



FACE MASK USE BY PATIENTS IN PRIMARY CARE

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INFLUENZA TRANSMISSION

- Seasonal and pandemic influenza are transmitted via small particle aerosols, large droplets, and fomites.¹
- Several studies have demonstrated face mask use an effective barrier against droplet transmission of respiratory viruses.^{2,3,4}



FACE MASK RECOMMENDATIONS

- CDC recommends use of masks in healthcare settings for the following patients:
 - cough
 - symptoms of respiratory infection
 - personnel in contact with the patients⁵
- In response to guidelines and due to demonstration of noninferiority of surgical masks to N95 respirators,^{6,7} many health care facilities implemented the use of surgical masks for respiratory infection control.



2009 H1N1 INFLUENZA

- First influenza pandemic since 1968
- From April 2009 to April 2010:⁸
 - 61 million people infected
 - 274,000 hospitalized
 - 12,470 deaths
- During fall 2009, sentinel providers reported influenza-like illness accounted for over 7.5 % of outpatient visits.⁹
 - Reflects importance of controlling transmission in primary care setting



STUDY PURPOSE

- Examine demographics of mask use and the ability of mask use to reflect trends in illness in the population.
 - Acute respiratory illness (ARI)
 - Influenza-like illness (ILI)
- Provide estimate for stocking a family practice clinic with face masks based on clinic data and face mask acceptance and use.



METHODS

- Retrospective observational study of practice data following the peak of H1N1
- Wingra Family Medical Center: a family practice clinic in Madison, WI located in multi-ethnic urban neighborhood serving individuals of varying socioeconomic status
- Week beginning October 25, 2009 to week beginning May 23, 2010, total of 31 weeks



METHODS

- Per clinic policy, surgical masks were offered to patients with cough, sore throat, or fever or those identified in clinic schedule as requiring a mask.
- For each mask dispensed, an entry was logged indicating date of mask use and age and sex of the patient.



METHODS

- Using the UW-Department of Family Medicine (UW-DFM) Clinical Data Warehouse, counts of ARI and ILI diagnoses were identified weekly by ICD-9-CM coding.
 - Acute respiratory illness
 - 460-466.99: “acute respiratory infections”
 - 381-382.9: “nonsuppurative otitis media and Eustachian tube disorders” and “Suppurative and unspecified otitis media”
 - 480-488.1: “pneumonia”, “influenza”, and “H1N1”
 - Influenza-like illness
 - Subset of ARI with measure temperature of 100° F or higher



METHODS

- To estimate face mask need, data were compiled for the clinical practice and for the entire UW-DFM, which consists of 27 clinical practices.
 - Data obtained from a four year period:
 - Total patient visits
 - Total ARI visits
 - Total ILI visits
 - Average visits per week
 - Average ARI visits per week
 - Average ILI visits per week
- Data was used to calculate percentage of yearly visits resulting in ARI diagnosis.



STATISTICAL ANALYSIS

- Descriptive statistics to describe age distribution of study population, both by aggregate and by gender
- One-way ANOVA used to examine differences in age distribution by gender



STATISTICAL ANALYSIS

- Pearson Correlation to study relationship between weekly mask use and clinical population prevalence of ARI and ILI and relationship between clinic and department trends in illness
- To estimate facemask use, calculated percentage of individuals with ARI receiving face masks in our study period and applied it to estimated percentage of yearly visits for ARI.



RESULTS

- During the 31 week study period,
 - 989 total visits for ARI identified retrospectively via ICD-9-CM coding
 - 37 visits for ILI (3.74% of ARI visits)
 - 793 masks were distributed (80 % of those with diagnosed ARI)



MASK USE BY MALE AND FEMALE PATIENTS DURING STUDY PERIOD

	Total	Male	Female
Masks Distributed (%)	793	286 (36.1%)	507 (63.9%)
Age of mask use (years±SD)	29.72 ± 20.48	24.99 ± 21.69	32.38 ± 19.28

One-way ANOVA revealed statistically significant difference for age of mask user between the genders, with the mean age greater in females than males.



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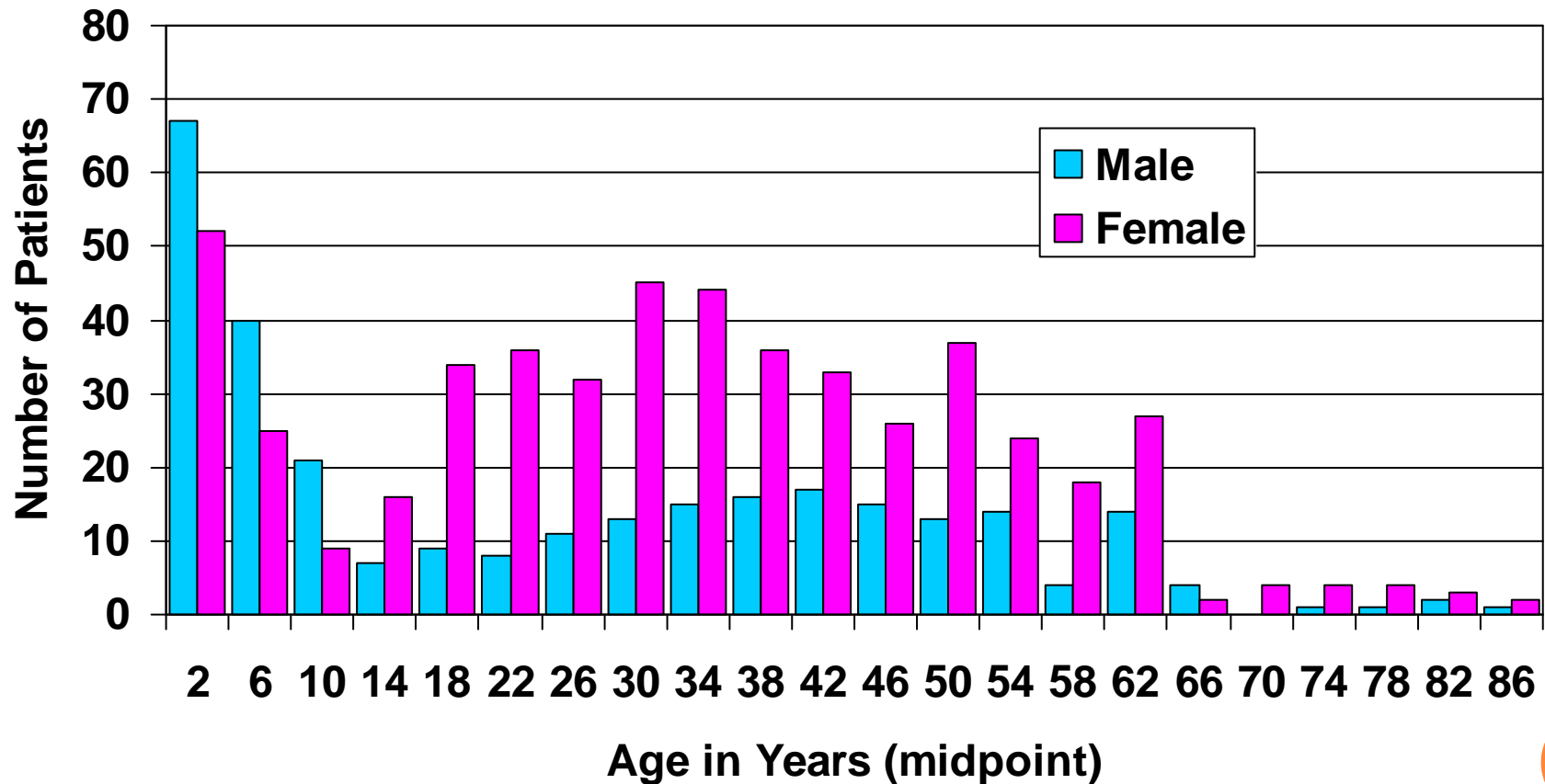
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DEMOGRAPHICS OF SURGICAL MASK DISTRIBUTION IN PRIMARY CARE

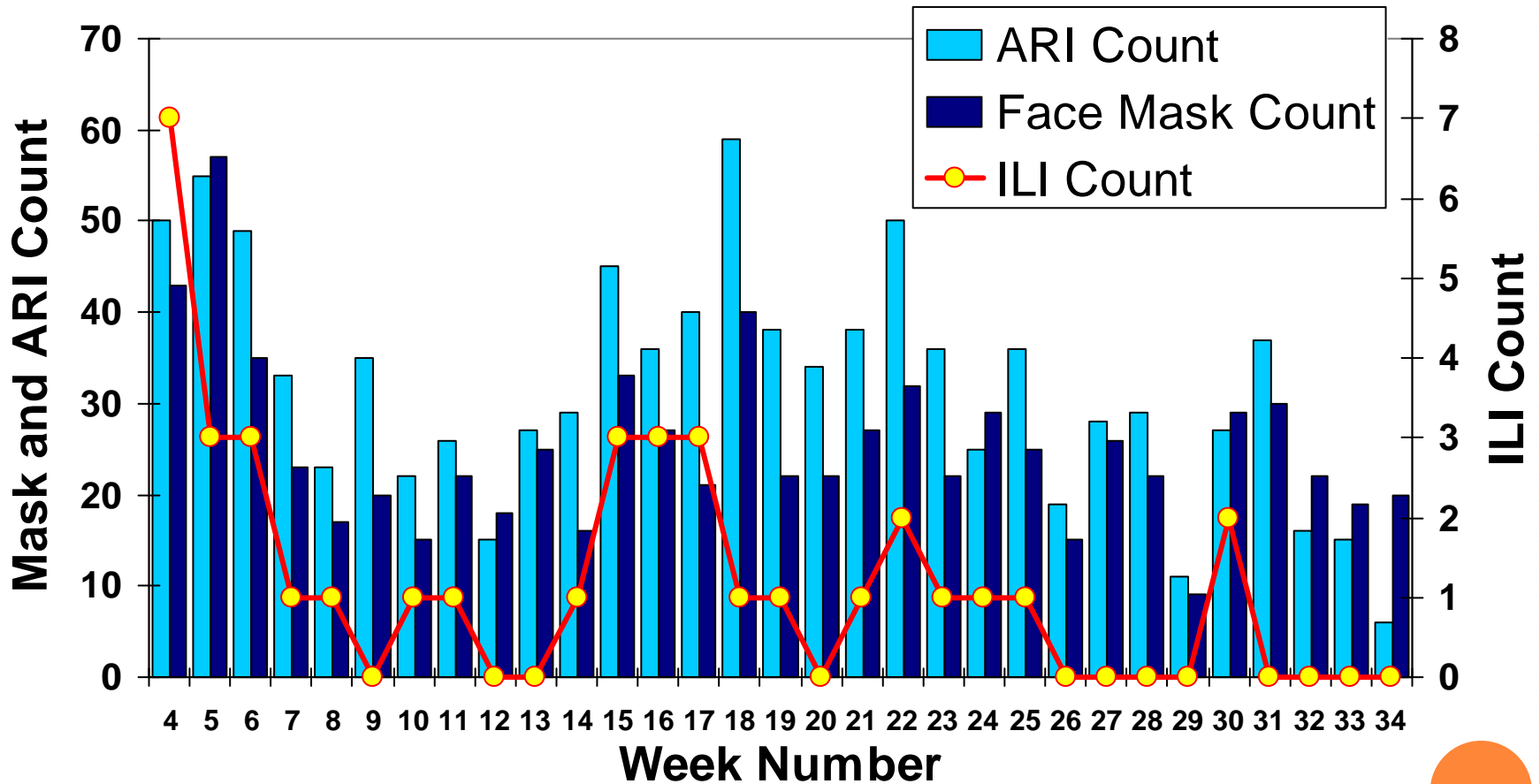


RESULTS

- Distribution of face mask use was highly correlated to ARI ($R=0.783$, $p<0.001$) prevalence and ILI ($R=0.632$, $p<0.001$) prevalence
- Face mask count exceeded ILI count every week (range: 9 to 54) and for several weeks, exceeded ARI count
- Weekly counts of ARI and ILI in the clinic were reflective of larger community trends in ARI ($R=0.810$, $p<0.001$) and ILI ($R=0.753$, $p<0.001$) prevalence



SURGICAL MASK DISTRIBUTION PER WEEK COMPARED TO ARI AND ILI PATIENTS



OUTPATIENT VISITS FOR ARI AND ILI OVER A FOUR-YEAR PERIOD

Four year period from June 2006 through May 2010		
	UW-DFM (% of total)	Clinic (% of total)
Total visits	3,446,856	90,056
Visits for ARI	274,468 (7.96%)	11,170 (8.06%)
Visits for ILI	6,593 (0.19%)	216 (0.24%)
Average Weekly Visits over four year period		
Weekly visits	16,492	431
Weekly visits for ARI	1313	53.4
Weekly visits for ILI	31.5	1.03



CONCLUSIONS

- Gender-specific age distributions reflect significant differences in mean age of mask user.
- Beyond childhood, females were more likely to be masked, until about age 60 when levels equate.
 - Reflects trends observed in Tecumseh study and Cleveland Family study concerning respiratory infection transmission^{12,13}
- Women may more often be caretakers for ill children, which have been identified as common sources of household influenza transmission.^{12,14}



CONCLUSIONS

- While correlation between mask use and ARI and mask use and ILI were reasonably high, several factors may have been at play that decreased mask use among those with ARI and ILI:
 - Patient refusal
 - Commonly reported as uncomfortable or ill-fitting⁴
 - Failure of staff to ID patient requiring a mask
- Most likely the discrepancy was due to our definition of ARI, which included otitis media and acute sinusitis



ESTIMATING FACE MASK NEED

- Eight percent of annual clinic visits are for ARI; cases for which a face mask would likely be recommended
- Based on our experience, 80 percent of individuals with ARI will be masked
- Example: 20,000 patient visits per year
 - Eight percent for ARI=1,600 visits
 - Eighty percent will be masked=1,280 face masks
- Based on this study, it is estimated that 6.4% of annual volume of patient visits will require face masks



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Any questions?



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