	9	22	98	489	629	3	4	13	135	110	—	0	1	2	2
Alaska	—	4	21	56	63	—	0	4	18	12	N	0	0	N	N
California	—	6	19	128	312	3	4	12	115	94	—	0	1	2	—
Hawaii	—	0	3	17	6	—	0	0	—	—	N	0	0	N	N
Oregon†	—	3	13	131	95	—	0	2	2	4	—	0	1	—	2
Washington	9	6	76	157	153	—	0	0	—	—	—	0	0	—	—
American Samoa	—	0	0	—	—	N	0	0	N	N	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—	N	0	0	N	N
Puerto Rico	—	0	1	1	—	—	1	8	22	37	N	0	0	N	N
U.S. Virgin Islands	—	0	0	—	—	N	0	0	N	N	N	0	0	N	N

C.N.M.I.: Commonwealth of Northern Mariana Islands.
U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional.
† Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Salmonellosis					Shiga toxin-producing *E. coli* (STEC)†					Shigellosis				
	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008
		Med	Max				Med	Max				Med	Max		
United States	605	858	2,323	20,801	23,204	51	80	255	1,881	2,371	178	323	1,268	8,518	10,560
New England	2	25	246	835	1,374	1	3	52	105	146	—	2	24	78	136
Connecticut	—	0	220	220	491	—	0	52	52	47	—	0	19	19	40
Maine§	1	2	8	65	81	—	0	3	10	6	—	0	6	3	10
Massachusetts	—	16	41	263	621	—	1	9	15	65	—	2	9	40	72
New Hampshire	1	3	42	177	85	1	1	3	21	14	—	0	3	5	4
Rhode Island§	—	2	11	78	50	—	0	1	—	7	—	0	1	8	8
Vermont§	—	1	7	32	46	—	0	6	7	7	—	0	2	3	2
Mid. Atlantic	90	89	189	2,320	2,957	6	6	23	123	259	15	55	74	1,593	1,368
New Jersey	—	12	44	192	719	—	1	7	19	85	—	16	35	334	418
New York (Upstate)	66	24	65	659	690	6	3	12	61	74	4	5	23	122	378
New York City	5	19	49	589	667	—	1	5	37	30	1	9	23	233	472
Pennsylvania	19	29	78	880	881	—	0	8	6	70	10	21	57	904	100
E.N. Central	39	97	156	2,656	2,799	5	14	74	344	374	34	79	132	1,649	1,922
Illinois	—	25	50	645	832	—	1	10	62	69	—	14	34	316	572
Indiana	—	11	50	311	321	—	2	13	55	41	—	2	21	51	445
Michigan	5	18	38	521	521	—	3	43	75	74	2	5	24	131	64
Ohio	33	27	52	836	714	4	3	15	69	86	31	40	80	852	639
Wisconsin	1	12	30	343	411	1	3	16	83	104	1	11	42	299	202
W.N. Central	41	52	109	1,468	1,510	15	12	42	342	434	20	14	49	499	515
Iowa	5	7	16	224	247	2	2	17	92	111	—	3	12	45	93
Kansas	6	7	19	213	244	—	1	7	25	24	2	3	11	145	11
Minnesota	14	13	56	349	373	6	2	14	100	83	5	3	24	48	152
Missouri	14	11	48	279	396	6	2	10	61	103	11	3	37	241	155
Nebraska§	2	5	41	228	139	1	2	12	47	82	2	0	3	15	1
North Dakota	—	0	30	32	27	—	0	28	3	1	—	0	9	3	29
South Dakota	—	4	22	143	84	—	0	5	14	30	—	0	1	2	74
S. Atlantic	223	262	457	5,706	5,516	6	13	48	335	388	30	48	85	1,334	1,905
Delaware	2	2	8	48	82	—	0	2	8	8	3	0	8	52	7
District of Columbia	—	0	2	—	41	—	0	1	—	5	—	0	2	—	10
Florida	183	103	180	2,614	2,334	3	2	10	89	82	7	9	26	251	532
Georgia	50	39	96	1,045	1,065	1	1	8	37	46	12	13	30	387	743
Maryland§	2	16	35	374	438	1	2	11	44	57	7	6	13	216	44
North Carolina	1	27	106	742	469	—	2	21	70	40	—	6	27	240	60
South Carolina§	—	16	57	333	473	—	0	3	16	24	—	4	17	71	388
Virginia§	1	19	88	430	493	—	3	27	57	98	1	4	59	112	101
West Virginia	4	4	23	120	121	1	0	3	14	26	—	0	3	5	20
E.S. Central	26	53	140	1,247	1,538	3	5	12	122	145	4	22	58	521	1,193
Alabama§	4	15	49	348	416	1	1	4	29	41	—	4	12	90	281
Kentucky	10	10	18	254	242	—	2	7	40	41	1	2	25	192	202
Mississippi	—	13	57	284	485	—	0	1	6	3	—	1	6	17	252
Tennessee§	12	14	62	361	395	2	2	6	47	60	3	13	48	282	458
W.S. Central	27	87	1,333	1,761	3,058	2	4	139	68	186	41	69	967	1,566	2,317
Arkansas§	13	12	38	299	340	1	1	5	19	28	6	9	21	205	282
Louisiana	—	15	54	330	524	—	0	1	—	5	—	5	20	88	408
Oklahoma	14	14	102	306	338	1	0	82	13	18	4	5	61	149	63
Texas§	—	49	1,204	826	1,856	—	2	55	36	135	31	48	889	1,124	1,564
Mountain	34	57	106	1,511	1,774	4	10	40	244	272	17	27	54	644	448
Arizona	8	19	43	509	505	1	1	4	30	36	10	17	40	479	209
Colorado	18	12	26	359	427	—	3	18	94	80	5	2	11	52	51
Idaho§	4	3	9	92	96	2	2	15	37	51	—	0	2	5	6
Montana§	—	2	7	69	59	—	0	3	14	23	—	0	5	13	3
Nevada§	3	4	10	141	132	—	0	3	16	10	2	1	13	36	119
New Mexico§	—	6	22	143	340	—	1	4	17	30	—	2	12	48	43
Utah	1	7	19	155	172	1	1	7	31	32	—	1	3	11	14
Wyoming§	—	1	6	43	43	—	0	2	5	10	—	0	1	—	3
Pacific	123	125	537	3,297	2,678	9	9	31	198	169	17	29	82	634	756
Alaska	—	2	9	67	27	—	0	1	—	4	—	0	1	3	—
California	96	95	516	2,524	1,928	5	5	15	123	88	15	25	75	512	652
Hawaii	2	5	13	138	145	—	0	2	2	9	—	0	3	16	25
Oregon§	1	7	20	214	243	—	1	7	16	24	—	1	10	20	39
Washington	24	11	85	354	335	4	3	16	57	44	2	3	11	83	40
American Samoa	—	0	1	—	1	—	0	0	—	—	—	0	2	3	1
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	2	—	8	—	0	0	—	—	—	0	1	—	14
Puerto Rico	—	13	40	185	351	—	0	0	—	—	—	0	4	5	12
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—

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U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional.
† Includes *E. coli* O157:H7; Shiga toxin-positive, serogroup non-O157; and Shiga toxin-positive, not serogrouped.
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

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TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Streptococcal diseases, invasive, group A					*Streptococcus pneumoniae*, invasive disease, nondrug resistant† Age <5 years				
	Current week	Previous 52 weeks Med	Previous 52 weeks Max	Cum 2009	Cum 2008	Current week	Previous 52 weeks Med	Previous 52 weeks Max	Cum 2009	Cum 2008
United States	39	102	239	3,532	3,716	9	35	122	1,066	1,127
New England	—	5	28	178	279	—	1	12	26	56
Connecticut	—	0	21	53	78	—	0	11	—	—
Maine§	—	0	2	13	20	—	0	1	2	1
Massachusetts	—	2	10	60	132	—	1	2	15	42
New Hampshire	—	1	4	30	17	—	0	2	7	7
Rhode Island§	—	0	2	9	20	—	0	2	—	6
Vermont§	—	0	3	13	12	—	0	1	2	—
Mid. Atlantic	6	19	42	716	772	3	5	33	162	144
New Jersey	—	2	6	83	142	—	1	4	28	42
New York (Upstate)	2	7	25	241	245	3	2	17	76	65
New York City	—	4	12	139	141	—	0	31	58	37
Pennsylvania	4	6	18	253	244	N	0	2	N	N
E.N. Central	4	17	42	741	733	1	6	18	167	205
Illinois	—	5	12	181	198	—	1	5	19	60
Indiana	—	3	23	184	96	—	0	13	32	21
Michigan	1	3	11	109	125	—	1	5	44	54
Ohio	3	4	13	170	201	—	1	6	48	36
Wisconsin	—	2	10	97	113	1	1	4	24	34
W.N. Central	8	6	37	290	272	—	2	11	91	58
Iowa	—	0	0	—	—	—	0	0	—	—
Kansas	—	1	5	37	32	N	0	1	N	N
Minnesota	7	0	34	125	127	—	0	10	50	13
Missouri	—	2	8	65	64	—	0	4	27	26
Nebraska§	—	1	3	32	25	—	0	1	5	6
North Dakota	—	0	4	11	8	—	0	3	4	5
South Dakota	1	0	3	20	16	—	0	2	5	6
S. Atlantic	15	22	47	774	739	1	6	16	206	217
Delaware	—	0	1	9	6	—	0	0	—	—
District of Columbia	—	0	2	—	8	N	0	0	N	N
Florida	6	6	12	185	167	1	1	6	48	39
Georgia	4	5	13	184	168	1	2	6	60	56
Maryland§	1	3	12	122	134	—	1	4	45	43
North Carolina	3	2	12	79	93	N	0	0	N	N
South Carolina§	—	2	5	49	42	—	1	6	33	37
Virginia§	—	3	9	116	93	—	0	4	18	35
West Virginia	1	1	4	30	28	—	0	3	12	5
E.S. Central	1	4	10	135	125	—	1	6	42	59
Alabama§	N	0	0	N	N	N	0	0	N	N
Kentucky	—	1	5	23	28	N	0	0	N	N
Mississippi	N	0	0	N	N	—	0	2	—	8
Tennessee§	1	3	9	112	97	—	1	6	42	51
W.S. Central	2	9	79	290	316	3	6	46	182	173
Arkansas§	—	0	2	13	7	1	0	4	19	10
Louisiana	—	0	3	9	13	—	0	3	13	10
Oklahoma	—	3	20	98	72	2	1	7	35	47
Texas§	2	6	59	170	224	—	4	34	115	106
Mountain	2	9	22	307	393	1	4	16	158	183
Arizona	1	3	7	102	136	1	2	10	82	85
Colorado	1	3	9	103	100	—	1	4	30	40
Idaho§	—	0	2	4	12	—	0	2	6	3
Montana§	N	0	0	N	N	N	0	0	N	N
Nevada§	—	0	1	5	6	—	0	1	—	3
New Mexico§	—	2	7	52	97	—	0	4	15	25
Utah	—	1	6	40	36	—	0	5	25	26
Wyoming§	—	0	1	1	6	—	0	1	—	1
Pacific	1	4	10	101	86	—	1	6	32	34
Alaska	—	1	4	27	19	—	0	5	27	22
California	N	0	0	N	N	N	0	0	N	N
Hawaii	1	3	8	74	67	—	0	2	5	12
Oregon§	N	0	0	N	N	N	0	0	N	N
Washington	N	0	0	N	N	N	0	0	N	N
American Samoa	—	0	0	—	30	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	N	0	0	N	N	N	0	0	N	N
U.S. Virgin Islands	—	0	0	—	—	N	0	0	N	N

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U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional.
† Includes cases of invasive pneumococcal disease, in children aged <5 years, caused by *S. pneumoniae*, which is susceptible or for which susceptibility testing is not available (NNDSS event code 11717).
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	*Streptococcus pneumoniae*, invasive disease, drug resistant†										Syphilis, primary and secondary				
	All ages					Aged <5 years									
	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008
		Med	Max				Med	Max				Med	Max		
United States	15	61	276	1,950	2,074	2	9	21	298	309	121	262	452	7,237	7,159
New England	—	1	48	32	45	—	0	5	1	6	4	5	15	186	186
Connecticut	—	0	48	—	—	—	0	5	—	—	—	1	5	36	14
Maine§	—	0	2	8	14	—	0	1	—	—	—	0	1	1	8
Massachusetts	—	0	1	1	—	—	0	1	1	—	4	4	11	129	137
New Hampshire	—	0	3	5	—	—	0	0	—	—	—	0	2	11	10
Rhode Island§	—	0	6	7	18	—	0	1	—	4	—	0	5	9	12
Vermont§	—	0	2	11	13	—	0	0	—	2	—	0	2	—	5
Mid. Atlantic	—	4	14	111	215	—	0	3	19	17	46	34	51	1,081	962
New Jersey	—	0	0	—	—	—	0	0	—	—	—	4	13	133	120
New York (Upstate)	—	1	10	49	45	—	0	2	10	6	4	2	8	73	83
New York City	—	0	4	3	89	—	0	2	—	—	40	22	36	677	592
Pennsylvania	—	1	8	59	81	—	0	2	9	11	2	6	12	198	167
E.N. Central	1	12	41	501	453	—	1	8	67	61	13	24	44	583	648
Illinois	N	0	0	N	N	N	0	0	N	N	1	9	19	174	252
Indiana	—	4	32	225	158	—	0	6	28	19	1	2	10	85	78
Michigan	—	0	2	18	15	—	0	1	2	2	10	3	16	141	120
Ohio	1	7	18	258	280	—	1	4	37	40	—	6	15	157	169
Wisconsin	—	0	0	—	—	—	0	0	—	—	1	1	4	26	29
W.N. Central	1	2	161	90	148	—	1	3	20	28	1	6	14	165	236
Iowa	—	0	0	—	—	—	0	0	—	—	—	0	2	12	12
Kansas	—	1	5	38	58	—	0	2	13	3	1	0	3	14	17
Minnesota	—	0	156	—	20	—	0	3	—	20	—	2	6	37	60
Missouri	1	1	5	40	64	—	0	1	5	2	—	3	10	83	140
Nebraska§	—	0	0	—	—	—	0	0	—	—	—	0	3	15	7
North Dakota	—	0	3	10	2	—	0	0	—	—	—	0	1	3	—
South Dakota	—	0	2	2	4	—	0	2	2	3	—	0	1	1	—
S. Atlantic	12	26	53	887	823	2	4	14	132	131	29	63	262	1,781	1,554
Delaware	—	0	2	13	3	—	0	0	—	—	—	0	3	22	10
District of Columbia	N	0	0	N	N	N	0	0	N	N	—	3	9	96	81
Florida	8	15	36	524	453	2	2	13	64	63	—	20	31	563	586
Georgia	4	8	25	268	282	—	1	5	41	40	5	14	227	385	327
Maryland§	—	0	1	4	4	—	0	0	—	1	5	6	16	168	190
North Carolina	N	0	0	N	N	N	0	0	N	N	9	6	19	308	169
South Carolina§	—	0	0	—	—	—	0	0	—	—	2	2	6	61	50
Virginia§	N	0	0	N	N	N	0	0	N	N	8	5	16	174	144
West Virginia	—	2	13	78	81	—	0	3	7	7	—	0	2	4	7
E.S. Central	—	5	25	186	229	—	1	3	27	42	13	22	36	640	606
Alabama§	N	0	0	N	N	N	0	0	N	N	—	6	16	237	257
Kentucky	—	1	5	51	56	—	0	2	7	9	—	1	10	31	49
Mississippi	—	0	3	—	27	—	0	1	—	6	6	3	18	122	81
Tennessee§	—	3	23	135	146	—	0	3	20	25	5	8	19	250	219
W.S. Central	—	1	6	64	73	—	0	3	13	12	9	49	80	1,377	1,199
Arkansas§	—	0	5	37	13	—	0	3	9	3	9	4	35	123	90
Louisiana	—	1	5	27	60	—	0	1	4	9	—	13	40	296	316
Oklahoma	N	0	0	N	N	N	0	0	N	N	—	1	7	33	45
Texas§	—	0	0	—	—	—	0	0	—	—	—	31	46	923	748
Mountain	1	2	7	77	87	—	0	3	16	11	3	8	18	167	379
Arizona	—	0	0	—	—	—	0	0	—	—	1	3	8	22	195
Colorado	—	0	0	—	—	—	0	0	—	—	—	1	5	53	97
Idaho§	N	0	1	N	N	N	0	1	N	N	—	0	2	3	2
Montana§	—	0	1	—	—	—	0	0	—	—	—	0	7	—	—
Nevada§	1	1	4	28	42	—	0	2	6	5	1	1	7	59	45
New Mexico§	—	0	0	—	—	—	0	0	—	—	1	1	5	28	23
Utah	—	1	6	40	44	—	0	3	9	6	—	0	2	—	15
Wyoming§	—	0	2	9	1	—	0	1	1	—	—	0	1	2	2
Pacific	—	0	1	2	1	—	0	1	1	1	3	48	67	1,257	1,389
Alaska	—	0	0	—	—	—	0	0	—	—	—	0	0	—	1
California	N	0	0	N	N	N	0	0	N	N	2	41	59	1,158	1,262
Hawaii	—	0	1	2	1	—	0	1	1	1	—	0	3	17	14
Oregon§	N	0	0	N	N	N	0	0	N	N	—	1	4	24	8
Washington	N	0	0	N	N	N	0	0	N	N	1	2	9	58	104
American Samoa	N	0	0	N	N	N	0	0	N	N	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	0	0	—	—	—	0	0	—	—	2	3	11	120	88
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.
U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional.
† Includes cases of invasive pneumococcal disease caused by drug-resistant *S. pneumoniae* (DRSP) (NNDSS event code 11720).
§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending August 1, 2009, and July 26, 2008 (30th week)*

Reporting area	Varicella (chickenpox)					West Nile virus disease†								
						Neuroinvasive					Nonneuroinvasive§			
	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008	Current week	Previous 52 weeks		Cum 2009	Cum 2008
		Med	Max				Med	Max				Med	Max		
United States	49	490	1,036	13,741	19,683	—	1	75	23	116	—	0	77	11	148
New England	5	11	46	181	1,054	—	0	2	—	—	—	0	1	—	2
Connecticut	—	0	21	—	533	—	0	2	—	—	—	0	1	—	2
Maine¶	—	0	11	—	166	—	0	0	—	—	—	0	0	—	—
Massachusetts	—	0	0	—	—	—	0	1	—	—	—	0	0	—	—
New Hampshire	5	4	11	134	169	—	0	0	—	—	—	0	0	—	—
Rhode Island¶	—	0	1	4	—	—	0	1	—	—	—	0	0	—	—
Vermont¶	—	3	17	43	186	—	0	0	—	—	—	0	0	—	—
Mid. Atlantic	5	38	58	977	1,559	—	0	8	1	3	—	0	4	—	—
New Jersey	N	0	0	N	N	—	0	2	—	—	—	0	1	—	—
New York (Upstate)	N	0	0	N	N	—	0	5	1	1	—	0	2	—	—
New York City	—	0	0	—	—	—	0	2	—	1	—	0	2	—	—
Pennsylvania	5	38	58	977	1,559	—	0	2	—	1	—	0	1	—	—
E.N. Central	9	157	254	4,194	4,795	—	0	8	—	3	—	0	3	—	3
Illinois	—	33	73	835	665	—	0	4	—	1	—	0	2	—	2
Indiana	—	0	35	332	—	—	0	1	—	1	—	0	1	—	—
Michigan	6	48	90	1,282	2,041	—	0	4	—	—	—	0	2	—	—
Ohio	3	42	91	1,373	1,545	—	0	3	—	1	—	0	1	—	—
Wisconsin	—	13	55	372	544	—	0	2	—	—	—	0	1	—	1
W.N. Central	4	22	114	648	780	—	0	6	2	10	—	0	21	3	34
Iowa	N	0	0	N	N	—	0	1	—	2	—	0	1	—	1
Kansas	—	6	22	176	307	—	0	2	—	4	—	0	3	—	6
Minnesota	—	0	0	—	—	—	0	2	1	—	—	0	2	—	5
Missouri	4	10	51	417	445	—	0	3	—	1	—	0	1	—	—
Nebraska¶	N	0	0	N	N	—	0	1	—	1	—	0	6	1	5
North Dakota	—	0	108	55	—	—	0	2	—	—	—	0	11	—	10
South Dakota	—	0	4	—	28	—	0	5	1	2	—	0	6	2	7
S. Atlantic	22	56	146	1,362	3,161	—	0	4	—	3	—	0	4	—	1
Delaware	—	0	4	8	26	—	0	0	—	—	—	0	1	—	—
District of Columbia	—	0	3	—	18	—	0	2	—	—	—	0	1	—	—
Florida	11	28	67	897	1,128	—	0	2	—	—	—	0	0	—	—
Georgia	N	0	0	N	N	—	0	1	—	—	—	0	1	—	1
Maryland¶	N	0	0	N	N	—	0	2	—	1	—	0	3	—	—
North Carolina	N	0	0	N	N	—	0	1	—	1	—	0	1	—	—
South Carolina¶	—	4	54	154	570	—	0	0	—	—	—	0	1	—	—
Virginia¶	—	3	119	28	968	—	0	0	—	—	—	0	1	—	—
West Virginia	11	9	32	275	451	—	0	0	—	1	—	0	0	—	—
E.S. Central	—	14	28	372	827	—	0	7	6	10	—	0	7	—	20
Alabama¶	—	14	28	370	817	—	0	3	—	—	—	0	2	—	1
Kentucky	N	0	0	N	N	—	0	1	—	—	—	0	0	—	—
Mississippi	—	0	1	2	10	—	0	4	5	6	—	0	7	—	15
Tennessee¶	N	0	0	N	N	—	0	2	1	4	—	0	3	—	4
W.S. Central	—	122	747	4,988	5,992	—	0	8	3	17	—	0	6	—	21
Arkansas¶	—	4	47	96	466	—	0	1	1	4	—	0	1	—	1
Louisiana	—	1	6	55	52	—	0	3	—	2	—	0	5	—	8
Oklahoma	N	0	0	N	N	—	0	1	—	2	—	0	1	—	4
Texas¶	—	115	721	4,837	5,474	—	0	6	2	9	—	0	4	—	10
Mountain	4	33	83	914	1,435	—	0	12	8	11	—	0	22	6	39
Arizona	—	0	0	—	—	—	0	10	4	5	—	0	8	1	1
Colorado	4	13	44	345	573	—	0	4	—	2	—	0	10	2	16
Idaho¶	N	0	0	N	N	—	0	1	1	2	—	0	6	—	12
Montana¶	—	2	20	105	216	—	0	1	1	—	—	0	2	—	—
Nevada¶	N	0	0	N	N	—	0	2	2	2	—	0	3	3	2
New Mexico¶	—	3	20	134	152	—	0	1	—	—	—	0	1	—	—
Utah	—	12	31	330	484	—	0	2	—	—	—	0	8	—	6
Wyoming¶	—	0	1	—	10	—	0	0	—	—	—	0	2	—	2
Pacific	—	3	12	105	80	—	0	38	3	59	—	0	23	2	28
Alaska	—	2	11	83	39	—	0	0	—	—	—	0	0	—	—
California	—	0	0	—	—	—	0	37	3	59	—	0	20	2	26
Hawaii	—	1	4	22	41	—	0	0	—	—	—	0	0	—	—
Oregon¶	N	0	0	N	N	—	0	2	—	—	—	0	4	—	2
Washington	N	0	0	N	N	—	0	1	—	—	—	0	1	—	—
American Samoa	N	0	0	N	N	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guam	—	1	3	—	55	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	9	23	274	380	—	0	0	—	—	—	0	0	—	—
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.
U: Unavailable. —: No reported cases. N: Not reportable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.
* Incidence data for reporting year 2008 and 2009 are provisional. Data for HIV/AIDS, AIDS, and TB, when available, are displayed in Table IV, which appears quarterly.
† Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (ArboNET Surveillance). Data for California serogroup, eastern equine, Powassan, St. Louis, and western equine diseases are available in Table I.
§ Not reportable in all states. Data from states where the condition is not reportable are excluded from this table, except starting in 2007 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at http://www.cdc.gov/epo/dphsi/phs/infdis.htm.
¶ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

TABLE III. Deaths in 122 U.S. cities,* week ending August 1, 2009 (30th week)

Reporting area	All causes, by age (years)						P&I† Total
	All Ages	≥65	45–64	25–44	1–24	<1	
New England	435	299	91	26	10	9	34
Boston, MA	123	69	34	10	5	5	14
Bridgeport, CT	31	24	5	1	1	—	—
Cambridge, MA	19	14	3	1	—	1	4
Fall River, MA	22	18	4	—	—	—	2
Hartford, CT	51	34	13	1	3	—	4
Lowell, MA	15	14	1	—	—	—	1
Lynn, MA	6	4	1	1	—	—	—
New Bedford, MA	25	18	4	3	—	—	1
New Haven, CT	U	U	U	U	U	U	U
Providence, RI	57	44	10	3	—	—	2
Somerville, MA	2	2	—	—	—	—	—
Springfield, MA	31	22	5	1	1	2	1
Waterbury, CT	16	12	2	2	—	—	2
Worcester, MA	37	24	9	3	—	1	3
t. Atlantic	2,214	1,446	551	123	53	41	107
pany, NY	53	36	14	2	—	1	3
Allentown, PA	24	18	5	—	1	—	—
Buffalo, NY	73	46	21	3	1	2	7
Camden, NJ	36	18	11	2	4	1	—
Elizabeth, NJ	13	10	2	1	—	—	1
Erie, PA	41	23	11	5	1	1	1
Jersey City, NJ	9	5	4	—	—	—	2
New York City, NY	1,025	679	249	55	24	18	37
Newark, NJ	27	19	6	1	—	1	1
Paterson, NJ	10	4	6	—	—	—	1
Philadelphia, PA	584	397	162	36	16	13	28
Pittsburgh, PA§	26	21	3	2	—	—	3
Reading, PA	25	17	6	1	1	—	3
Rochester, NY	109	78	15	6	2	1	5
Schenectady, NY	17	13	2	2	—	—	1
Scranton, PA	22	15	3	2	1	1	1
Syracuse, NY	87	66	15	2	2	2	8
Trenton, NJ	22	12	9	1	—	—	2
Utica, NY	18	11	4	1	—	—	1
Yonkers, NY	22	18	3	1	—	—	2
E.N. Central	1,840	1,191	441	94	56	55	104
Akron, OH	36	26	8	—	—	2	—
Canton, OH	24	21	3	—	—	—	1
Chicago, IL	328	171	104	20	15	15	33
Cincinnati, OH	71	44	19	2	1	5	9
Cleveland, OH	221	159	47	6	4	5	3
Columbus, OH	175	127	32	11	2	3	13
Dayton, OH	105	66	30	6	3	—	2
Detroit, MI	168	84	47	14	14	7	7
Evansville, IN	35	28	5	1	1	—	2
Fort Wayne, IN	70	54	10	3	1	2	—
Gary, IN	13	11	—	—	1	1	—
Grand Rapids, MI	48	38	8	2	—	—	—
Indianapolis, IN	186	102	57	12	5	10	15
Lansing, MI	37	29	5	3	—	—	3
Milwaukee, WI	72	46	17	4	3	2	2
Peoria, IL	41	32	8	—	1	—	4
Rockford, IL	43	32	7	2	2	—	2
South Bend, IN	47	35	8	3	1	—	3
Toledo, OH	75	50	18	3	1	3	3
Youngstown, OH	47	36	8	2	1	—	2
W.N. Central	488	304	124	33	16	11	37
Des Moines, IA	U	U	U	U	U	U	U
Duluth, MN	34	25	8	1	—	—	—
Kansas City, KS	14	7	6	1	—	—	—
Kansas City, MO	98	61	29	3	2	3	6
Lincoln, NE	44	34	6	2	2	—	3
Minneapolis, MN	53	32	14	3	2	2	7
Omaha, NE	90	59	22	4	1	4	7
St. Louis, MO	37	18	13	5	1	—	5
St. Paul, MN	59	33	14	7	4	1	9
Wichita, KS	59	36	12	7	4	1	—
S. Atlantic	1,133	650	321	93	35	34	71
Atlanta, GA	112	47	42	10	4	9	5
Baltimore, MD	146	74	47	15	3	7	12
Charlotte, NC	130	84	36	8	1	1	10
Jacksonville, FL	171	103	46	13	5	4	7
Miami, FL	90	52	23	9	4	2	7
Norfolk, VA	44	24	11	4	3	2	2
Richmond, VA	59	26	23	5	3	2	5
Savannah, GA	48	29	14	1	1	3	4
St. Petersburg, FL	58	34	17	4	2	1	6
Tampa, FL	206	136	42	20	5	3	11
Washington, D.C.	60	36	18	2	4	—	1
Wilmington, DE	9	5	2	2	—	—	1
E.S. Central	647	518	232	61	16	20	59
Birmingham, AL	182	116	43	14	3	6	9
Chattanooga, TN	77	50	21	5	—	1	3
Knoxville, TN	76	48	19	6	—	3	10
Lexington, KY	48	27	19	2	—	—	5
Memphis, TN	162	94	42	15	5	6	17
Mobile, AL	116	68	38	7	3	—	4
Montgomery, AL	53	29	18	6	—	—	3
Nashville, TN	133	86	32	6	5	4	8
W.S. Central	1,447	883	381	97	42	44	57
Austin, TX	80	49	19	6	3	3	4
Baton Rouge, LA	67	42	15	7	—	3	—
Corpus Christi, TX	63	46	13	—	2	2	2
Dallas, TX	182	99	53	15	8	7	9
El Paso, TX	95	53	28	7	3	4	2
Fort Worth, TX	U	U	U	U	U	U	U
Houston, TX	418	246	107	28	20	17	12
Little Rock, AR	74	46	22	3	2	1	3
New Orleans, LA	U	U	U	U	U	U	U
San Antonio, TX	237	148	68	16	1	4	10
Shreveport, LA	79	50	23	2	2	2	6
Tulsa, OK	152	104	33	13	1	1	9
Mountain	1,051	704	213	80	31	23	47
Albuquerque, NM	112	75	25	7	3	2	4
Boise, ID	52	39	5	6	1	1	3
Colorado Springs, CO	60	41	9	5	3	2	1
Denver, CO	68	42	17	7	1	1	5
Las Vegas, NV	263	184	62	15	1	1	14
Ogden, UT	58	39	12	4	—	1	5
Phoenix, AZ	171	98	37	16	11	9	5
Pueblo, CO	25	18	6	—	1	—	1
Salt Lake City, UT	136	85	28	12	7	4	7
Tucson, AZ	108	83	12	8	3	2	2
Pacific	1,557	990	381	118	39	29	135
Berkeley, CA	12	8	3	1	—	—	3
Fresno, CA	130	87	30	7	3	3	11
Glendale, CA	29	25	2	2	—	—	6
Honolulu, HI	76	51	17	5	1	2	5
Long Beach, CA	45	24	15	3	3	—	6
Los Angeles, CA	259	156	62	26	8	7	33
Pasadena, CA	18	12	2	—	3	1	1
Portland, OR	112	80	25	6	—	1	5
Sacramento, CA	203	137	44	13	7	2	18
San Diego, CA	130	86	35	6	1	2	8
San Francisco, CA	106	58	32	12	1	3	14
San Jose, CA	165	109	39	8	5	4	13
Santa Cruz, CA	32	20	6	5	1	—	3
Seattle, WA	113	58	35	14	3	3	5
Spokane, WA	49	29	15	3	1	1	2
Tacoma, WA	78	50	19	7	2	—	2
Total¶	11,012	6,985	2,735	725	298	266	651

U: Unavailable. —:No reported cases.

* Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of >100,000. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

† Pneumonia and influenza.

§ Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶ Total includes unknown ages.

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☆ U.S. Government Printing Office: 2009-523-019/41193 Region IV ISSN: 0149-2195

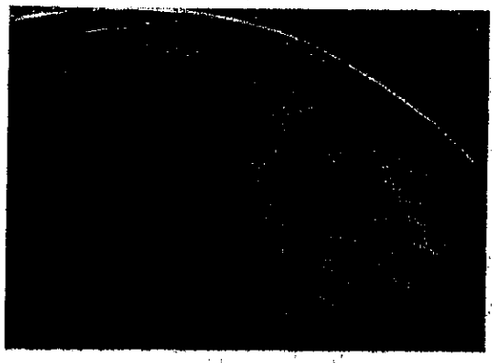

Fig. 2. Parental colony and twin colony induced in diploid 1. The parental is dark green while the twin colony is partly chartreuse and partly lacking alkaline phosphatase (these cells form a small dark brown area in the centre of the chartreuse colony due to their slower growth rate).

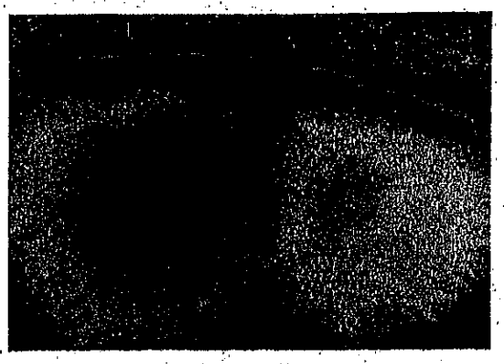

Fig. 3. Parental colony and twin colony induced in a *bps-chs* repulsion diploid. The parental colony is dark green while the twin colony is half chartreuse (light green) and half beige (*bps* is located proximal to *ni*, on the same chromosome arm[8])—probably allelic to fawn (Clutterbuck, personal communication).

violet irradiation of yeast[5] and ustilago[6], this effect of ultra-violet light on recombination may be a general phenomenon. These diploids provide a simple visual screening system for agents that may induce crossing-over.

This work was supported by a grant from the National Research Council of Canada. The *ni, palB* strain was kindly supplied by Dr G. Dorn.

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Received July 10, 1967.

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Growth of Cell-strains and Primary Cells on Micro-carriers in Homogeneous Culture

THERE are obvious advantages in culturing tissue cells in suspension instead of in monolayers and in using the suspension as a substrate for virus multiplication. Culture conditions for cell growth and virus multiplication can be studied and large scale production can be achieved more easily. The growth of cells from cell-lines, in suspension culture, as separate units or small clumps, has already been demonstrated. In contrast, nobody has yet succeeded in growing diploid and primary cells by this method[1,2], for the cells have become aneuploid or did not grow at all in suspension culture[3].

Our own experiments with human diploid cells and with primary cells have confirmed earlier findings. The essential difference between suspension and monolayer culture seems to be in the attachment of the cells to a solid surface in the latter method. If the wall of the monolayer vessel could be replaced by microscopic particles to serve as a surface for attachment, the advantages of homogeneous culture could be afforded to diploid cells. The suspended particles with cells need be no larger than the small clumps found in suspension culture of some cell-lines.

When looking for a suitable material to function as what we have termed "micro-carriers", we had to discount glass beads because these are too heavy to be kept in suspension. Dextran particles of the 'Sephadex' type do not have this disadvantage, but cells appeared to adhere and grow on these only if positively charged 'DEAE-Sephadex' is used. This was not unexpected, for tissue cells are negatively charged[4].

Fully covered micro-carriers were obtained. About 20 h after inoculation the cells adhered to the 'Sephadex', a few on each particle, and gradually a confluent monolayer was formed. When the 'Sephadex' particles were fully covered some particles were joined together by a bridge of cells (Fig. 1).

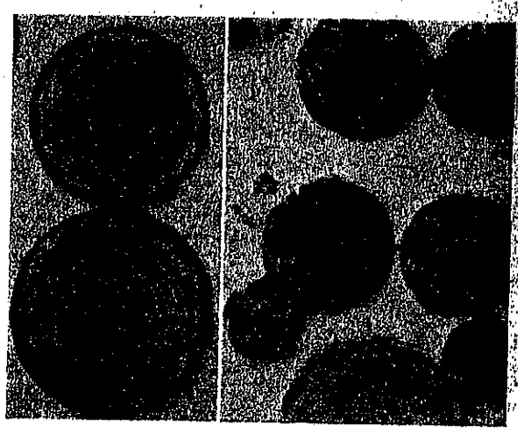

Fig. 1. Adhesion and growth of H cells on 'DEAE-Sephadex *A*-50' (× 60). Left, after ± 24 h; and right, after ± 96 h.

By this method we successfully cultivated different cell-lines and also human diploid cells and primary rabbit kidney cells. Most experiments were carried out using fibroblast-like cells derived from embryonic rabbit skin (*H* cells) and diploid human embryonic lung cells (*HEL* cells). Neither grew in normal homogeneous culture.

The medium used for monolayer and homogeneous culture was Eagle's minimum essential medium[5], supplemented with 10 per cent newborn calf serum, 0·12 per cent 'Methocel' (15 c.p.s., Dow) and streptomycin and neomycin. To the medium for homogeneous culture 1 g/l. of sterile 'DEAE-Sephadex *A*-50' was added as a micro-carrier for the cells. Before being sterilized the 'Sephadex' was washed according to the standard washing procedure and equilibrated with phosphate buffered saline.

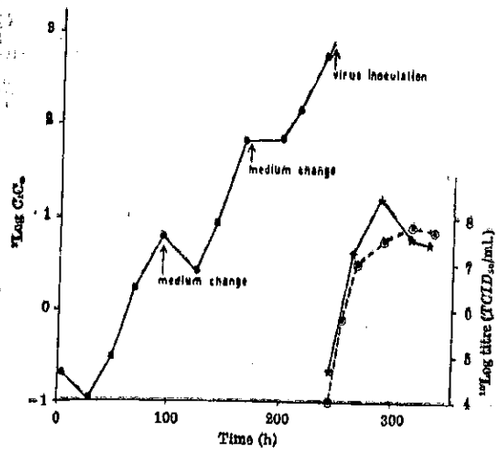

Fig. 2. Growth of *HEL* cells on micro-carriers in homogeneous culture and polio virus multiplication in these cells in comparison with that in cells from monolayers. The culture volume was at the start 1·5 l. and after changes in the medium 3·0 l.; the speed of the stirrer was 100 r.p.m., and the arbitrary C_0 is 1×10^5 cells/ml. ●—●, Cell concentration (calculated on 1·5 l. volume); ×—×, virus titre homogeneous culture; ○ - - ○, virus titre monolayer culture.

The Bilthoven unit[4] was used for homogeneous culture. Culture conditions were the same as for the suspension cultures of cells from cell-lines, except that the speed of stirring was reduced. The homogeneous cultures were inoculated with trypsinized cells from monolayer cultures at an initial count of $50–100 \times 10^3$ cells/ml. The cell concentration was determined by counting nuclei in a Fuchs–Rosenthal counting chamber after staining with 0·5 per cent crystal violet in 0·1 molar citric acid. In this way the nuclei were freed from the 'Sephadex'.

The maximum growth rate of the cells in the micro-carrier cultures was about the same as in monolayer cultures, but higher cell concentrations could be achieved by changing the medium. This was done by siphoning off the culture fluid after allowing the 'Sephadex' to settle. Fig. 2 also shows that as far as virus multiplication is concerned there was no essential difference between monolayer and micro-carrier culture. The optimal conditions for culturing cells and viruses by this culture method have still to be found.

I thank Dr A. C. Hekker and P. A. van Hemert for their help and advice. I also thank Dr H. H. Vink for carrying out photographic work.

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Received June 26; revised August 4, 1967.

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Haematopoietic Stem Cells: Evidence for Competing Proliferative Demands

A HAEMATOPOIETIC stem cell must be able both to replicate itself and to differentiate into a formed blood element. The presence of a pool of multipotent, functionally important, common stem cells for the various haematopoietic formed elements has not as yet been established. There is evidence to suggest that there is a population of bone marrow cells which when transplanted into irradiated recipients is capable of differentiating into more than one mature cellular form[1–4]. We are interested in whether this class of cells is functionally important, and specifically whether demand for one blood element limits the ability of the animal to produce other cell types. Such a relationship would suggest competitive demands on a common stem cell pool. There is some evidence to suggest that this may be the case. Harris *et al.*[4] have shown that after large acute haemorrhage the number of granulocyte precursors in the guinea-pig bone marrow is reduced. The present experiment demonstrates that an increased demand for red blood cell production reduces the ability of transplanted syngeneic bone marrow to make granulocytic progeny.

A technique for assaying the granulocytic progeny of transplanted bone marrow has recently been developed[5]. In this technique, syngeneic bone marrow is injected into lethally irradiated mice. The bone marrow is allowed to proliferate for 7–9 days in the recipient animal and its granulocytic progeny is then determined by measuring the peripheral granulocyte response to endotoxin. This response has been shown to be a measure of the marrow granulocyte reserve[6]. The greatest response to endotoxin is proportional to the number of marrow cells injected 7 days earlier[5] and can be used to assay the proliferative capacity of such injected cells to produce mature granulocytic progeny.

In this experiment, male *C3H/HeJ* mice 8–12 weeks old were used. They were divided into two groups, and one group was bled of 0·6 ml. from the orbital sinus 3 days and again 1 day before irradiation. Both groups of animals then received 700 r. whole body irradiation delivered with a 250 kV X-ray machine (*HVL* 1·65 mm^3, *FSD* 50 cm) at 119 r./min. Each group was then subdivided and graded doses of syngeneic normal bone marrow were injected intravenously. One week later the animals were intravenously injected with 10^{-4} µg of 'Pyrexal', a purified lipopolysaccharide of *Salmonella abortus equi*, and the white blood cell counts recorded immediately before, and at 2, 4 and 6 h after, endotoxin. This response is essentially a granulocyte response and thus white blood counts are used, which obviates the need for differential counts[6]. Haematocrits were measured before radiation and again on the day before administration of endotoxin. All blood samples were taken and injections were made by way of the mouse tail vein.

Table 1

Group	Haematocrit before X-ray	Haematocrit on day 6, 1 day before endotoxin
1 (700 r., no bleeding)		
(*a*) 0 bone marrow cells	46·0 (±1·1)	37·2 (±1·1)
(*b*) $1·0 \times 10^6$ bone marrow cells	45·8 (±1·2)	41·2 (±1·6)
(*c*) $2·0 \times 10^6$ bone marrow cells	44·0 (±0·9)	37·6 (±0·7)
(*d*) $4·0 \times 10^6$ bone marrow cells	43·3 (±0·6)	40·2 (±1·0)
2 (700 r., bled twice of 0·6 ml.)		
(*a*) 0 bone marrow cells	27·4 (±0·6)	25·4 (±1·9)
(*b*) $1·0 \times 10^6$ bone marrow cells	24·6 (±1·2)	21·2 (±0·7)
(*c*) $2·0 \times 10^6$ bone marrow cells	25·6 (±1·3)	23·4 (±0·9)
(*d*) $4·0 \times 10^6$ bone marrow cells	25·6 (±0·6)	24·4 (±0·8)

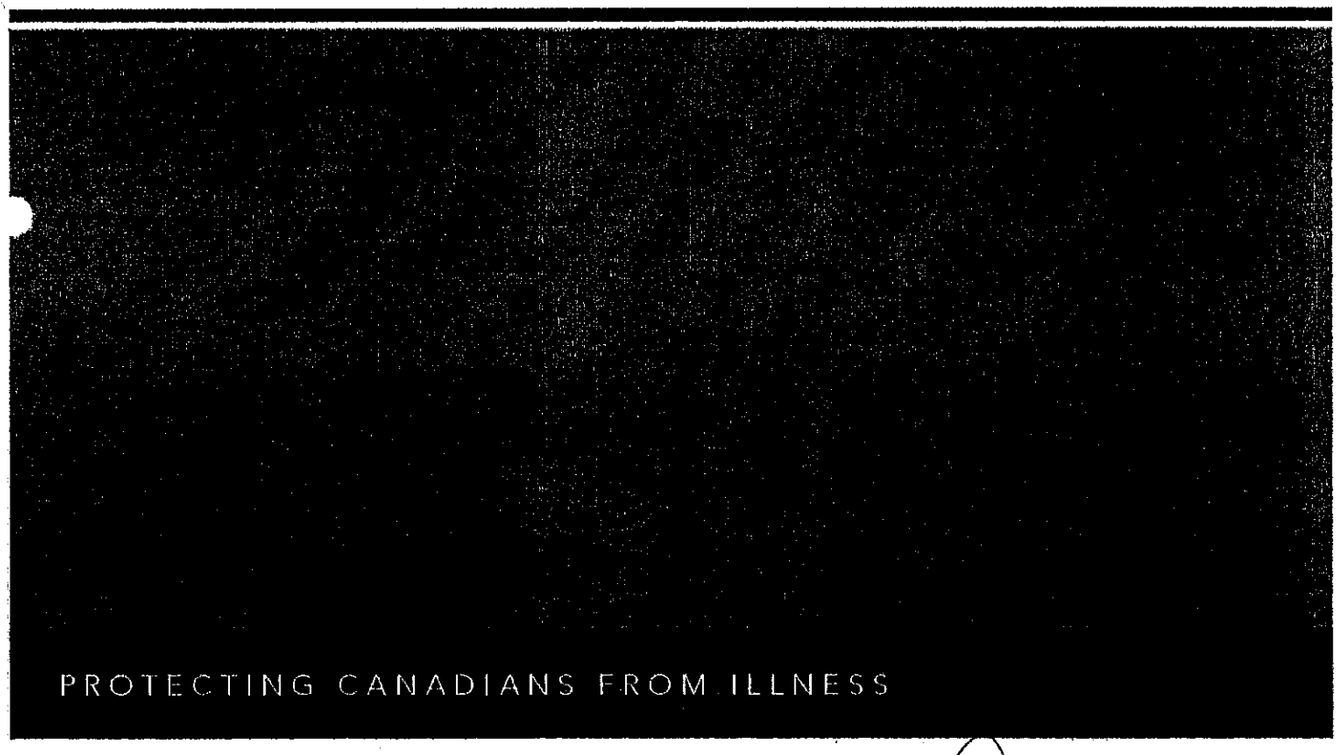
Each subgroup contains five animals. The number in parenthesis is the stand.r.l error of the mean.

Table 1 shows the groups used and their haematocrits before injection of bone marrow and on day 6 (the day before endotoxin). Fig. 1 shows the maximum white blood cell responses to endotoxin in both groups plotted against the number of bone marrow cells injected 7 days before. The anaemic recipient animals are less able to respond to endotoxin, which indicates that the same number of transplanted marrow cells give rise to fewer granulocytic progeny in the bled recipients.

We attempted to confirm this in a somewhat different manner. In this second type of experiment, erythropoietin derived from sheep treated with phenylhydrazine (supplied by Connaught Medical Research Laboratories,

CANADIAN IMMUNIZATION GUIDE

PART 1



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Également disponible en français sous le titre :

Guide canadien d'immunisation Partie 1

Publication date: April 2014

Cat.: HP40-3/2014E-PDF
ISBN: 978-1-100-23215-7
Pub.: 130578

PART 1
TABLE OF CONTENTS

PART 1

IMMUNIZATION IN CANADA

This chapter provides the objectives of immunization programs in Canada, an overview of immunization policy and program development, and a description of national advisory bodies on immunization.

OBJECTIVES OF IMMUNIZATION

The objectives of immunization programs are to prevent, control, eliminate or eradicate vaccine-preventable diseases (depending on the epidemiology of the diseases, efficacy of available vaccines, and the ability to reach the target populations). Over the past 50 years, in countries with effective immunization programs, important reductions have been achieved in the incidence of vaccine-preventable diseases. Globally, smallpox has been eradicated and efforts are currently directed at the eradication of polio and elimination of measles. Universally recommended vaccination has been hailed as one of the ten greatest public health achievements of the 20th century and is credited with saving more lives than any other health intervention. Moreover, immunization programs, particularly those with standardized immunization schedules, have proven to be highly cost-effective and, in some cases, cost-saving. Refer to the Benefits of Immunization in Part 1 for more information.

As the incidence of vaccine-preventable diseases is decreasing, the attention of some of the public may shift from the disease and its sequelae to potential adverse events following immunization. This shift in focus has resulted, in some cases, in individuals questioning the need for immunization, leading to lower vaccine coverage and resurgence of some diseases. In Canada, the resurgence of measles, mumps, and pertussis in particular in 2010 to 2013 has highlighted the need for the continuation of immunization programs that achieve high immunization coverage.

The low incidence of vaccine-preventable diseases and their associated morbidity and mortality in Canada is a result of successful vaccination programs. In addition to achieving high rates of immunization coverage, for Canadians to receive the greatest possible benefit from immunization, it is essential that vaccines and vaccination programs continue to be monitored and evaluated on an ongoing basis. This will ensure the direct protection of vaccinated individuals, as well as help indirectly to protect vulnerable individuals who may not respond to vaccines or for whom vaccines may be contraindicated (e.g., measles vaccine in an immunocompromised child).

IMMUNIZATION POLICY AND PROGRAM DEVELOPMENT

In Canada, the responsibility for health care, including immunization, is shared by the federal, provincial and territorial (F/P/T) governments. While each jurisdiction has a distinct mandate and unique operating context, their activities are complementary and collaborative.

THE NATIONAL IMMUNIZATION STRATEGY

Since its adoption in 2003, the National Immunization Strategy (NIS) (http://www.phac-aspc.gc.ca/im/nis-snl/) has been a platform for collaboration between F/P/T stakeholders and has facilitated the development of consistent and equitable approaches to immunization planning, vaccine purchasing,

program delivery and education. The NIS provides mechanisms for enhanced collaboration on issues such as vaccine safety, surveillance, immunization registries, research, vaccine supply and immunization program planning, and enables bridging of policy recommendations made at the national level with immunization program development at the provincial/territorial (P/T) level. In 2011, F/P/T governments initiated a review of the NIS with a goal to further strengthen the collaboration and coordination of immunization efforts in Canada.

THE NATIONAL IMMUNIZATION

Through their health departments, advisory bodies and other public authorities, all F/P/T governments engage in different aspects of immunization program planning, delivery and evaluation. Some of these stakeholders are described below.

The Federal Government

The Public Health Agency of Canada (PHAC) is the principal federal government agency responsible for immunization. Its mandate is to provide leadership, advice and support for timely vaccine recommendations and sustainable immunization programs. PHAC is supported by two advisory committees that provide the federal government with medical and scientific advice for the prevention and management of vaccine preventable diseases in Canada:

- National Advisory Committee on Immunization *(NACI)*
  NACI is a scientific advisory committee with members who are recognized experts in the fields of paediatrics, infectious diseases, immunology, medical microbiology, internal medicine and public health. NACI makes expert and evidence-based recommendations regarding the use of vaccines authorized for use in Canada, advises on the need for national vaccination strategies, and makes recommendations for vaccine development research. NACI is also responsible for producing the *Canadian Immunization Guide*. Created in 1964 and originally reporting to the predecessor of Health Canada, the Department of National Health and Welfare, and later to Health Canada, NACI has reported to PHAC since the agency was created in 2004. More information about the national immunization guideline development process can be found below. (http://www.phac-aspc.gc.ca/naci-ccni/index-eng.php)

- Committee to Advise on Tropical Medicine and Travel *(CATMAT)*
  CATMAT makes evidence-based recommendations relating to tropical infectious diseases and health risks associated with international travel, suggests mechanisms for the widespread dissemination and utilization of such information, and advises on priorities for epidemiological research and other activities related to travel or tropical medicine. Some CATMAT recommendations for the use of authorized immunization products for travellers may extend beyond recommendations developed by NACI for Canada due to differences in disease prevalence internationally. CATMAT recommendations are available on the PHAC website (http://www.phac-aspc.gc.ca/tmp-pmv/catmat-ccmtmv/index-eng.php).

Health Canada (HC) is the federal authority responsible for regulation of vaccines for human use under the Food and Drugs Act (http://laws-lois.justice.gc.ca/eng/acts/F-27/index.html) and Food and Drugs Regulations (http://laws-lois.justice.gc.ca/eng/regulations/C.R.C.%2C_c._870/). HC reviews the clinical and manufacturing information of vaccine submissions and authorizes the sale of vaccines in Canada. Together with PHAC, it is responsible for monitoring vaccine safety and effectiveness throughout the life cycle of the product. HC also promotes immunization initiatives and ensures that First Nations, Inuit and Métis receive appropriate immunization services.

Other federal departments and bodies with immunization-related interests and activities (i.e. research, policy and operational considerations) include Citizenship and Immigration Canada, Correctional Service of Canada, Department of National Defence, Canada Border Services Agency, Public Works and Governments Services Canada, Department of Foreign Affairs and International Trade, Statistics Canada, Veterans Affairs Canada, Aboriginal Affairs and Northern Development Canada, Patented

Medicine Prices Review Board, Canadian Institutes of Health Research, National Research Council and Industry Canada.

Previously, the federal government has also supported the introduction of new immunization programs by provinces and territories.

Provincial and Territorial Governments

The P/T governments are responsible constitutionally for the administration and delivery of health care services, including immunization-related programs. Immunization policies and schedules are developed by P/T governments and their expert immunization advisory committees based on jurisdiction-specific needs, other vaccine recommendations (i.e. NACI), program resource availability and constraints, and identified priorities. In addition, P/T governments are responsible for: purchasing vaccines for publicly funded programs; the design and maintenance of immunization registries; disease and safety surveillance and program monitoring; and public and professional education and engagement (e.g., immunization campaigns, information services, and professional training, education and guidance). Each P/T has its own process and mechanism for setting immunization targets and planning, designing, implementing and evaluating immunization programs. Typically, P/T governments initiate their vaccine and immunization program assessment processes following, or in tandem with NACI and, where applicable, the Canadian Immunization Committee (CIC). (http://www.phac-aspc.gc.ca/naci-ccni/)

The Pan-Canadian Public Health Network

The Pan-Canadian Public Health Network (PHN) (http://www.phn-rsp.ca/index-eng.php) was established by Canada's F/P/T Ministers of Health in 2005 as a key intergovernmental mechanism to:

- strengthen and enhance Canada's public health capacity,
- enable F/P/T governments to enhance day-to-day business of public health, and
- anticipate, prepare for, and respond to public health events and threats.

The work of the PHN is governed by a 17-member Pan-Canadian Public Health Network Council (PHNC) composed of senior F/P/T government officials responsible for public health, including the Chief Public Health Officer of Canada (http://www.phac-aspc.gc.ca/cpho-acsp/). The PHNC is accountable to the Conference of F/P/T Deputy Ministers of Health. The F/P/T Deputy Ministers of Health provide direction and approve common public health policy and program priorities including the implementation of vaccine recommendations proposed by PHNC.

The Canadian Immunization Committee

The Canadian Immunization Committee (CIC) consists of F/P/T government representatives who review and provide recommendations on immunization program planning, including cost-effectiveness assessment. These recommendations are provided to the F/P/T Deputy Ministers of Health through the PHN.

Council of Chief Medical Officers of Health

The Council of Chief Medical Officers of Health (CCMOH) membership includes the Chief Medical Officer of Health from each P/T, the most senior public health physician of the First Nations and Inuit Health Branch of HC (http://www.hc-sc.gc.ca/fniah-spnia/index-eng.php), and the Chief Public Health Officer of Canada. The CCMOH provides guidance and recommendations on technical issues relating to PHN. The CCMOH reports to the Conference of F/P/T Deputy Ministers of Health through PHNC.

NACI RECOMMENDATION DEVELOPMENT

In developing recommendations, NACI relies on working groups to define issues and to establish the scope and requirements for the evidence review. The working groups consist of NACI members, liaison members and other vaccine experts who review the scientific literature on the burden of disease (epidemiology, morbidity, mortality) in the general population and specific risk groups; vaccine characteristics (e.g., safety, immunogenicity, efficacy, effectiveness); product monograph and other relevant scientific and technical information. Recommendations from other groups (e.g., World Health Organization [WHO], Canadian Paediatric Society, Advisory Committee on Immunization Practices [United States]) are also considered. At present, NACI does not review cost-effectiveness data or make program implementation recommendations.

When the knowledge synthesis is completed, the working group presents a draft NACI Statement with recommendations to the full NACI committee for review, discussion and adoption. Once adopted, NACI statements and updates are published in the Canada Communicable Disease Report (http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/) and posted in both official languages on the NACI website (http://www.phac-aspc.gc.ca/naci-ccni/). NACI recommendations are summarized and provided for easy use by vaccine providers, policy makers and the general public in the Canadian Immunization Guide.

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PART 1

BENEFITS OF IMMUNIZATION

BENEFITS OF IMMUNIZATION

Immunization is one of the most important advances in public health and is estimated to have saved more lives in Canada over the past 50 years than any other health intervention. Before vaccines became available, many Canadian children died from diseases such as diphtheria, measles and polio that are now preventable by immunization. Immunization programs are responsible for the elimination, containment or control of infectious diseases that were once common in Canada; however, the viruses and bacteria that cause vaccine preventable diseases still exist globally, can be imported to Canada through travel, and can be transmitted to people who are not protected by immunization. If immunization programs were reduced or stopped, diseases that are now rarely seen in Canada because they are controlled through immunization would re-appear, resulting in epidemics of diseases causing sickness and death. This phenomenon has been seen in other countries; for example, large epidemics of diphtheria and measles have occurred in Europe in recent decades after immunization rates declined.

Immunization is important in all stages of life. Infants and young children are particularly susceptible to vaccine preventable diseases because their immune systems are not mature enough to fight infection; as a result, they require timely immunization. Older children and adults also require immunization to restore waning immunity and to build new immunity against diseases that are more common in adults.

Immunization directly protects individuals who receive vaccines. Through herd immunity, immunization against many diseases also prevents the spread of infection in the community and indirectly protects:

- infants who are too young to be vaccinated,
- people who cannot be vaccinated for medical reasons (e.g., certain immunosuppressed people who cannot receive live vaccines),
- people who may not adequately respond to immunization (e.g.the elderly).

IMPACTS OF VACCINES ON VACCINE PREVENTABLE DISEASES

Table 1, Figures 1, 2, and 3 illustrate the impact of vaccines on infectious diseases in Canada. Refer to Part 4 chapters for additional information about the success of immunization programs against specific vaccine preventable diseases.

Table 1: Incidence of select vaccine preventable diseases in Canada – pre-vaccine era compared with 2007-2011

Disease and impact	Vaccine introduction / Disease reporting	Pre-vaccine era			2007-2011	
		Pre-vaccine period	5 year average annual incidence/ 100,000	Peak annual number of cases*	5 year average annual incidence/ 100,000	Peak annual number of cases
Diphtheria Infection of the throat causes severe breathing difficulty which may result in asphyxia. Infection also results in the dissemination of diphtheria toxin, which damages the heart and ntral nervous system. In the pre-vaccine era case fatality was about 5% to 10%, with highest death rates occurring in the very young and the elderly.	• Diphtheria toxoid introduced in 1926 • Routine infant immunization since 1930 • National notifiable diseases reporting began in 1924	1925-1929	84.2	9,010	0.006	4
***Haemophilus influenzae* type b (Hib) invasive disease** (children less than 5 years of age) Infection can cause meningitis, epiglottitis, bacteremia, cellulitis, pneumonia or septic arthritis in young children. Case fatality rate of meningitis is about 5%. Severe neurologic sequelae occur in 10% to 15% of survivors and deafness in 15% to 20%	• Vaccines first introduced in 1986 • Conjugate vaccine introduced in 1988 • Routine infant immunization since 1988-89 • National notifiable disease reporting of all invasive Hib disease began in 1986	1986-1990	30.1[2]	671	0.49[2]	18
Hepatitis B (HB) Infection in approximately 10% of adults results in chronic infection leading to a chronic carrier state that may result in cirrhosis, liver cancer, and death.	• Universal HB immunization for adolescents implemented in the early- to mid-1990s • National notifiable disease reporting of HB infection began in 1969	1989-1993	9.1[3]	3,378[4]	5.3[5]	2,011[6]
Measles Bronchopneumonia and otitis media occur in about 1/10 cases and encephalitis occurs in 1/1,000 cases (fatal in 15% and neurologic sequelae in 25%). Case fatality rate is 1-2 per 1000. Subacute sclerosing panencephalitis is a rare but fatal complication.	• Live vaccine authorized in 1963 • Universal immunization program implemented in 1983 • 2-dose measles-containing vaccine schedule introduced 1996/97 • National notifiable diseases reporting began in 1924 (no	1950-1954	372.7	61,370	0.60[7]	752[7]

Disease and Agent	Vaccine Introduction & Disease Reporting	Pre-vaccine			2007-2011	
		Pre-vaccine period	5 year average annual incidence/ 100,000	Peak annual number of cases*	5 year average annual incidence/ 100,000	Peak annual number of cases
	reporting from 1959 to 1968)					
Meningococcal serogroup C invasive disease Invasive meningococcal disease most often results in meningitis or septicemia. Severe cases can result in delirium and coma and, if untreated, shock and death. Case fatality rate is 10%, and 10-20% of survivors have severe sequelae such as limb amputations and deafness.	• Polysaccharide vaccines first introduced in Canada in 1981 • Routine infant or toddler immunization programs using conjugate vaccine introduced across Canada between 2002 and 2006 • National notifiable disease reporting began in 1924	1997-2001	0.30	186	0.06	30
Mumps Acute parotitis develops in 40%, of which 25% are unilateral. Complications include orchitis (20% to 30% of post-pubertal males), oophoritis (5% of post-pubertal females), meningitis (<10% of cases), deafness (0.5 to 5/100,000 cases) and encephalitis (less than 1/50,000 cases). Occasionally mumps can cause permanent infertility or deafness.	• Vaccine authorized in 1969 • Universal immunization program implemented in 1983 • National notifiable disease reporting began in 1924 (no reporting from 1960 to 1985)	1950-1954	251.2	43,671	1.84	1,110
Pertussis Young infants may experience complications, such as vomiting after a coughing spell, weight loss, breathing problems, choking spells, pneumonia, convulsions, brain damage, and in rare cases, death. Older children and adults develop persistent cough lasting for up to 6 weeks.	• Whole cell pertussis vaccine authorized in 1943 • Acellular pertussis vaccine replaced whole cell in 1997-1998 • Adolescent and adult acellular vaccine formulation authorized in 1999 • National notifiable disease reporting began in 1924	1938-1942	156.0	19,878	3.88	1,961
Poliomyelitis Paralysis occurs in less than 1% of infections but among those paralyzed, about 2 - 5% of children	• Inactivated polio vaccine (IPV) authorized in 1955 • Oral polio vaccine	1950-1954	17.5	6,384	0	0

Disease and Impact	Vaccine introduction & disease reporting	Pre-vaccine era			2007-2011[1]	
		Pre-vaccine period	5 year average annual incidence/ 100,000	Peak annual number of cases*	5 year average annual incidence/ 100,000	Peak annual number of cases
and 15-30% of adults die.	authorized in 1962 and in use in Canada until 1996 • IPV used primarily from 1996-present					
Rubella and congenital rubella syndrome (CRS) Although rubella is generally a mild disease, encephalitis occurs in 1/6,000 cases. However, rubella infection in pregnancy can cause **congenital rubella syndrome (CRS)**. Infection in the first 10 weeks of pregnancy has an 85% risk of leading to CRS. CRS can result in miscarriage, stillbirth and fetal malformations (congenital heart disease, cataracts, deafness and mental retardation).	• Rubella vaccine introduced 1969 • Universal immunization program implemented in 1983 • National notifiable disease reporting began in 1924 • National notifiable diseases reporting of CRS began in 1979	Rubella: 1950-1954 CRS: 1979-1983	Rubella: 106.3 CRS: 3.0[8]	Rubella: 37,917 CRS: 29	Rubella: 0.01 CRS: 0.11[8]	Rubella:10 CRS: 1
Tetanus Infection leads to general rigidity, and convulsive spasms, with death in about 10% of cases. Higher rates of death occur among infants.	• Tetanus toxoid introduced in 1940 • National notifiable diseases reporting began in 1957	1935-1939	0.13	25	0.01	6

* Five years preceding vaccine introduction

1 Provisional numbers for measles and rubella from the Canadian Measles and Rubella Surveillance System. All other data from the Canadian Notifiable Disease Surveillance System.

2 Children less than 5 years of age

3 Reported cases of newly diagnosed HBV infection per 100,000 population. Combines acute, chronic and unspecified HBV infections

4 Reported cases of newly diagnosed HBV infection in 1989

5 Reported cases of newly diagnosed HBV infection per 100,000 population. Combines acute, chronic and unspecified HBV infections

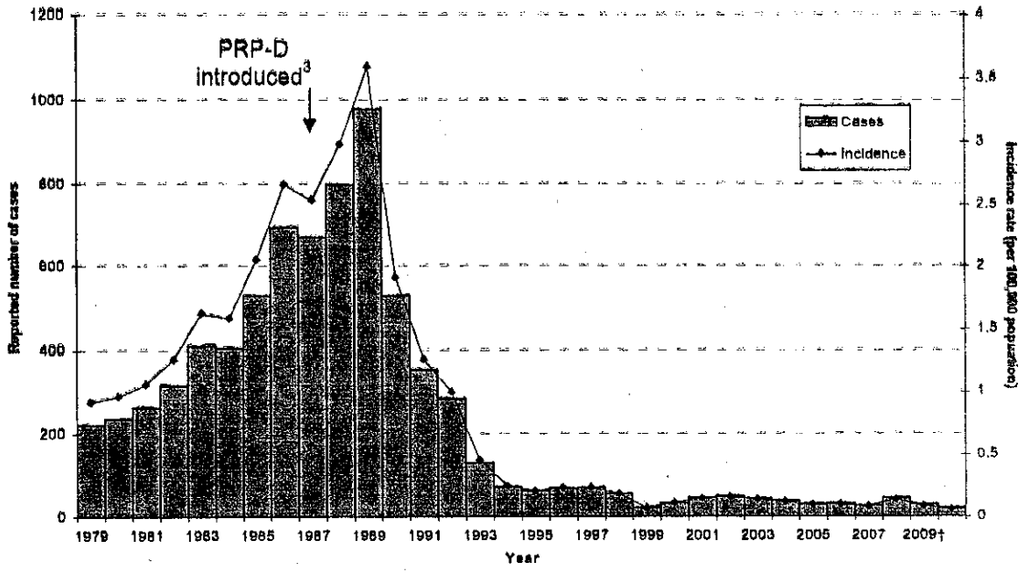
6 Reported cases of newly diagnosed HBV infection in 2008

7 In 2011, a large outbreak of measles occurred in Quebec; a total of 752 cases were reported in Canada. Excluding 2011, the peak number of cases was 102 (2007), and the average annual incidence for this time period (i.e. 2007 – 2010) was 0.21 cases per 100,000 population

8 Per 100,000 live births

CAF S.A.
María Bernarda Bglay
Farmacéutica
Co - Directora Técnica
M.P. 15.146

Figure 1: *Haemophilus influenzae* type b disease – reported number of cases[1] and incidence rates, Canada, 1979-2010[2]

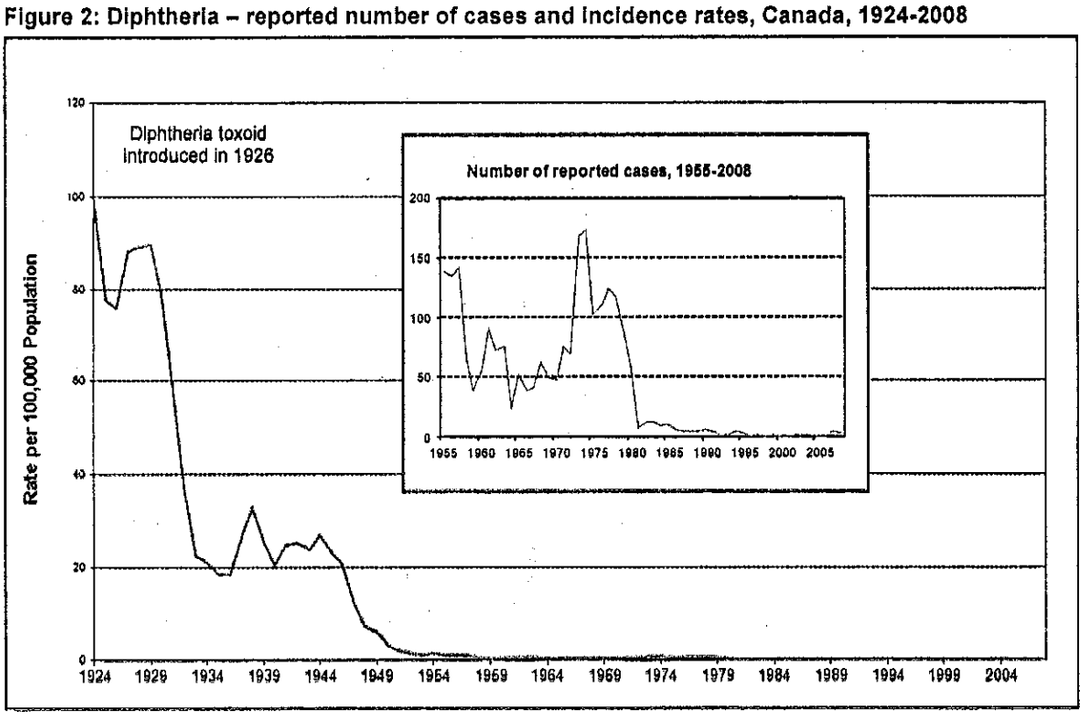


1 Case data obtained from the Canadian Notifiable Disease Surveillance System. Population data obtained from Statistics Canada July 1st annual estimates. Data for 2009 and 2010 are preliminary.

2 Only Hib meningitis was reportable from 1979 to 1985. After this, all invasive disease caused by Hib became reportable.

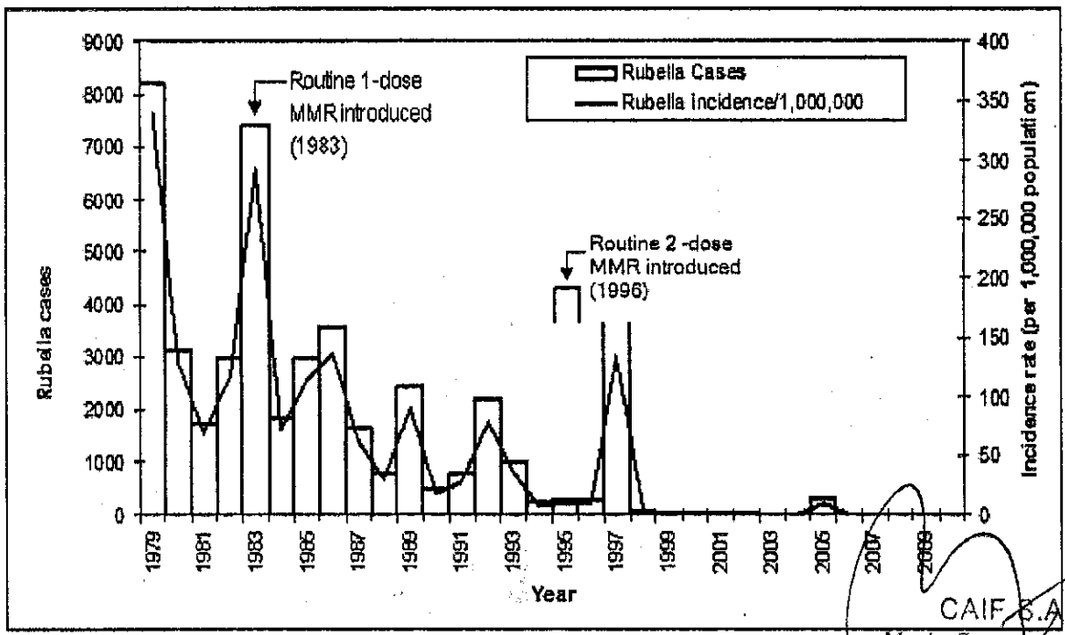
3 PRP-D: Hib conjugate vaccine containing purified polyribosylribitol phosphate capsular polysaccharide of Hib covalently bound to diphtheria protein. The vaccine was licensed in 1986 and in 1988 introduced into the majority of provincial vaccination programs.

Figure 2: Diphtheria – reported number of cases and incidence rates, Canada, 1924-2008



Population data sources: Statistics Canada, Population by Sex and Age, 1921-1971, revised annual estimates of population, Canada and the provinces, (Catalogue 91-512)
Statistics Canada, Population estimates 0-90+ July Canada - Provinces 1971-2008.xls

Figure 3: Rubella - reported number of cases and incidence rates, Canada, 1979 to 2010



COST BENEFIT OF VACCINES

Vaccine preventable diseases result in significant costs to individuals, the health care system, and society, including costs associated with visits to health care providers, hospitalizations, and premature deaths. Parents may lose time from work to care for sick children and sick children lose time at school. For example, the societal cost for each case of rotavirus requiring a visit to the emergency room is estimated to be $675.

The cost-benefit of vaccine is strongly influenced by the price of the vaccines used. Many vaccines, such as measles-mumps-rubella vaccine for children, provide both health benefits and savings in health care costs (refer to Table 2). This means that the cost of implementing the immunization program is less than the cost of treating the illness or injury that would occur if the program had not been not implemented. Because immunization with these vaccines improves health and results in cost savings, the decision to include these vaccines in publicly funded immunization programs is straightforward. In developing public health programs, international organizations such as the World Health Organization, United Nations Children's Fund and the World Bank recommend that immunization be given high priority because of its high cost-effectiveness.

Table 2: Cost savings achieved through selected immunization programs

Immunization program	Cost saving per $1 spent
Influenza for adults 65 years of age and older	$45
Measles, mumps, rubella for children	$16
Pneumococcal polysaccharide for adults 65 years of age and older	$8
Diphtheria, pertussis, tetanus for children	$6

Newer vaccines tend to be costlier and may not be cost-saving, so the decision to introduce them into publicly funded immunization programs is determined by society's willingness to pay for their anticipated health benefits. In general, such programs compare very favourably to other public health interventions in terms of cost per life year saved (refer to Table 3). In Canada, evaluation of benefits and costs of new immunization programs is done by Provinces and Territories. Refer to Immunization in Canada for more information.