

**PROTOCOL NAME**

**COVID-19 Booster Dose Reminder/Recall for Adolescents**

**VERSION**

**Version 1.0**

## TABLE OF CONTENTS

I. PROTOCOL SYNOPSIS .....	4
II. BACKGROUND .....	5
A. Marshfield Clinic Health System.....	6
III. STUDY OBJECTIVE .....	6
IV. STUDY POPULATION.....	6
A. Inclusion Criteria.....	6
B. Exclusion Criteria .....	6
V. INTERVENTION PERIOD .....	7
VI. INTERVENTION .....	7
A. Randomization.....	7
VII. OUTCOME MEASURES.....	7
A. Primary Endpoint .....	7
VIII. PLANNED ANALYSIS.....	7
A. Sample Size and Power .....	8
IX. HUMAN SUBJECTS CONSIDERATIONS.....	8
X. REFERENCES .....	8
XI. APPENDIX .....	9

## LIST OF ABBREVIATIONS

<b>Abbreviation or Term</b>	<b>Definition</b>
CDC	Centers for Disease Control and Prevention
HIPAA	Health Insurance Portability and Accountability Act
HPV	Human Papillomavirus
MCHS	Marshfield Clinic Health System
MenACWY	Meningococcal Conjugate Vaccine
Tdap	Tetanus, Diphtheria, and Acellular Pertussis Vaccine

## I. PROTOCOL SYNOPSIS

<b>Study Sponsor:</b> Centers for Disease Control and Prevention (CDC)
<b>Title:</b> COVID-19 Booster Dose Reminder/Recall for Adolescents
<b>Study Short Name:</b> COVID-19 Booster Reminders
<b>Study Rationale:</b> Uptake of COVID-19 booster vaccines among adolescents in the United States is suboptimal. Booster dose coverage is significantly lower among adolescents aged 12-17 years relative to older age groups. Patient reminder/recall systems have been shown to be an effective strategy to increase vaccination among patients of all ages.
<b>Study Objective:</b> To assess the efficacy of a one-time reminder/recall for COVID-19 booster dose among eligible adolescents in a regional rural healthcare system.
<b>Study Design:</b> We will conduct a 1:1 randomized intervention by sending a one-time reminder/recall notice to parents of 12-17 year-olds due for a COVID-19 booster dose. Those randomized to the intervention arm will receive a one-time reminder/recall via their parent's preferred method of communication (mailed letter, text, email) while the usual care (control) arm will not receive any reminder/recall notice. This study will be conducted at a single integrated healthcare system serving patients in central, northern, and western Wisconsin.
<b>Endpoint:</b> The primary endpoint will be receipt of COVID-19 booster dose within 90 days of randomization.
<b>Analysis:</b> Analyses will compare receipt of COVID-19 booster dose among adolescents assigned to the intervention versus usual care.

## II. BACKGROUND

To increase protection against SARS-CoV-2 infection, a single COVID-19 booster dose was recommended in the United States for adolescents aged 16-17 years in December 2021 and 12-15 years in January 2022<sup>1</sup>. Uptake of the first COVID-19 booster dose among children and adolescents has been suboptimal. As of August 2022, booster dose coverage among adolescents aged 12 through 17 years was 33% compared to 70% among adults aged  $\geq 65$  years<sup>2</sup>.

Centralized reminder and recall systems have been shown to be a cost-effective strategy to increase vaccination rates<sup>3</sup>. Reminder and recall at Marshfield Clinic Health System (MCHS) are centralized and target young children aged 18-23 months and adolescents aged 12 years. In accordance with CDC and MCHS vaccination recommendations, COVID-19 vaccine was added to the reminder/recall letters for 12-year olds due for tetanus, diphtheria, and acellular pertussis vaccine (Tdap), meningococcal conjugate vaccine (MenACWY), or human papillomavirus (HPV) vaccine in the summer of 2021.

Beginning January 2022, individuals aged 12 and older who have completed the primary series were eligible to receive COVID-19 boosters<sup>1</sup>. We propose to assess the efficacy of a one-time reminder/recall targeting adolescents aged 12-17 years who are eligible, but have not yet received the booster vaccine.

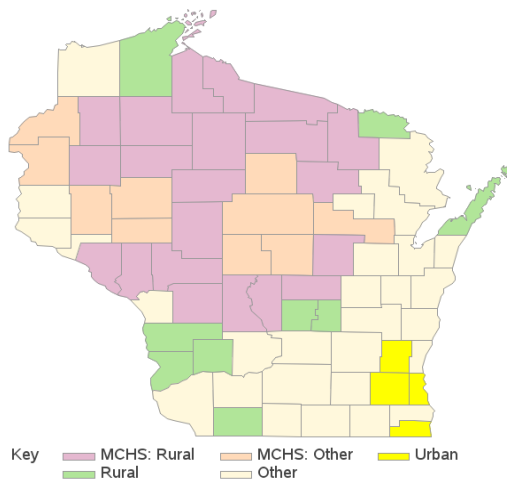
The intervention will leverage the existing MCHS's centralized reminder/recall system and process for enrolling patients for text and email communication regarding appointments and healthcare updates. The proposed intervention is a component of a larger project funded by the Centers for Disease Control and Prevention (CDC) to understand and address determinants of rural-urban differences in vaccine uptake among adolescents in the upper Midwest (NCT05148559).

## A. Marshfield Clinic Health System

Marshfield Clinic Health System is a large integrated regional healthcare system that serves a predominantly rural population. MCHS has over 10,000 employees working at 55 clinical locations throughout central, western, and northern Wisconsin, serving over 18,600 adolescents aged 12-17 years. The MCHS primary service area encompasses 32 counties in Wisconsin, including 70% of the state's rural counties (**Figure 1**).

**Figure 1. Marshfield Clinic Health System Service Area and Rural/Urban Classification of Counties based on Urban Influence Codes**

[USDA ERS - Urban Influence Codes](#)



## III. STUDY OBJECTIVE

To assess the efficacy of a one-time reminder/recall for COVID-19 booster dose sent via the parent's preferred method of communication among adolescents aged 12-17 years.

## IV. STUDY POPULATION

The target population is parents of MCHS adolescent patients aged 12-17 years who are due for a COVID-19 booster dose. Booster eligible patients were those who completed the COVID-19 primary series, defined as receipt of 2 doses of Pfizer/BioNTech mRNA vaccine  $\geq 17$  days apart, and were due for the COVID-19 booster (i.e.,  $\geq 5$  months since their second dose). Inclusion and exclusion criteria are outlined below.

### A. Inclusion Criteria

- Marshfield Clinic Health System patient aged 12-17 years with at least one preventive visit or two evaluation & management visits with a MCHS provider in the last 36 months
- Due for at COVID-19 booster dose (completed the COVID-19 primary series and it has been  $\geq 5$  months after the second dose)

## **B. Exclusion Criteria**

- Primary care provider is not affiliated with MCHS
- Opted out of MCHS's centralized vaccine reminder notifications
- Received COVID-19 vaccine off label
- Missing or invalid contact information
- Deceased

## **V. INTERVENTION PERIOD**

The intervention will be conducted in Spring 2022, as soon as possible after IRB approval is obtained.

## **VI. INTERVENTION**

The intervention (reminder/recall) consisted of a one-time booster dose reminder sent to parents using their specified preferred communication method (postal mail, email, or text). The default preferred communication method will be postal mail (letter) if text or email is not specified in the electronic health record. The reminder/recall message will differ for those who will receive text versus letter or email, due to restrictions on privacy and length of text messages ([APPENDIX](#)). The usual care group will not receive the reminder/recall until after the 90-day evaluation period. All persons in the usual care group will receive the reminder/recall via mailed letter.

### **A. Randomization**

Eligible adolescents will be stratified based on communication method and rurality (using home address). Each patient who is eligible at the time of data extraction/randomization will be assigned a random number, which will be used to facilitate stratified random sampling. Within each strata, the random number will be used to assign patients to intervention (reminder/recall sent via postal mail, text or email) or usual care (no reminder/recall) arm in a 1:1 ratio.

## **VII. OUTCOME MEASURES**

### **A. Primary Endpoint**

The primary endpoint will be documentation of receipt of a COVID-19 booster dose during the 90 days after randomization (90-day evaluation period).

Receipt of COVID-19 booster dose will be obtained from data available from the MCHS electronic health data, which includes a local vaccination registry that exchanges vaccination data from the state immunization registry.

## **VIII. PLANNED ANALYSIS**

Data will be analyzed using the data analysis software, SAS. We will calculate the absolute difference in COVID-19 booster dose receipt between study groups, as well as confidence intervals. We will also assess differences between arms using Chi-square tests, Student's t-test and Wilcoxon rank sum test where appropriate.

### **A. Sample Size and Power**

This was a system-wide initiative with the intention that all eligible adolescent patients receive the reminder/recall. Therefore, power calculations were not done. We estimate about 18,600 MCHS adolescent patients aged 12-17 years, of whom, 25% or about 4,650 have completed the COVID-19 primary series and may be due for the booster dose.

## **IX. HUMAN SUBJECTS CONSIDERATIONS**

This is a quality improvement initiative aimed at measuring the impact of a focused intervention to improve adolescent vaccination rates. Potential risks are limited to the possibility that participants' identifying information would be inadvertently disclosed. We do not anticipate any major risk to participants hence, a waiver of informed consent and HIPAA authorization have been requested and approved by the MCHS Institutional Review Board.

## **X. REFERENCES**

1. Centers for Disease Control and Prevention. (2022, January 5). CDC expands booster shot eligibility and strengthens recommendations for 12-17 year olds. Centers for Disease Control and Prevention. Retrieved September 15, 2022, from <https://www.cdc.gov/media/releases/2022/s0105-Booster-Shot.html>
2. Fast, H. E., Murthy, B. P., Zell, E., Meng, L., Murthy, N., Saelee, R., . . . Harris, L. (2022). Booster COVID-19 Vaccinations Among Persons Aged  $\geq 5$  Years and Second Booster COVID-19 Vaccinations Among Persons Aged  $\geq 50$  Years - United States, August 13, 2021-August 5, 2022. *MMWR Morb Mortal Wkly Rep*, 71(35), 1121-1125. doi:10.15585/mmwr.mm7135a4
3. Singer, E., & Couper, M. P. (2008). Do incentives exert undue influence on survey participation? Experimental evidence. *J Empir Res Hum Res Ethics*, 3(3), 49-56. doi:10.1525/jer.2008.3.3.49



**XI. APPENDIX**

**Intervention mailed letter/email**

**Give your child's COVID-19 vaccination protection a boost.**

Dear Parent or Guardian:

This is a reminder that <<child's name>> is due for their COVID-19 booster dose.

Everyone ages 12 years and older is recommended to get a booster dose for the best protection against COVID-19 and circulating variants. Preteens who are up to date with their COVID-19 vaccinations and symptom free do not have to miss school or other activities because of quarantine after close contact.

Please contact Marshfield Children's at 877-998-0880 to schedule an appointment today. To self-schedule online, visit <https://www.marshfieldclinic.org/covidvaccine>.

If <<child's name>> received COVID-19 vaccine or other vaccines from another provider, please let us know so we can update our records. If you need help paying for vaccinations, our Patient Assistance Center can help. Please call them at 1-800-782-8581, extension 94475.

Thank you for allowing us to care for <<child's name>>.

Marshfield Children's

**Intervention text message**

From Marshfield Children's: Everyone ages 12 years and older is recommended to get a booster dose for the best protection against COVID-19 and circulating variants. Please call 877-998-0880 to schedule a booster appointment today. To self-schedule online, visit <https://www.marshfieldclinic.org/covidvaccine>. Please do not reply.