



Quality Improvement Report

Overview of proper co-ordering of vitamin B12 injection for a vitamin B12 deficient patients who were prescribed vitamin b12 injection in Al Thumama Health Centre July -September 2021

Authors

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Abstract

Reviewing the vitamin B 12 deficiency prevalence in Qatar and main gate for treating patient is primary care health centres we noticed a deficiency in co ordering b12 to be executed by nurses after prescribing it and its dispense through the pharmacy, such a need complaint from physician was at the time of data collections in Al Thumama Health centre 28% and after implementing certain changes this compliance improved to above the aim of 80%precisely 93% on post trial PDSA cycle²

Problem discrepancy between the treating doctors prescribing vitamin b12 injection in vitamin b12 deficient patient and co-ordering of the injecton so the treatment room staff will have the green light for pursuance to vitamin injection to the patient taking in consideration highly prevalence b12 deficiency among various patients demographics and diagnoses knowing that having a prescription order is not enough to be administered to the patient by the staff.

Background

The prevalence of vitamin B12 deficiency is likely to vary among different populations and depending on the threshold used to define deficiency. Examples include the following:

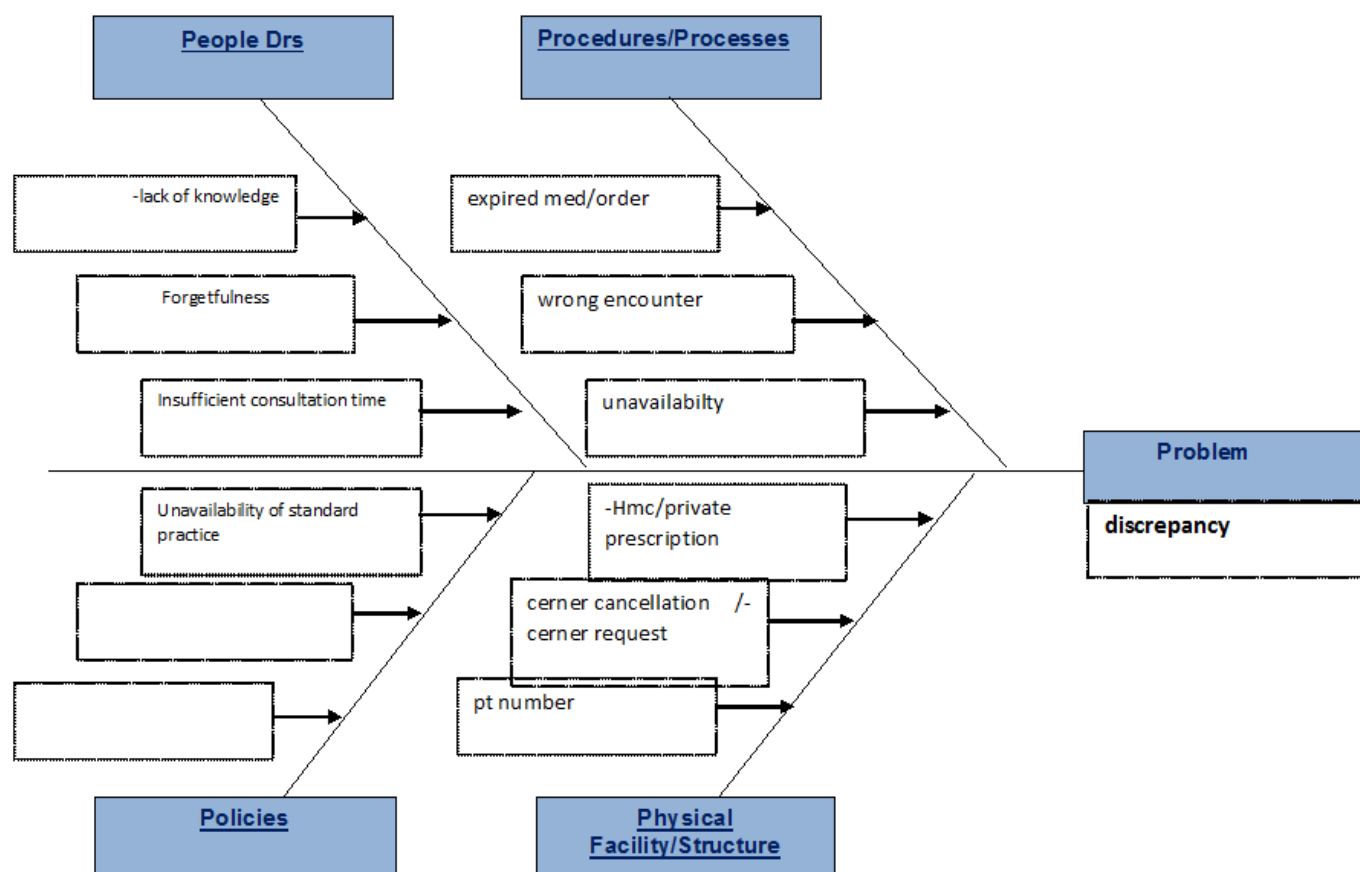
For General population – In a 2016 series of 3324 patients with anemia in a general practice population in the Netherlands, 249 had macrocytosis^[3]. Of these, there were 46 cases of vitamin B12 deficiency (1.4 percent of all anemic individuals; 18 percent of those with macrocytic anemia) and 16 cases of folate deficiency (0.5 percent of all anemic; 6 percent of macrocytic anemia). A 2014 examination of folate

testing performed on outpatients in a single center in Boston, Massachusetts (United States) found folate deficiency in only 47 of 84,187 (0.06 percent); another 166 (0.2 percent) had low-normal values (3.0 to 3.9 ng/mL)^[4].

While Older adults – In a 1994 examination of 548 older adult participants from the Framingham heart study (ages 67 to 96), serum vitamin B12 levels were low (<200 pg/mL) in 29 (5 percent)^[5]. Another 6 percent had vitamin B12 levels that were above the lower limit but were associated with increased levels of methylmalonic acid (MMA) and homocysteine, indicative of functional deficiency. Only one person had

antibodies to intrinsic factor. By comparison, in a control group of younger healthy individuals aged 22 to 63 years, 1.7 percent had low vitamin B12 levels. Serum folate levels were low (<2.6 ng/mL) in 16 of the older adult participants (2.9 percent, some of whom also had vitamin B12 deficiency) and 1.7 percent of controls. Another cross-sectional study of 729 people age 60 years or

older in the general population found pernicious anemia in 17 (2.3 percent), based on low vitamin B12 levels and/or antibodies to intrinsic factor [6]. Older adults living in retirement or care facilities are more likely to have elevated MMA found on screening than older adults living independently [7].



Measurement

This quality improvement project was performed with an aim to optimise Prescription-administration of b12 injection orders by doctors in Al Thumama health centre. Two data collection forms were created for both phases of the project: pre-trial phase and trial phase. The pre-trial phase involved collecting available data of prescribed vitamin on cerner medical records July-sep 2021 Al Thumama H.C. The post-trial phase was used to evaluate the ‘dual prescription/in office order after changes implemented on December 2021 same in the health centre).

All individual stakeholders were asked to keep a log book for missing order cases-nurses, pharmacist- and regular reminders for physicians were done, cerner team proposal of automatic in office order request to be signed by prescribing physician with every injection prescribed.

Design

The ‘new’ workflow was designed with the aim to minimize missing orders and to maximize patient care with proper prescriptions less wasted time consumed doing the missing orders by triage doctors less frustration for patients waiting for

orders less time and effort wasted from treatment room staff trying to execute the injection.

Two data collection forms were created for both phases of the project:

Pretrial phase and trial phase. The pretrial phase involved collecting available data of prescribed vitamin on cerner medical records July-sep 2021 Al Thumama H.C. The post-trial phase was used to evaluate the ‘dual prescription/in office order

after changes implemented on December 2021 same in the health centre).

All individual stakeholders were asked to keep a log book for missing order cases-nurses, pharmacist- and regular reminders for physicians were done, cerner team proposal of automatic in office order request to be signed by prescribing physician with every injection prescribed.

Initial data was done on al Thumama patients 3 months with below mentioned values

Figure 1

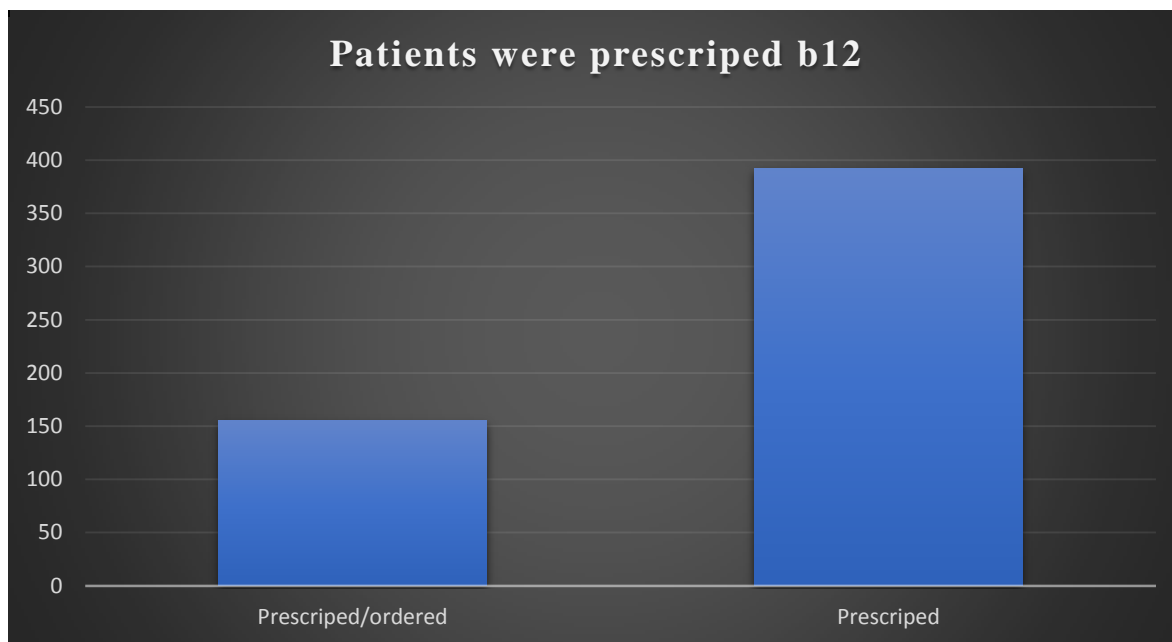
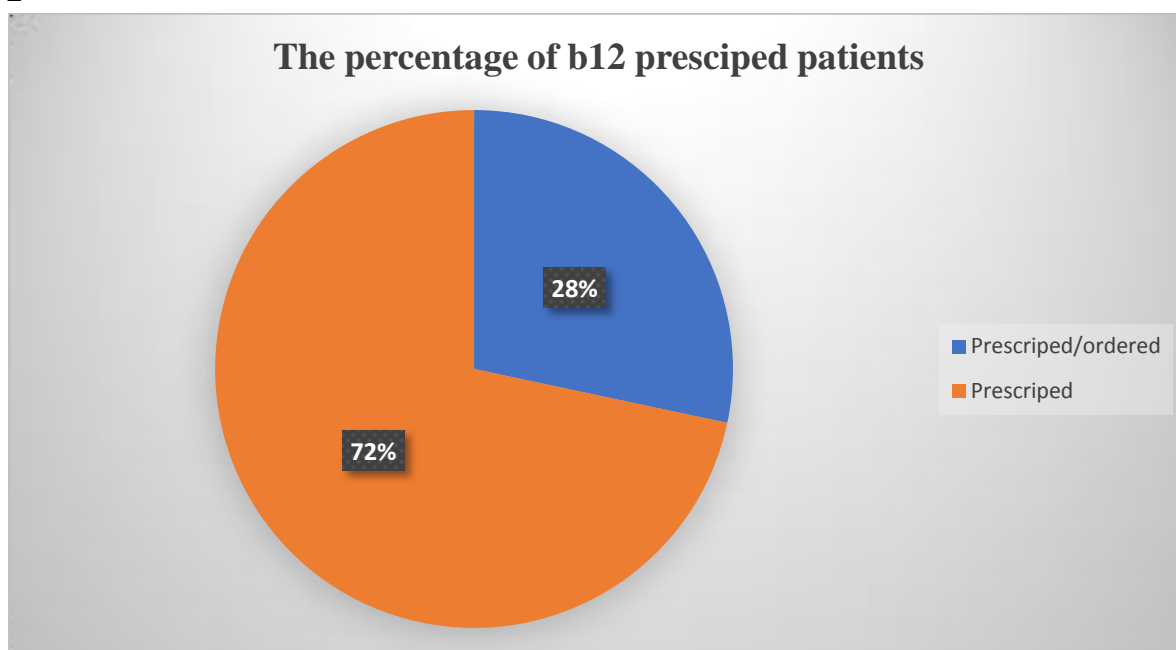


Figure 2



New Data /Post Trial

Figure 3

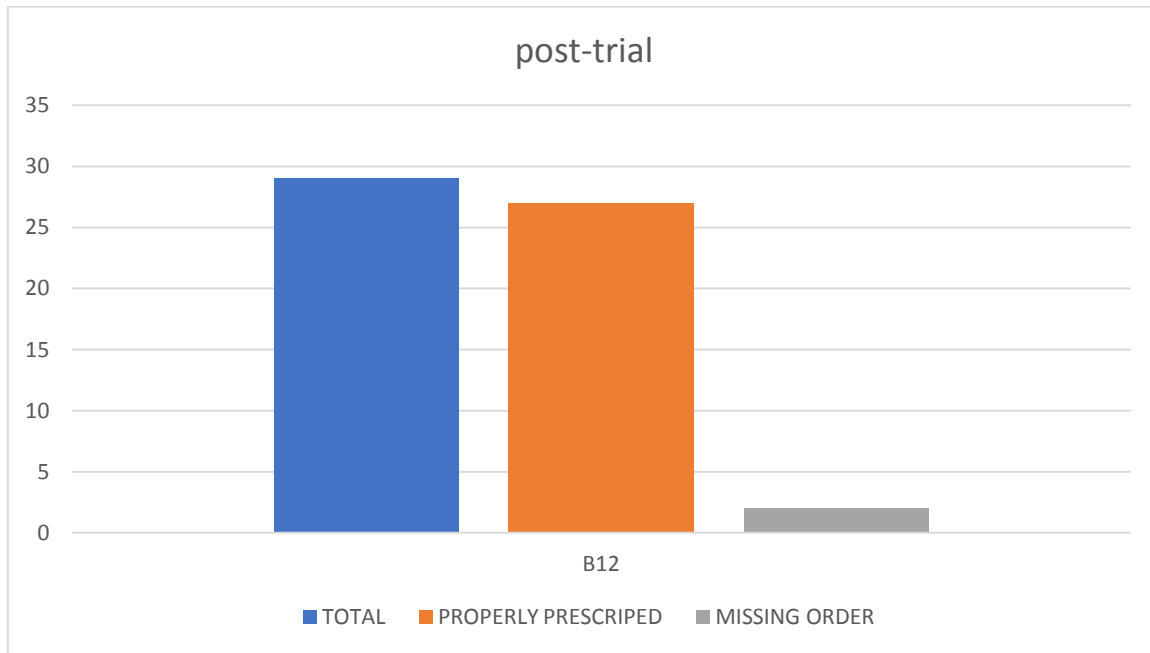
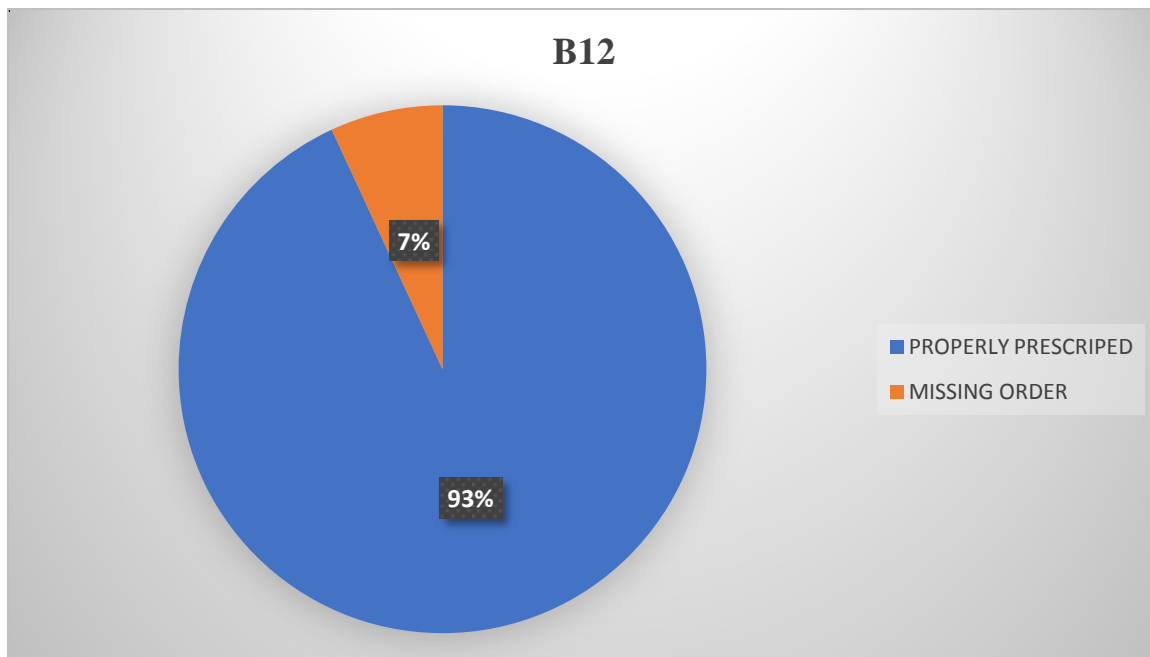


Figure 4



Assumptions and reasons (why we expected the ‘new’ changes implementation to work)

A similar workflow to the one being designed has been known to be successfully employed

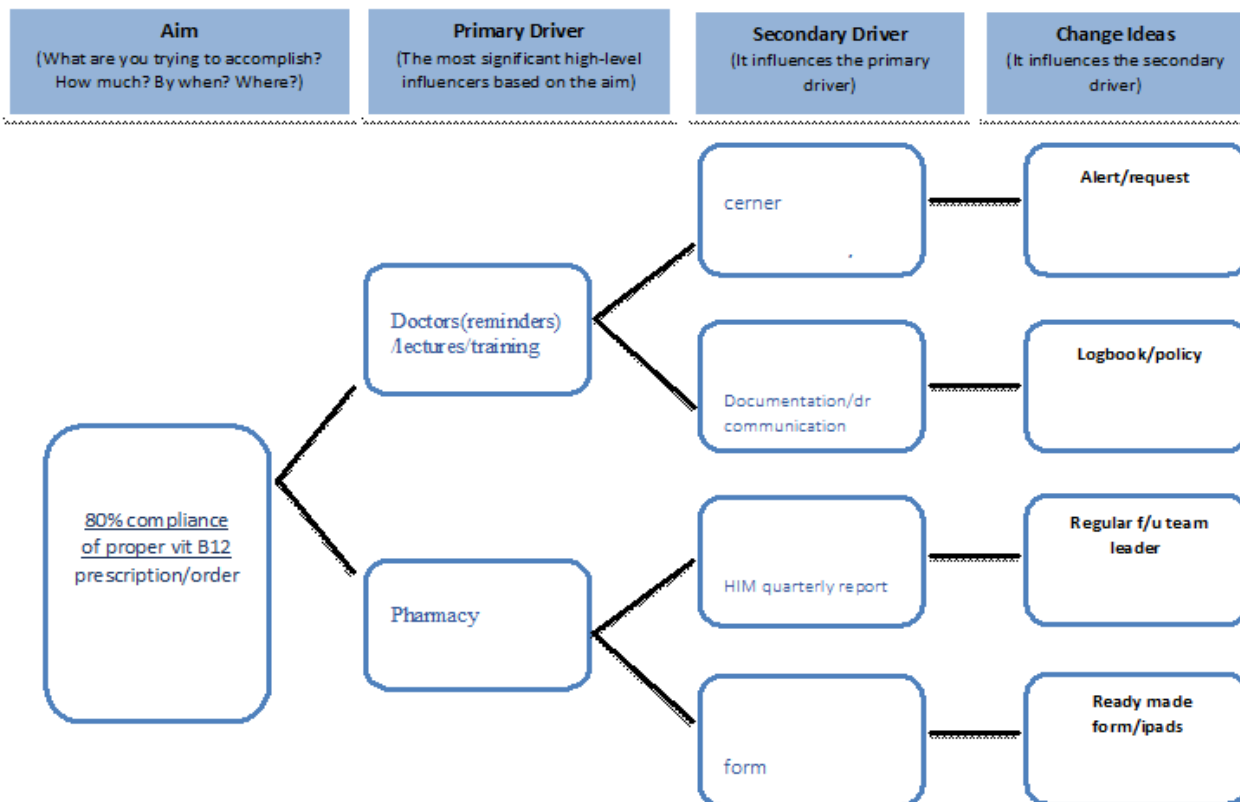
Consultation and Engagement

During the planning phase, the various stakeholders who would be involved in the execution of this workflow were identified. Each

stakeholder was called individually to meet with the study team to discuss the proposal and any concerns they may have. Limitations of each stakeholder were assessed and compiled.

Inputs were obtained from doctors, nurses, and managers of the general services team who is involved in prescription this vitamin.

List the possible changes using the driver diagram and **select the possible Changes.**



Project Team

The project team was consisted of members from each of the stakeholder groups. Before the implementation of the project, a meeting was called to discuss the concept, plan, limitations and the proposed workflow. Team leads were assigned per stakeholder group. They were tasked with briefing team members on updates and the longitudinal changes to the workflow. They also attended weekly meetings to coordinate and explore various issues and areas for improvement.

Problems Anticipated

- More effort from pharmacy/nurses/doctors more time needed
 - Opportunity patient care willingness of team

Sustainability Plan

The plan for this project was to be scaled up as a permanent workflow in our health centre. The approval of this workflow would involve presenting the results of the project to the lead physician/ doctors of the health centre for further evaluation. On approval from leads, the change

implementation will be instituted as a new protocol within the health centre.

Strategy

Before the start of the project, all stakeholders were briefed on the action plan and were delegated to brief their respective staff . Doctors were informed 1 month prior and on the day of commencement of the trial phase to prescribe-order B12 injection also nurses from the treatment rooms both male/female and pharmacy staff were briefed at the start of the project and though out the period.

Pretrial phase

PDSA cycle 1:

July -Sep 2021

Retrospective health record data collection was made reflecting a period of three months to ensure enough viable data was collected.

Trial phase Dec 2021

PDSA cycle 2: Follow-up from the pretrial phase, all new protocols were kept

Our initial aims were to ensure enough compliance

What data will be collected? (Structure, Process, or Outcome Measures)	How will you collect the data? (Method) <i>ex. Surveys, Audits, Observations</i>	Who will collect? (Name)	When to collect? (Date & Time)	Where to collect? (Source of data)
Measure: 1_pt data missing the in office order and treating dr name 2_ pt data missing the in office order and treating dr name	1-Logbook 2-log book	1-Nurse 2-pharmacist	Oct/dec	1-Treatment room 2-pharmacy

Results

As was described in charts the target was assigned to be met at the start of the project (not less than 80%) compliance for proper description to b12 injections in patients requiring IM medication formula in al thumama health centre . initially compliance was 28% as reflected by data collected for 3 months to 93% compliance following the implemented changes

Lessons and Limitations

One of the biggest limitations of the studyprojects was the coordination of the various staff and new recruitments of staff .along with heavy patient numbers per the clinics.

The subjective feedback we had received after implementing the new changes reinforces its efficacy and its effect on optimising resources and time. It has greatly changed normal

Conclusion

The start point is the discrepancy between (prescription and in office orders) which is a highly prevalent issue affecting patient time , satisfaction also nurses time and effort and extra burden on the triage doctors making in office orders for the missed ones period dates 1st july to 30thsep 2021 end part is at least 80% effective treatment orders in althumama health centre including most patients who were diagnosed as b12 deficiency who needed injectable treatment regimen in althumama health centre between the dates start of Oct-end of dec2021

Data Availability Statement

All data relevant to the study are included in the article.

Ethics statements

Patient consent for publication

Not required.

Ethics approval

In accordance with policy guidelines in PHCC, the study presented is intended to improve the care of patients and expedite recovery. It focused on properly prescribing vitamin b12 injection in patients with deficiencies.

Acknowledgments

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