Focus on the implementation of vitamin D supplements in Australian Residential Aged Care Facilities (RACFs)

Summary Report

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COGNITIVE DECLINE PARTNERSHIP CENTRE

Authors: Ms Pippy Walker, Dr Annette Kifley, Professor Ian D Cameron.

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Report Outline

About vitamin D

Why is vitamin D important?

Vitamin D is associated with a number of chronic and complex health conditions. People with vitamin D deficiency are more likely to suffer from conditions affecting the bodies cardiovascular, respiratory, gastrointestinal, neurological, musculoskeletal and metabolic systems, in addition to skin conditions and some cancers[1]. Residents living in aged care facilities are at high risk of vitamin D deficiency, with reports of up to 86% of residents being deficient[2-4].

Older people with low levels of vitamin D have been found to be at higher risk of falling, which can lead to injury and reduced quality of life[5]. Taking a vitamin D supplement is an effective way of improving blood levels[6]. Furthermore, research has demonstrated that taking a vitamin D supplement is an effective way of reducing the rate of falls among residents living in aged care[7].

What do we know about the uptake of vitamin D in residential aged care?

Previous research has indicated that the proportion of residents in aged care taking vitamin D has been increasing gradually over the previous decade. Despite this, the most recent audit conducted in November 2014 established that only 47% (n=1592) of residents across three Australian states were prescribed an adequate dose of vitamin D[8].

Current best practice guidelines recommend that a vitamin D supplement of at least 800IU per day be considered for all residents for the prevention of falls[9]. This does not require a blood test to confirm deficiency, as all residents in aged care are at high risk. Addressing this evidence to practice gap requires urgent attention to ensure optimal falls prevention practice for older adults living in residential care.

About this project

VITAMIN D SUPPLEMENTS:

WHERE DO YOU STAND (OR FALL)?

What was the purpose of this study?

The aim of this study was to increase the proportion of residents in Australian residential aged care facilities prescribed an adequate dose (≥800IU/day) of vitamin D. In doing so this project set out to evaluate the feasibility of this intervention and factors that influenced implementation outcomes.

Who was involved and when did this study occur?

Implementation occurred between December 2015 and June 2017 and was led by a project officer from the University of Sydney. Forty-one aged care facilities participated, which were from four different not-for-profit aged care organisations and provided care in either NSW or SA. Implementation was split into two groups, with approximately half (17) of participating sites starting the 12 month intervention in December 2015, and the remaining sites (24) starting six months later in June 2016.

What did implementation involve?

The following strategies were employed to facilitate implementation of vitamin D supplement use:

- Appointment of a local champion
- Educational outreach
- Educational resources
- Audit and feedback
- Expert opinion leader
- Facilitated quality improvement

Table 1 provides a brief description of what these strategies involved.

Table 1: Implementation Strategies Employed

Appointment of a local champion	Each participating site nominated a key contact person who would liaise with the study project officer to coordinate project related activities, drive implementation onsite and provide feedback to the project officer.
Educational outreach	The study project officer delivered a face-to-face education session to staff at each participating aged care facility over 1-2 visits within the first 3 months of the project. In some instances, residents were also invited to attend these sessions.
Educational resources	Educational posters, brochures, pamphlets and study pens were provided to each site to circulate to their staff, residents and family members. These resources, in addition to a short educational video and a recording of the face-to-face education delivered to staff members were also available online at sydney.edu.au/medicine/cdpc/resources.
Audit and feedback	Every 6 months medication charts were audited to establish the proportion of residents at each participating facility that were prescribed an adequate dose of vitamin D. This information was reported back to key stakeholders via published study newsletters to provide feedback on progress throughout the project period.
Expert opinion leader	Communication with medical professionals (general practitioners and pharmacists) servicing participating facilities was signed by an expert geriatrician to add credibility to the information being provided. This included communication regarding audit results and letters encouraging professionals to access study related resources and information.
Facilitated quality improvement	In the second six months of the intervention the project officer met with key staff at each site to discuss the possible barriers to implementation and strategies that were feasible to implement to help address identified barriers and improve the uptake of vitamin D supplement use. Information discussed at this meeting was summarised into a quality improvement plan for each site. Progress on the implementation of derived strategies was discussed with key contacts during 1-2 follow up phone calls from the project officer to provide support and identify any ongoing difficulties with implementation.

Who and how were stakeholders involved?

The implementation of the above described strategies involved the nominated champion (key contact) at each participating site, nursing and care staff, servicing medical professionals (GPs and pharmacists) and residents and their families. The following briefly describes how each group were involved:

Key contacts

- Direct line of communication with study project officer for implementation and feedback

- Coordinated session times and attended education and quality improvement meetings
- Disseminated study resources to staff, residents and their families
- Led implementation of strategies outlined in their quality improvement plan.

Facility Staff

- Were invited to participate in face-to-face education
- Were invited to complete study related surveys
- Had access to study related resources
- Where relevant assisted with awareness raising and implementation of vitamin D supplements.

General Practitioners and Pharmacists

- Received study information via email or fax
- Were invited to complete study related surveys
- Pharmacists provided medication chart audit data
- In most cases were engaged by facility staff for awareness raising and referral of residents as part of their quality improvement plan for implementation of vitamin D supplement use.

Residents and their families

- Had access to study related resources and in some instances received face-to-face education
- Were invited to provide feedback on these resources via a small survey
- In some cases were engaged by facility staff to raise awareness and discuss individual suitability of vitamin D as part of their quality improvement plan for implementation.

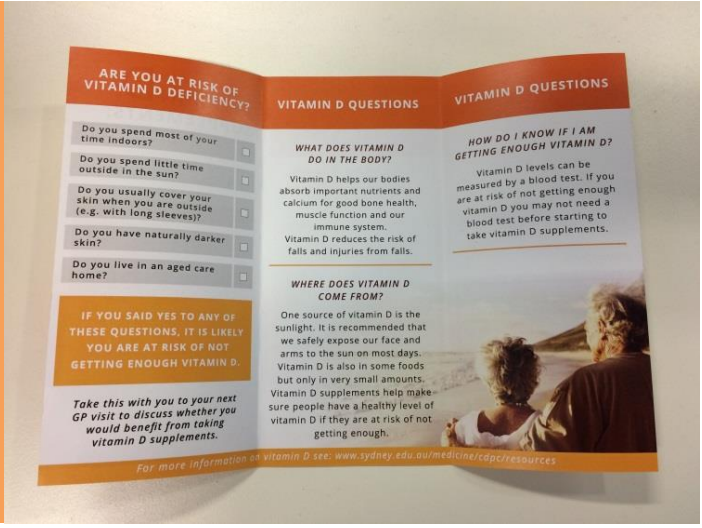
How were outcomes evaluated?

Vitamin D supplement use was evaluated every six months via a medication chart audit for each site. This information was fed back to stakeholders to keep them informed of progress.

Surveys were administered at the beginning and end of the 12-month intervention period to GPs, pharmacists and facility staff. Surveys evaluated any changes in knowledge, confidence, attitudes, beliefs or practices related to vitamin D supplementation, and their perceived appropriateness of the intervention. A similar survey was also offered to staff members immediately before and after the face-to-face education session to evaluate any changes in knowledge, confidence, attitudes or beliefs on factors related to vitamin D supplementation as a result of the education.

One to two initial meetings with the key contact and project officer, with one to two follow up meetings to provide support and evaluate progress was conducted at each site. This included asking about the implementation of the devised quality improvement plan strategies, understanding the perceived barriers to implementation and gaining feedback on what could be improved.

Key Findings



Was there a change in vitamin D supplement use?

The overall proportion of residents at each facility prescribed an adequate dose (≥800IU/day) of vitamin D increased by 3.9% (95%CI 0.6 - 7.2%, p=0.02) at 12 months and 4.6% (95%CI 0.9 - 8.2%, p=0.015) at 18 months from baseline. Figure 1 shows the change in prevalence and individual facility variation in prevalence of vitamin D supplement use over the course of the intervention.

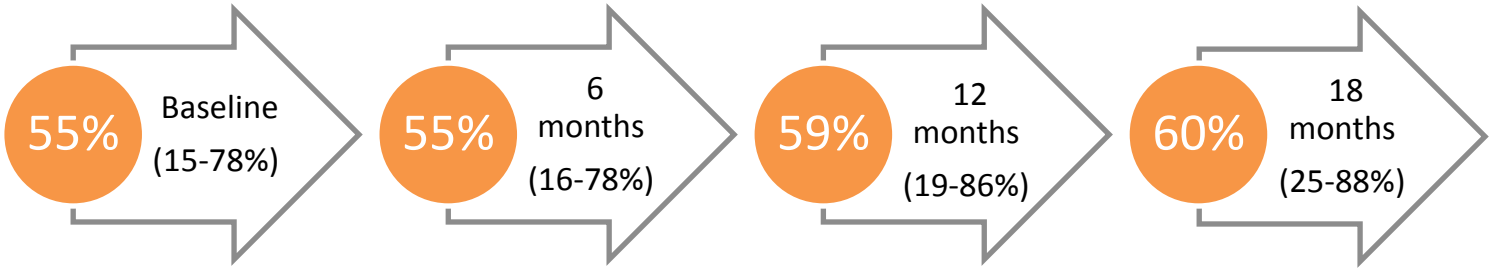


Figure 1: Overall proportion of residents at each facility prescribed adequate vitamin D (facility variation) at each medication chart audit

Did this change differ between groups?

The primary outcome of this study was the difference in the change in prevalence between the group of facilities that had started the intervention and the control group at six months. There was no significant difference in the change in prevalence of adequate vitamin D supplement use between the intervention and control group at six (1.10%, 95%CI -3.8 – 6.0, p = 0.6), twelve (3.73%, 95%CI -10.3-2.9, p=0.2) or eighteen (1.98, 95%CI -9.0-5.1, p=0.5) months.

Did this change vary among individual participating facilities?

Baseline prevalence and 12 month prevalence varied widely between individual facilities. The degree of change in prevalence seen in individual facilities during the 12 month intervention varied from -13% to 32%. Implementation strategies were evaluated by comparing three groups of facilities; those that saw reasonable improvement, those that saw little or no improvement, and those that saw a decline in prevalence (see Figure 2). It should be noted however that baseline prevalence itself may also influence implementation, as facilities with a higher prevalence at baseline may be less likely to improve.

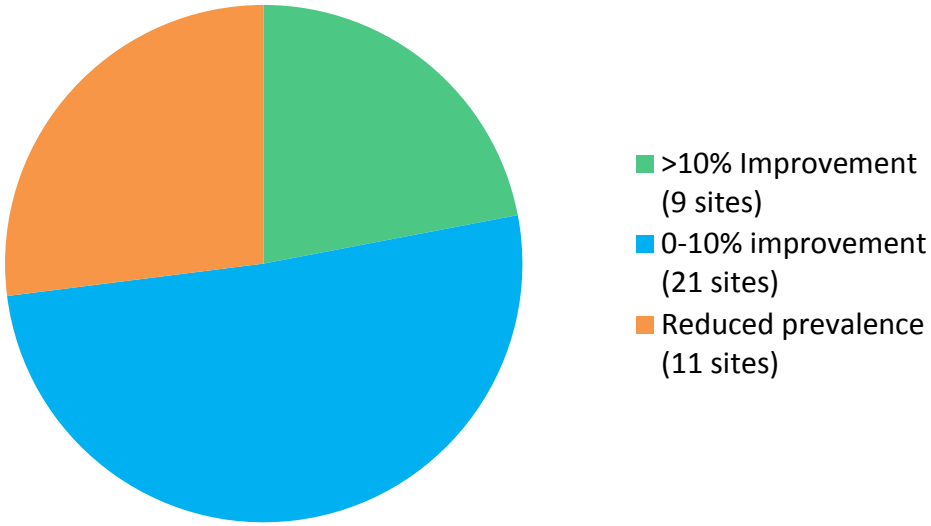


Figure 2: Individual facility outcomes for change in adequate vitamin D supplement use prevalence over 12 months

What factors influenced implementation in participating aged care facilities?

Figure 3 summarises the main factors that were found to impact upon the success of implementation and are discussed in more detail below.

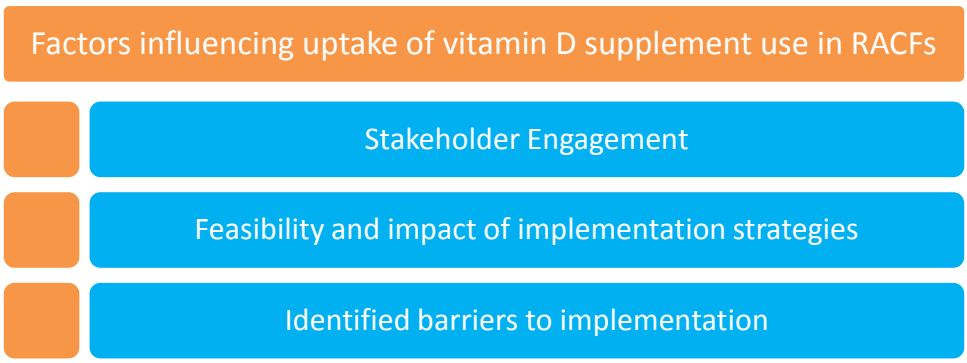


Figure 3: Summary of key factors to explain variable implementation of vitamin D supplements

Stakeholder Engagement

All stakeholders played an important role in this project, however some were more engaged than others and appeared to influence the uptake of vitamin D supplement use differently.

Key Contacts

- All except one facility had their key contact person present at either the face-to-face education session or the quality improvement planning session. 24/41 sites had their key contact at both sessions.
- Key contact involvement was more common among sites that saw improvements in vitamin D supplement use compared to those that did not.

Facility Staff

- When looking at staff attendance at education as a proportion of bed capacity, sites that had more than a 10% improvement in vitamin D prevalence had a higher level of staff engagement (20%), compared to sites that saw little or no improvement (16% and 14% respectively).
- The education resulted in improved reported knowledge and confidence relating to vitamin D supplement use.

GPs and pharmacists

- GPs and pharmacists of participating sites were not well engaged in this implementation project, with up to only 12% completing surveys.
- Survey respondents indicated no change in knowledge, confidence or practices surrounding vitamin D, and about half indicated that they did not access study resources or information.

Residents and their families

- Half of the participating sites provided face-to-face information to residents about the study, 22% provided face-to-face information to family members, 24% emailed information to family members and 29% made study newsletters available onsite.

Feasibility and impact of implementation strategies

In addition to awareness raising and engagement of key stakeholders, strategies relating to systems and processes to ensure the ongoing implementation of vitamin D supplement use were also prioritised locally. Table 2 outlines all of the identified strategies, the proportion of facilities that identified each strategy as important for implementation, and the proportion of those facilities that were then successful at implementing each planned strategy.

Feasibility

The percentages in the third column of Table 2 give an indication of the feasibility of implementing each strategy. For example, most facilities that set out to provide education to residents and their families were able to do so.

Strategies that were poorly implemented include embedding vitamin D into online assessment forms, arranging an ongoing audit of residents to monitor the prevalence of vitamin D supplement use locally and embedding ongoing education on vitamin D for staff for continuing professional development.

Impact

Although difficult to draw conclusions on the effectiveness of individual strategies, there are some differences regarding the implementation of strategies between facilities that had better outcomes than those that did not see an improvement (see Figure 2). In general, doing more corresponded with more improvement in vitamin D supplement use (i.e. higher total number of strategies employed), however facilities that had greater than 10% improvement in prevalence employed the following strategies more than less successful sites:

- ✓ Conducting a one-off internal audit to identify residents not currently prescribed vitamin D
- ✓ Implementing an unwritten procedure to identify residents suitable for consideration of vitamin D supplementation as part of usual practice (e.g. screening on admission, following a fall, screening and providing education at case conferences or medication reviews)
- ✓ Following up with GPs directly regarding individual residents identified as suitable for consideration of vitamin D supplementation.

Table 2: Quality improvement strategies identified and implemented by participating sites

Strategy	Facilities that identified (%)	Facilities that implemented (%)
Knowledge/awareness of vitamin D		
Face-to-face education for residents	28/41 (68)	21/28 (75)
Information and resources emailed to families	14/41 (34)	10/14 (71)
Making resources available onsite (in addition to study posters and brochures e.g. newsletters)	12/41 (29)	12/12 (100)
Face-to-face education for families	12/41 (29)	9/12 (75)
Adding vitamin D to staff meeting agendas	11/41 (27)	9/11 (82)
Embedding ongoing education for staff into the workplace *(e.g. adding links or information to online portals)*	11/41 (27)	5/11 (46)
Additional face-to-face education for staff	3/41 (7)	2/3 (67)
Identification of residents suitable for vitamin D		
Conducting a one-off audit to identify residents not currently prescribed, and potentially suitable for vitamin D	29/41 (71)	21/29 (72)
Adding vitamin D to online or hard copy assessment forms *(e.g. falls risk ax, admission or case conference forms)*	23/41 (56)	0/23 (0)
Implementing an unwritten process or procedure to identify residents suitable for vitamin D *(e.g. staff to remember to check on admission or during a case conference/ care plan review)*	20/41 (49)	16/20 (80)
Arranging an ongoing audit to identify residents suitable for follow up (either internally or as a request to pharmacy)	1/41 (2)	0/1 (0)
Referral pathways		
Follow up with general practitioners regarding specific residents that have been identified as potentially benefitting from vitamin D	23/41 (56)	14/23 (61)
General follow up with pharmacists to raise awareness	17/41 (41)	11/17 (65)
General follow up with general practitioners to raise awareness	16/41 (39)	16/16 (100)
Follow up with physiotherapists for support	3/41 (7)	2/3 (67)
General follow up with nurse practitioners to raise awareness	1/41 (2)	0/1 (0)

Identified barriers to implementation

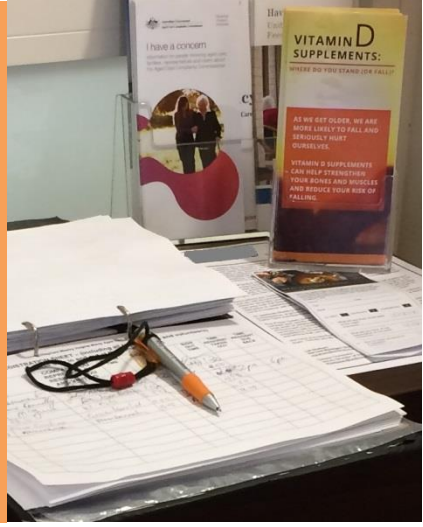
Table 3 summarises the barriers to implementation identified, and the percentage of key contacts at each participating facility that identified each listed barrier as likely to influence the success of implementation locally. Resident and family attitudes was the most frequently reported barrier. Few key contacts reported staff knowledge as a likely barrier, which may be related to the positive response and improvement in knowledge of staff reported following onsite education.

Leadership and culture for prevention tended to be reported by facilities that had lower key contact engagement (attendance at education and quality improvement planning meetings), either due to staff turnover, low participation in study activities or both. GP beliefs and attitudes was primarily identified by facilities that saw either a reduction in prevalence or between a 0-10% improvement, compared to those with more than a 10% increase in prevalence (73, 71 and 33% of key contacts respectively).

Table 3: Summary of identified barriers of participating key contacts

Identified barriers	%
Resident & family beliefs or attitudes	83
GP beliefs & attitudes	63
Suitability of residents for vitamin D	49
Competing priorities/ time/ capacity to implement	49
Resident & family knowledge or understanding	41
Awareness/ process/ prompt for staff	41
Resident behaviours	32
Contact with general practitioners	29
Staff turnover	29
Resident turnover	24
Leadership & culture for prevention	20
GP knowledge	17
Pharmacist attitudes & beliefs	15
Staff knowledge	5

Recommendations



What needs to happen now?

Despite only seeing small improvements to the prevalence of vitamin D supplement use, there have been a number of important learnings with regard to the changing profile of residents in aged care, and factors that both appeared to facilitate and hinder the success of implementation. Based on the findings of this study the following recommendations for consideration by various stakeholder groups have been made, to ensure optimal falls prevention in the residential aged care setting is realised:

Actions for Policy Makers

- Fund public health campaigns to raise community awareness of the benefits of vitamin D supplement use, and the health care costs that can be averted by achieving widespread uptake in aged care.
- Consider funding further research into the effects of vitamin D in the community dwelling older adult population.

Actions for Researchers

- Evaluate longer term outcomes of implementation efforts.
- Prioritise direct engagement with general practitioners and support for participating facilities.
- Research the changing care needs of older people in relation to vitamin D insufficiency and the effects of vitamin D supplement use in both residential and community settings.

Actions for Aged Care Organisations

- Provide top down support for implementation by reviewing the inclusion of identified organisation level strategies, providing structural support for prevention and fostering collaboration across sites.
- Consider local solutions to medical practitioner access, such as providing support for nurse practitioners, pharmacists and physiotherapists to routinely identify and refer residents suitable for vitamin D supplementation as part of their role.

Actions for Aged Care Facilities

- Appoint and foster local leadership for implementation.
- Implement strategies that are responsive to locally identified barriers.
- Undertake regular medication chart audits for follow up with medical staff as appropriate.
- Continue to raise awareness of the importance of vitamin D among all stakeholders.

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