



Economic Order Quantity Implementation Summary and Results

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Background

The Centers for Disease Control and Prevention (CDC) restructured how it distributes publicly-funded vaccines to providers several years ago. The changes were successful in helping CDC to improve efficiency and accountability, and reduce costs. One of the key changes at that time was Tiered Order Frequency (TOF). TOF assigned each provider a set order frequency based on vaccine usage and storage capacity. Washington State implemented Tiered Order Frequency in 2007.

In July 2009, CDC conducted a site visit to analyze and document the current VFC Program operating system for Washington. CDC also evaluated our historical vaccine ordering volumes. They provided detailed provider-level ordering data that could be used to evaluate and assign new ordering schedules for each provider.

As part of the Vaccine Management Business Improvement Project (VMBIP) CDC introduced Economic Order Quantity (EOQ). EOQ further refines the concepts of TOF to better manage publicly-funded vaccine supply and distribution. EOQ updates the order frequency levels based on annual vaccine order volumes and sets a two-week order timing window. Having providers place orders according to their assigned order schedule (frequency + timing) is expected to more evenly distribute vaccine orders throughout each month, and throughout the year.

In April 2010, the Vaccine Management and IP Registry Integration Team hired an EOQ Coordinator to plan and implement EOQ. In the past, the Program worked with Local Health Jurisdictions (LHJ) as one large group or with individual LHJs to implement changes. With EOQ, we took a slightly different approach and launched a multi-pronged training plan that focused on increased communication and working with smaller groups of LHJs.

Timeline:

4/10	5/10	6/10	7/10	8/10	9/10	10/10	11/10	12/10	1/11	2/11	3/11	4/11	5/11
Planning													
		Tips of the Week											
			EOQ Challenge										
					Pilot								
						Kick-Off							
							Regional Rollout						

Implementation

Schedule Assignments: April – August 2010

To balance ordering patterns, we divided the state into regions. We assigned each region an order timing (first or second half of the month) and a start month. Providers in the larger LHJs (more than 60 providers) were divided so that an equal numbers of providers were assigned to order during each half of the month. To make communication and support more manageable, the larger LHJs were scheduled to rollout over two- to three-month periods.

EOQ Tip of the Week: July – November 2010

We started communicating with LHJs through EOQ tips of the week. These tips provided introductory information that created awareness and interest before the official kick-off. Early communication and working with smaller groups of LHJs lead to more active feedback cycles. We provided LHJs with information in manageable amounts. This allowed LHJs additional time to ask questions and prepare themselves and their providers for change.

Reducing Single Antigen Orders Challenge: August – October 2010

To create focused awareness and encourage small changes we introduced a three-month EOQ Challenge to reduce single antigen orders. The Challenge presented the LHJs with a friendly competition that addressed a specific area of vaccine ordering that has a direct impact on distribution costs and efficiencies. The Challenge was very successful and we continue to maintain the results. (See 2010 and 2011 monthly results below.)

Pilot Group: September 2010

Our first group of four LHJs from the southeast region and one LHJ from the southwest region of the state started ordering on EOQ schedules in September. This group was instrumental in helping us to refine our implementation methods before we started the regional rollout with the rest of the LHJs.

One-on-One Meetings: Sept 2010

We also started meeting one-on-one with the four largest LHJs on the west side of the state. This helped to better understand and address the unique challenges and issues these LHJs would encounter.

Kick-Off Meeting: October 2010

An all-LHJ teleconference marked the official kickoff for the full rollout. The call included a review of the information shared over the previous four months. We shared our statewide goals and objectives for EOQ and the schedule for completing the implementation before June 2011.

Regional Rollout: November 2010 – May 2011

To simplify the process of balancing orders across the state, we used a regional approach to assign order timing. LHJs were scheduled for implementation based on these assignments. We held conference calls to prepare each group of LHJs and provided materials and tools to support them and their providers. The regional approach simplified the implementation for the state and made it easier to address issues and adapt to changing needs.

Support Materials

In addition to the Tip of the Week and communication materials used for the LHJ conference calls, we provided LHJs with various materials to support provider communication and implementation. Each LHJ received the following:

- Spreadsheet showing annual order volumes, frequency and timing assignments, and start dates for each provider.
- Individual calendars for each provider highlighting expected ordering schedules.
- Introductory letter template for communicating with providers.
- Frequently Asked Questions reference document.
- Recommended order quantity calculation guidelines.
- Recommended order quantity calculator (Excel Workbook).
- Off-Schedule tracking tool.

These materials were also made available on our EOQ webpage:

<http://www.doh.wa.gov/cfh/immunize/vaccine/eoq.htm>

Continuous Quality Improvement

A few months after the rollout completed, we asked LHJs to complete an online survey to evaluate the effectiveness of EOQ-related communication and materials. The survey was open to a limited number of participants in each LHJ. Below is a summary of the responses. The results will help guide future implementations.

As we started preparing for 2012, we considered feedback received during and after the rollout. In November, we held a small-group feedback session with six LHJs. Storage capacity was an issue in 2011 because flu vaccine was available at the same time as the busy back-to-school season. To address this, we reevaluated provider frequency assignments and decided to include flu vaccine in the annual volume totals. We also modified the provider calendars to improve printability. We gathered additional feedback on accountability reporting and going paperless that will be used for future changes.

LHJ Evaluation Results

Communication

EOQ Tip of the Week:

Timeliness

84% Right on Time

11% Too Early

5% Not Early Enough

Usefulness

39% Very Useful

53% Fairly Useful

8% Not Useful

Clarity

58% Very Clear

39% Fairly Clear

3% Unclear/Confusing

Kick-Off Meeting:

Timeliness

81% Right on Time

14% Too Early

5% Not Early Enough

Usefulness

46% Very Useful

43% Fairly Useful

11% Not Useful

Clarity

60% Very Clear

35% Fairly Clear

5% Unclear/Confusing

Regional Calls:

Timeliness

92% Right on Time

8% Not Early Enough

Usefulness

49% Very Useful

46% Fairly Useful

5% Not Useful

Clarity

62% Very Clear

35% Fairly Clear

3% Unclear/Confusing

Materials

Provider Calendars:

53% Very Useful

31% Somewhat Useful

8% Not Useful

8% Don't Know

Provider Letter Template:

47% Very Useful

34% Somewhat Useful

16% Not Useful

3% Don't Know

Recommended Order Quantity

Guidelines:

55% Very Useful

32% Somewhat Useful

5% Not Useful

8% Don't Know

Recommended Order Quantity

Calculator:

38% Very Useful

40% Somewhat Useful

19% Not Useful

3% Don't Know

Frequency Assignment Spreadsheets:

42% Very Useful

42% Somewhat Useful

5% Not Useful

11% Don't Know

Off-Schedule Tracking Log:

16% Very Useful

39% Somewhat Useful

24% Not Useful

21% Don't Know

Frequently Asked Questions:

58% Very Useful

34% Somewhat Useful

3% Not Useful

5% Don't Know

EOQ Web Page:

42% Very Useful

32% Somewhat Useful

5% Not Useful

21% Don't Know

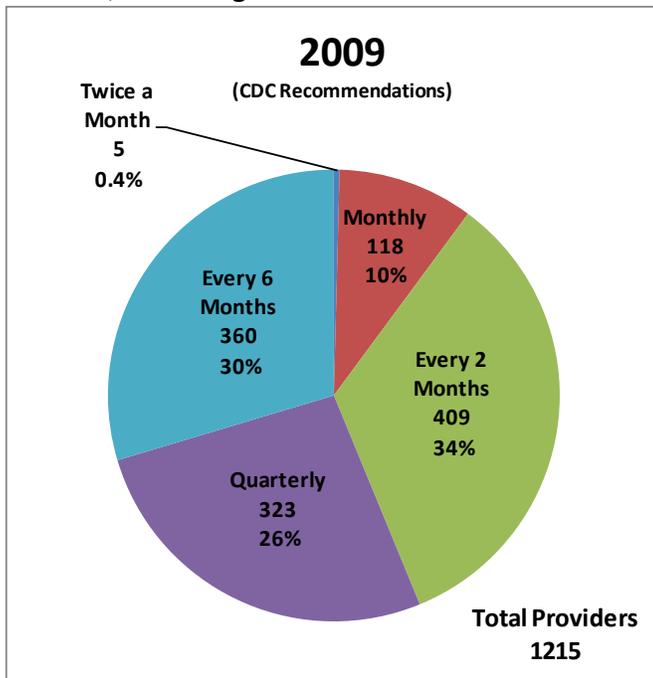
Immunization Information System (IIS) Enhancements

We started making changes to support EOQ practices in the IIS (Child Profile) in 2010. The vaccine order and approval screens clearly display each provider's order frequency, order timing, and order schedule. When an order is submitted outside assigned frequency, timing, or schedule, the provider is required to explain the off-schedule order. LHJs are required to review and approve every off-schedule order before submitting it to the state. The system also calculates the recommended order quantity based on each provider's order history over the previous three years. These changes are expected to be in production in 2012.

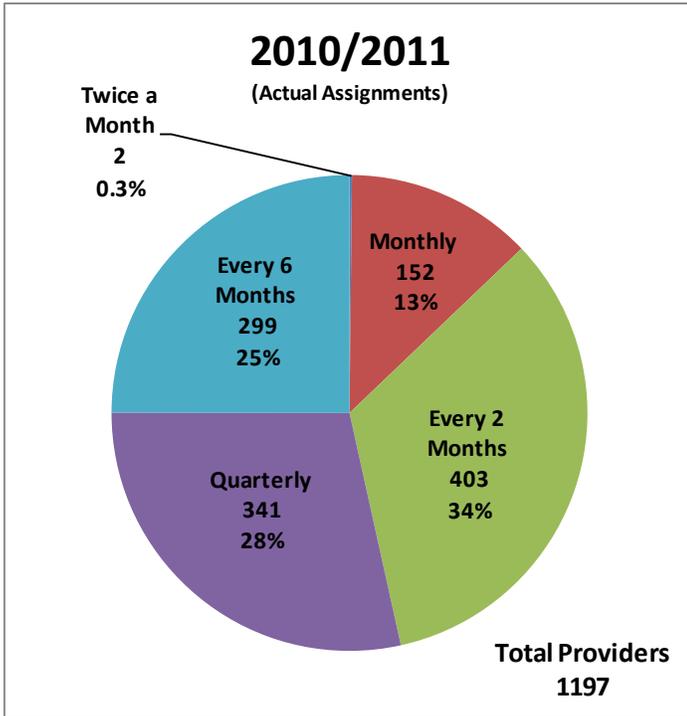
Outcomes

Changes in Provider Order Frequency Assignments:

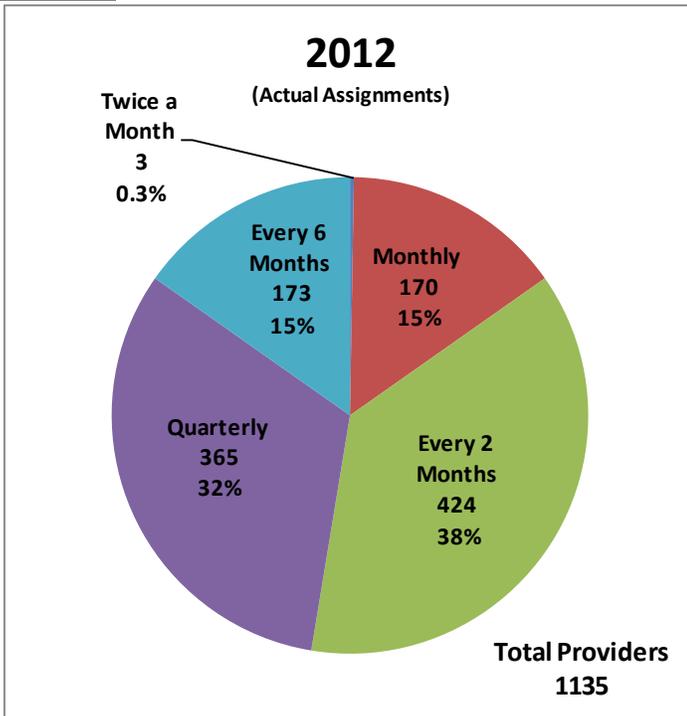
CDC recommended frequency distribution based on 2008/2009 annual vaccine order volumes, excluding flu vaccine.



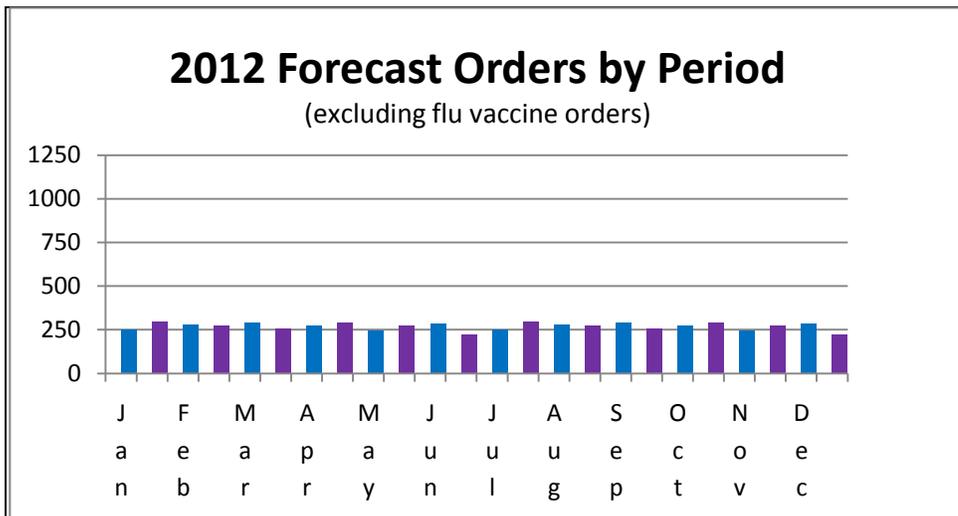
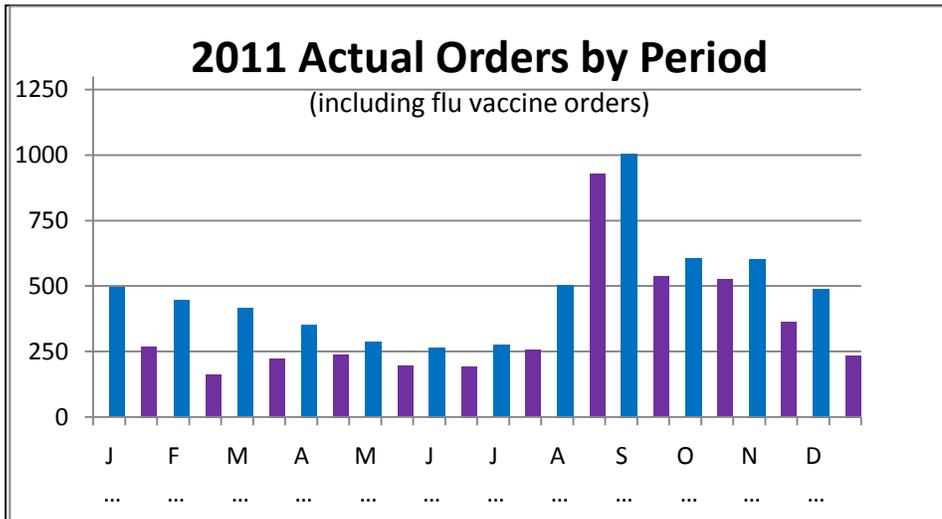
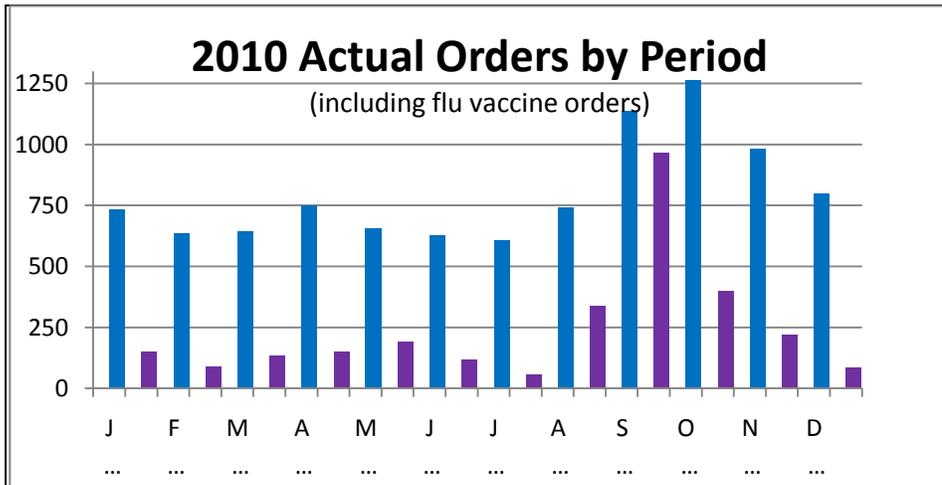
EOQ implementation frequency distribution based on 2010 annual vaccine order volumes, excluding flu vaccine.



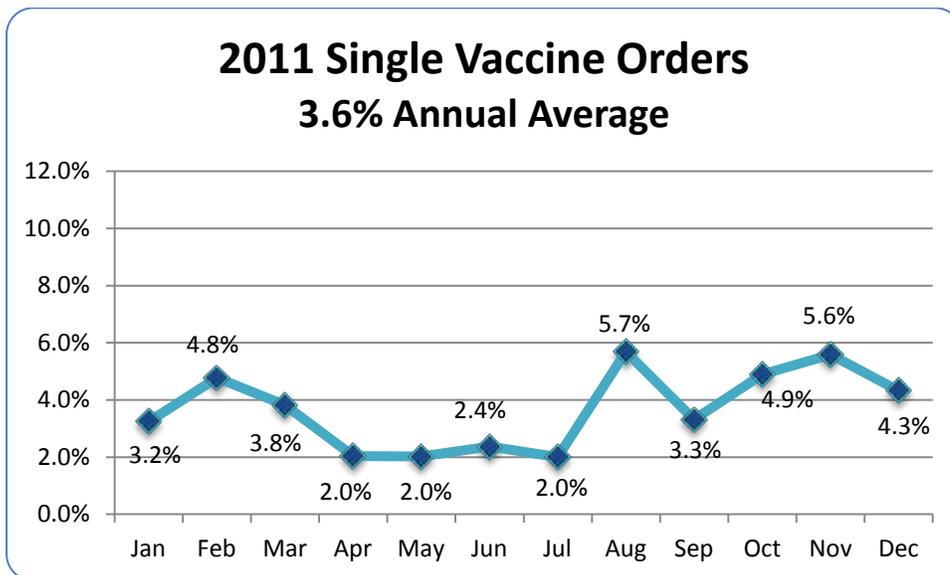
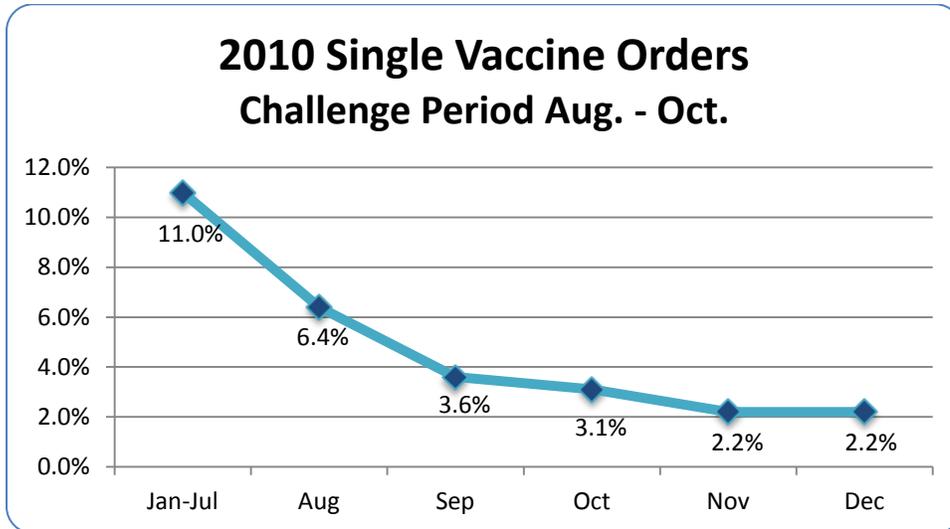
2012 revised frequency distribution based on 2011 annual vaccine order volumes, including flu vaccine.



Changes in Order Timing Distribution:



Changes in Single Antigen Order Volumes (excluding flu vaccine orders and clinics offering only 1 or 2 antigens):



Summary

EOQ has positively affected our distribution of vaccine orders and the changes adopted for 2012 continue to support EOQ objectives.

The addition of flu vaccine in determining 2012 frequency assignments reduced the percentage of providers assigned to order every six months by 10%. The other

frequencies increased by 2% to 6% as a result of this change. Even so, the frequency of orders is much better distributed than it was in 2009. Seventy percent of providers are now assigned to order on bi-monthly or quarterly schedules. Once the IIS is updated, we'll be able to measure how many providers are in compliance with their frequency assignments.

Order timing assignments reduced the number of orders submitted the first half of the month and increased the number orders submitted the second half of the month. Even with flu vaccine orders included, the orders are more evenly distributed throughout each month. One of the greatest challenges presented by this change is managing provider accountability reporting for providers ordering after the 16th of month. Plans for online reporting may help to address these challenges.

Even with occasional increases, overall, the number of single antigen orders has been greatly reduced. We've gone from an average of 11% of all orders being for a single antigen (non-flu) to maintaining single antigen orders at about 3.6%.

In 2010, providers submitted over 12,400 orders. In 2011, with EOQ, providers submitted fewer than 9,900 orders. Before EOQ we averaged 1,039 orders each month. After EOQ, we averaged 823 orders each month. While decreasing the number of orders submitted by 21% in 2011, the number of doses ordered actually increased by about 62,000 doses. All of this confirms Washington State's implementation of EOQ supports CDC objectives.