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Child Care Center Exclusion Policies and Directors' Opinions on the Use of Antibiotics

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Abstract

We studied exclusion policies and child care center directors' opinions regarding antibiotic use for childhood illnesses. Among 135 respondents, 96.9% reported that they had written policies on exclusion of children for acute illnesses. Although 52.4% of respondents agreed that children are prescribed antibiotics unnecessarily, 89.1% believed that parents pressure physicians to prescribe unnecessary antibiotics.

Children experience frequent illnesses, such as the cold, influenza, sore throat, otitis media, and bronchitis, that are primarily caused by viruses. Frequently, antibiotics are inappropriately prescribed for these illnesses.¹ Overuse of antibiotics has serious public health implications, because it leads to emergence of antibiotic-resistant bacteria, increased healthcare costs, and potential avoidable adverse events.

Child care center directors are required by state regulations to exclude children with specific communicable diseases from their centers. For example, in Pennsylvania, child care center directors are required to exclude children and staff with various diseases, including respiratory streptococcal infections and pertussis.² However, children in child care centers may be at increased risk for inappropriate antibiotic prescriptions. Not only are children at increased risk for acute infectious illnesses,³ but child care center directors may influence antibiotic misuse by enforcing exclusion policies unnecessarily or by inappropriately referring children to physicians.⁴ To guide public health interventions, we assessed exclusion policies and child care center directors' opinions regarding antibiotic use for childhood illnesses.

METHODS

We adapted a self-administered survey instrument previously used by the Minnesota Department of Health to assess knowledge, attitudes, and beliefs regarding respiratory

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illnesses and antibiotics.⁵ Demographic characteristics, policies regarding illnesses, and opinions regarding antibiotic use were assessed with a written survey. Questions about antibiotics were assessed by a 3-point scale ranging from “never” to “always.” After approval by an institutional review board, we mailed questionnaires to directors of child care centers that were participating in Keystone STARS in March 2007. Keystone STARS is a program sponsored by the Pennsylvania Department of Public Welfare to promote continuous quality improvement in early learning and school age environments. Demographic characteristics, policies regarding illnesses, and opinions regarding antibiotic use were assessed via a written survey. Child care centers ($n = 450$) were randomly selected using proportional sampling from 6 regions to reflect the percentage of the total population of STARS participants in each region.⁶ For example, if 20% of the total STARS participants were from region A, then 20% of the study sample ($450 \times 0.20 = 90$ child care centers) were randomly sampled from region A. The Pennsylvania Department of Public Welfare sent letters to child care center directors explaining the purpose of the survey. To encourage participation, centers were promised educational materials and a children's book, *The Little Elephant with the Big Earache* by Charlotte Cowan, on receipt of a completed survey. The survey was mailed to each facility director in March 2007. Reminders to nonrespondents were mailed in May 2007. Results were not linked to the particular center.

Associations were quantified using odd ratios (ORs) with associated 95% confidence intervals (CIs). Median values and interquartile ranges (IQRs; 25th percentile to 75th percentile) were calculated for all continuous responses. Statistical analyses were performed using SAS software, version 9.1 (SAS Institute).

RESULTS

The survey was returned by 135 (30%) child care directors. Most directors were female (126 [97.7%] of 129 directors), aged 26 to 45 years (78 [60.0%] of 130), and had received a college degree (92 [70.2%] of 131). They reported that toddlers (age, 13–36 months) accounted for 11% (IQR, 4.5%–22%) of daily enrollment and that preschoolers (age, 37–59 months) accounted for 23% (IQR, 12%–33%) of daily enrollment. A median of 7 (IQR, 3–12) and 4 (IQR, 2–6.5) full-and part-time staff members, respectively, worked in the child care facilities.

Regarding the exclusion of children with acute infectious diseases, 124 (96.9%) of 128 reported that their center had written policies guiding exclusion of children for acute illness. In general, directors (123 [96.9%] of 127) and classroom teachers (80 [63.0%] of 127) were responsible for determining when an ill child should be excluded. The Table illustrates responses to a series of questions assessing exclusion of children for specific symptoms. Policies requiring receipt of antibiotics prior to returning to the child care center were notable in that most directors reported that children with conjunctivitis with white or yellow pus (114 [91.9%] of 124 directors), conjunctivitis with watery discharge (76 [61.8%] of 123), or diarrhea (62 [50.4%] of 123) were always excluded from the child care center until antibiotics were prescribed. Although receipt of antibiotics prior to the child's return to a child care center was not always required in other scenarios, directors frequently reported that antibiotics were sometimes required.

Of note, high percentages of directors reported that antibiotics were never required prior to returning to the child care setting for a runny nose without green or yellow mucous (111 [89.5%] of 124 directors) or for cough without fever (92 [75.4%] of 122) (Table). The number of children enrolled in each center was associated with child care center directors' responses on exclusion for children with ear pain until the child receives antibiotics (likelihood of exclude response for every 10 student increase in enrollment; OR, 1.15; 95%

CI, 1.04–1.26; $P = .005$) and director's perception that parents often demand unnecessary antibiotics so the children can return to the child care center (likelihood of parents demand for every 10 student increase in enrollment; OR, 1.12; 95% CI, 1.02–1.22; $P = .02$). No significant association was found between directors' education and responses on exclusion for ear pain or perception regarding parents demand for antibiotics.

Most child care directors disagreed or strongly disagreed that children would be sick for a longer time if they did not receive an antibiotic for cough, cold, or influenza symptoms (114 [89.1%] of 128 directors). Most recognized that exposure to unnecessary antibiotics can promote antimicrobial resistance (101 [80.8%] of 125 agreed or strongly agreed) and denied feeling more comfortable allowing children with colds in child care if the children were receiving antibiotics (29 [22.7%] of 128 agreed or strongly agreed that they felt more comfortable). However, respondents felt that parents frequently demanded unnecessary antibiotics so that their children could return to a child care center (96 [75.6%] of 127 agreed or strongly agreed that this often occurs). Respondents were divided regarding whether doctors often prescribe unnecessary antibiotics so that children can return to a child care center, with 66 of 126 (52.4%) stating that they disagree or strongly disagree that this occurs.

DISCUSSION

Children in child care centers have a greater risk of acquiring infections including increased occurrence of physician-diagnosed ear infections and sinusitis and parental reports of runny or stuffed nose. Also, there is evidence that child care center directors often exclude ill children until antibiotics are prescribed.³ The current study found wide variations in policies regarding child exclusion during acute illnesses and directors' opinions regarding the need for antibiotics in specific symptomatic scenarios. Although many directors recognized the lack of efficacy of antibiotics for a variety of conditions, there remains significant room for improvement. Interventions to promote judicious use of antibiotics should include dissemination of model child care center policies^{7,8} through various means, including focused information on health department Web sites.

Dissemination of information should be reinforced with educational campaigns directed at child care center staff regarding the clinical courses that should be expected with illnesses and judicious antibiotic use. Such campaigns may also include increasing awareness about communicable disease exclusion requirements and criteria for readmission.³ These measures would help child care centers to implement rational, evidence-based approaches to excluding ill children and would reduce misconceptions about need for antibiotics among child care providers.^{4,9} Furthermore, well-informed child care providers could educate parents about antibiotic overuse and the emergence of antimicrobial resistance.⁹

We acknowledge some limitations. As in all surveys, our survey may have been subject to nonresponse bias and included only those centers that participated in the STARS program. We sampled facilities involved in a quality improvement program from diverse regions in a large state that reduced bias among child care centers participating in the STARS program but not those not involved in the program. Despite these limitations, the variation in exclusion policies and that the center directors appear to put more faith in antibiotics than is called for are of concern. With growing concerns about transmission of seasonal and novel influenza in child care settings,¹⁰ these issues gain more significance.

In summary, we documented that many child care center directors believe that antibiotics are necessary for treatment of viral illnesses and that centers often exclude ill children until antibiotics are prescribed. Educational initiatives aimed at child care center staff and

recommended exclusion policies, in conjunction with parental and physician educational programs, may prove to be effective strategies for minimizing the inappropriate use of antibiotics in children.

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TABLE

Child Care Center Procedures for Sick Children as Reported by Child Care Center Directors

		Response, no. (%) of respondents		
Scenario, procedure	No. of respondents	Never	Sometimes	Always
Fever (temperature of 100°F [37.8°C] axillary or higher)				
Exclude child until symptoms improve	130	9 (6.9)	74 (56.9)	47 (36.2)
Exclude child until she/he sees a doctor	127	40 (31.5)	76 (59.8)	11 (8.7)
Exclude child until she/he receives antibiotics	126	55 (43.7)	67 (53.2)	4 (3.2)
Ear pain or is pulling on his/her ears				
Exclude child until symptoms improve	125	71 (56.8)	42 (33.6)	12 (9.6)
Exclude child until she/he sees a doctor	126	69 (54.8)	44 (34.9)	13 (10.3)
Exclude child until she/he receives antibiotics	124	75 (60.5)	40 (32.3)	9 (7.3)
Runny nose with green or yellow mucous				
Exclude child until symptoms improve	125	35 (28.0)	66 (52.8)	24 (19.2)
Exclude child until she/he sees a doctor	125	43 (34.4)	71 (56.8)	11 (8.8)
Exclude child until she/he receives antibiotics	125	54 (43.2)	63 (50.4)	8 (6.4)
Runny nose without green or yellow mucous				
Exclude child until symptoms improve	124	109 (87.9)	13 (10.5)	2 (1.6)
Exclude child until she/he sees a doctor	124	109 (87.9)	12 (9.7)	3 (2.4)
Exclude child until she/he receives antibiotics	124	111 (89.5)	11 (8.9)	2 (1.6)
Cough without fever				
Exclude child until symptoms improve	122	76 (62.3)	43 (35.2)	3 (2.5)
Exclude child until she/he sees a doctor	123	81 (65.9)	40 (32.5)	2 (1.6)
Exclude child until she/he receives antibiotics	122	92 (75.4)	29 (23.8)	1 (0.8)
Bronchitis				
Exclude child until symptoms improve	122	12 (9.8)	50 (41.0)	60 (49.2)
Exclude child until she/he sees a doctor	124	14 (11.3)	42 (33.9)	68 (54.8)
Exclude child until she/he receives antibiotics	123	20 (16.3)	48 (39.0)	55 (44.7)
Chest cold				
Exclude child until symptoms improve	123	51 (41.5)	63 (51.2)	9 (7.3)
Exclude child until she/he sees a doctor	124	58 (46.8)	58 (46.8)	8 (6.5)
Exclude child until she/he receives antibiotics	123	65 (52.9)	53 (43.1)	5 (4.1)
Diarrhea (3 or more loose stools per day)				
Exclude child until symptoms improve	126	1 (0.8)	15 (11.9)	110 (87.3)
Exclude child until she/he sees a doctor	123	8 (6.5)	43 (35.0)	72 (58.5)
Exclude child until she/he receives antibiotics	123	27 (22.0)	34 (27.6)	62 (50.4)
Conjunctivitis (a red or pink eyeball) with white or yellow pus				
Exclude child until symptoms improve	125	0 (0.0)	11 (8.8)	114 (91.2)
Exclude child until she/he sees a doctor	126	1 (0.8)	9 (7.1)	116 (92.1)
Exclude child until she/he receives antibiotics	124	2 (1.6)	8 (6.5)	114 (91.9)
Conjunctivitis (a red or pink eyeball) with watery discharge				
Exclude child until symptoms improve	123	8 (6.5)	34 (27.6)	81 (65.9)

Scenario, procedure	No. of respondents	Response, no. (%) of respondents		
		Never	Sometimes	Always
Exclude child until she/he sees a doctor	124	8 (6.5)	33 (26.6)	83 (66.9)
Exclude child until she/he receives antibiotics	123	11 (8.9)	36 (29.3)	76 (61.8)