

The Effect of Information—Motivation—Behavioral Skills Model-Based Continuing Medical Education on Pediatric Influenza Immunization Uptake: A Randomized, Controlled Trial

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Introduction

- Children 6 to 23 months of age have a high-risk of complications and are considered one of the priority groups for influenza immunization by the Canadian National Advisory Committee on Immunization.(1)
- Despite the national Canadian influenza immunization recommendation, seasonal flu vaccine coverage in Canada in this vulnerable age cohort remains sub-optimal.(2)
- Research has shown that the major drivers of parental acceptance of seasonal influenza vaccination for their children are parental attitudes on the severity of influenza and importance of prevention of influenza, a doctor's recommendation and a desire to reduce influenza symptoms.(3,4)

Background

Overall, the published literature reiterates and highlights the association between physician recommendation and vaccination uptake.(5-7) However, previous research in the U.S. has shown that some physicians are neither aware of the severity of influenza infection in young children nor are they aware of the complications of influenza in children 6-23 months of age.(8) While passive medical education engagements may be effective at transmitting information to health care practitioners, previous literature has shown that conventional CME platforms are poor at actually changing physician behavior.(9)

Objective

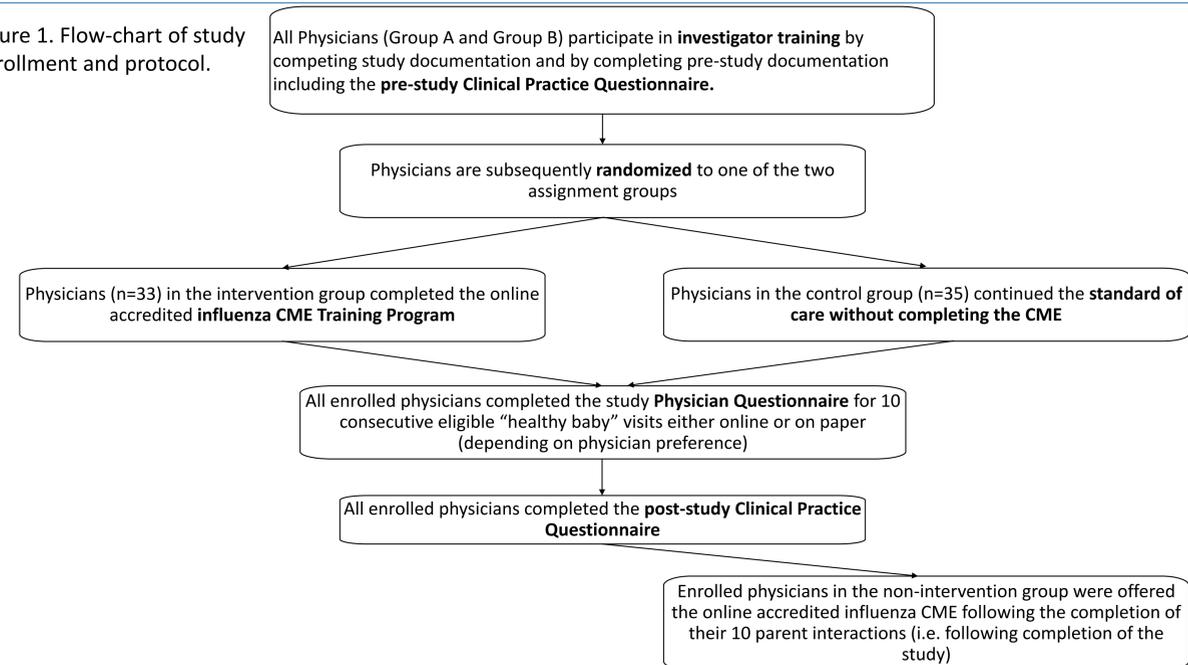
This study aimed to describe the impact of an Information—Motivation—Behavioral Skills (IMB) model based, accredited, online CME (eCME) program on seasonal influenza vaccination in children 6-24 months of age.

Methods

Randomized, Controlled Trial Methods:

- The study objective was addressed by conducting a multi-center, randomized trial where physicians were recruited and randomized (in a 1:1 fashion) to one of two study arms.
- One study group received the accredited, tailored influenza CME program (online Self-Learning program, certified by the College of Family Physicians of Canada for up to 1 Mainpro+ Credit) whilst the other study group did not receive the CME and was expected to follow their standard of care (Figure 1). Details of the study protocol are outlined in **Figure 1**.
 - The eCME provided easy to translate into action information, motivation to act on this information, and behavioral skills coaching for acting effectively, aimed at increasing provider ability and inclination to recommend seasonal influenza vaccination in this age range, and addressed identified parental barriers to seasonal influenza vaccination.
 - In addition to publicly funded options of standard influenza vaccines (i.e. TIV and QIV), the enhanced adjuvanted influenza vaccine (aTIV), an approved yet publically unfunded vaccine, was also discussed.

Figure 1. Flow-chart of study enrollment and protocol.



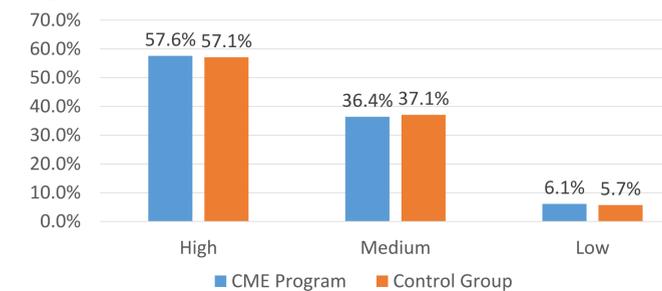
Statistical Analysis:

- Data analysis was primarily descriptive with measures of central tendency (mean, median) and dispersion (standard deviation, 95% confidence interval of the mean) used for continuous variables and frequency distributions for categorical variables.
- For the comparison of the two groups in terms of physician ability to recommend influenza vaccination, as measured by the proportion of patients immunised and strength of recommendation, the clustered Chi Square test was used.
- Logistic regression was used to compare the proportions of influenza immunizations in the two groups while adjusting for socio-economic status (SES) level of the physician practice location.

Results

- A total of 68 HCPs were recruited: 33 randomized to the CME group and 35 to routine practice.
- Both study groups were comparable with respect to physician practice location socioeconomic status (a potential confounder) (p=0.997) (**Figure 2**).
- HCP interactions with parents were evaluated during 628 visits: 292 visits by HCPs in the CME group and 336 by HCPs in the routine practice group.

Figure 2. SES status of the recruited physician practice area.



- The adjusted odds of influenza immunization were 1.5 times higher in the CME group compared to the control group (**Table 1**)

Table 1. Mixed Model – Binary logistic regression for the odds of immunization following a physician-parent interaction.

Covariate	Beta	SE	OR (95% CI)	p-value	
Intercept	-0.103	0.207	0.90 (0.60, 1.36)	0.620	
Exposure	Control group	Ref.	-	-	
	CME Program	0.418	0.170	1.52 (1.09, 2.12)	0.014*
SES	Low	0.467	0.416	1.60 (0.71, 3.61)	0.261
	Medium	0.136	0.177	1.15 (0.81, 1.62)	0.440
	High	Ref.	-	-	-

Physician site was included in the model as a random effect. Statistically significant results are marked with “*”
SES=socio-economic status; SE= standard error; OR = odds ratio

- Parents seen by HCPs in the CME group were ~ 30% more likely to agree to immunize their child with seasonal influenza vaccination compared to parents seen by HCPs in the control group
- Children in the CME group were ~ 20% more likely to receive aTIV compared to children in the control group (p<0.001).

Table 2: Outcome of physician discussion with parent regarding seasonal influenza immunization, by exposure group

Parental decision to immunize child		CME Program (n=292)	Control Group (n=336)	Total (n=628)	p-value
Agreed	n	146	133	279	0.007*
	%	52.9%	40.7%	46.3%	
Postpone discussion to next visit	n	49	83	132	
	%	17.8%	25.4%	21.9%	
Declined	n	81	111	192	
	%	29.3%	33.9%	31.8%	

P-value was assessed with non-parametric Mann-Whitney Test for continuous variables and with Fisher's Exact Test or Pearson Chi-Square for categorical variables.

Discussion

- Physician ability and confidence related to fostering discussions around influenza disease and vaccination, and recommending influenza vaccination were significantly improved following completion of an accredited behaviorally enhanced CME.
- Physicians receiving the augmented CME were 1.5 times more likely to immunise against influenza
- Parents seen by physicians in the augmented CME group were:
 - ~30% more likely to accept influenza vaccination and of these,
 - ~20% more likely to accept an approved un-funded influenza vaccine (aTIV).

Conclusions

HCP education with a tailored health behavior uptake model based CME, addressing the burden of influenza disease in young children and influenza vaccine hesitancy, was associated with a significant increase in influenza immunization.

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