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**SUMMARY**

A med calendar was designed and used to improve medication compliance among Navajo Indian patients in Shiprock, New Mexico. Improvement in med compliance was noted in over 70% of the patients.

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**THE USE OF A MED CALENDAR  
TO INCREASE MEDICATION COMPLIANCE**

The Public Health nurses at the USPHS Indian Hospital in Shiprock, New Mexico, have successfully designed and implemented a med calendar to increase medication compliance among their non-compliant Navajo Indian patients.

**FRAMEWORK**

In spite of various attempts to find a solution, the Public Health nurses noted that they all encountered patients with medication compliance problems. These problems included overdose, underdose, forgetting to take medications, taking meds at the incorrect time of day, not being able to open bottles, and mixing several meds in one bottle. Traditional attempts to increase compliance such as egg cartons, marking bottles, and daily pill containers failed.

One of the Public Health nurses noted that she frequently referred to a regular monthly calendar in the general care of her patients to point out appointment dates, clinic dates, and special dates such as commodity food distribution. She reasoned that the pictorial association was easier to understand for our many non-English speaking patients, a large percentage of whom are elderly. As a result, she developed a method of taping the patient's oral medications to his regular monthly calendar. Thus, in 1985, began the use of the med calendar on a large scale basis.

## DESIGN OF THE MED CALENDAR

Initially, the calendars were hand made by the drivers in the Public Health Nursing Department whose primary duties are to serve as interpreters for the Public Health nurses.

Regular size poster board (20" X 26") was used to simulate a monthly calendar. The squares of the calendar were drawn on the poster board with a black marker pen. The days of the week were placed at the top of each column. No dates or months were included. The poster-board was then laminated. After lamination, each Public Health nurse used a water soluble marker pen to label the days of the month and the calendar month it was being used. This enabled the calendar to be used from month to month on a continuous basis and to be re-used for other patients.

## METHODOLOGY

The patient's medications were placed in unit dose packages which were obtained from the hospital pharmacy. The filled unit dose packages were taped to the laminated calendar with masking tape according to the patient's medication dosage, ie.: each square would contain one package for a daily dose, two packages for BID, three packages for TID, etc. The patient received a detailed explanation on when and how to take his/her medicine. The calendar was attached to a wall, usually with stick pins. Medications were placed for 2-4 weeks at a time. Initially, the cost of the calendars was \$1.75 each, which did not include the labor to make them. Later, a professional printer was located who produces them for \$3.00 a calendar.

Safety of the calendars was addressed from two perspectives. There was a concern for stability of the medications in a clear package as opposed

to a dark opaque bottle. The Chief of Pharmacy assured us this would not be a problem. Medicines can be kept in unit dose packages up to six months. The pharmacists considered the benefits of patient compliance much greater than any small risk of medication instability.

Safety around children was also a major factor to be considered and it continues to be an issue that is addressed with each calendar in use. The calendars must be placed high enough on a wall to be out of the reach of children. If this is not possible, the use of a med calendar is not considered.

#### EVALUATION

The med calendars were well accepted by the patients. Acceptance of the calendars is attributed to three factors. The Navajo patients relate well to ordinary monthly calendars and this does not require knowledge of the English language. Also, visibility of the calendars contributed to acceptance. The calendars are large and easily seen. The visibility makes them hard for the patient to ignore or avoid. Finally, once explained, the medication dosages are much more easily understood with a pictorial association.

The calendars are quite durable. Some are still in use after 2-3 years.

From 1985-1987, 64 med calendars were used with non-compliant patients. Improvement was noted in 47 patients. No noticeable improvement was noted in 13 patients and results are unrecorded in 4 patients. Seventy-three percent of the patients showed some improvement. Improvement was measured by any one or combination of

the following:

1. Improvement in clinical symptoms including decreased hospitalizations.
2. Accurate or improved pill count.
3. Patient and/or doctor affirmation. Many patients told their doctors the calendars helped them and many doctors sent referrals to the Public Health nurses requesting a calendar be used.

From October, 1987 to July, 1989, more detailed usage of the med calendars was recorded. Fifty calendars were used in this time period. Improvement was noted in 40 patients (80%). No noticeable improvement was noted in 10 patients. Improvement was noted in the following areas with some patients sharing a combination of improvement:

|                                        |   |             |
|----------------------------------------|---|-------------|
| Improvement in clinical symptoms       | - | 21 patients |
| Improvement in pill count              | - | 22 patients |
| No further hospitalizations            | - | 4 patients  |
| M.D. statement of improved medical f/u | - | 3 patients  |

The calendars were used with all age groups but the majority were used with the elderly.

|                |   |             |
|----------------|---|-------------|
| Under 20 years | - | 1 patient   |
| 21-40 years    | - | 5 patients  |
| 41-60 years    | - | 5 patients  |
| over 60 years  | - | 39 patients |

Diagnoses of patients using a med calendar.

Cardiovascular disease  
Respiratory disease  
Cancer  
Pulmonary tuberculosis  
Diabetes mellitus  
Seizure Disorder  
Parkinson's disease  
Lupus erythematosus  
Arthritis  
Osteoporosis  
Schizophrenia

Reasons for implementing a med calendar:

|                                                                         |             |
|-------------------------------------------------------------------------|-------------|
| Unspecified medication non compliance (includes<br>13 doctor referrals) | 18 patients |
| Confusion/low mental aptitude                                           | 7 patients  |
| Difficulty understanding large number of meds                           | 5 patients  |
| Deterioration of clinical symptoms                                      | 5 patients  |
| Overdose                                                                | 3 patients  |
| Auditory or visual handicap                                             | 3 patients  |
| Patient request                                                         | 1 patient   |
| Unrecorded                                                              | 8 patients  |

Twenty-six calendars are currently in use. Reasons for discontinuing the med calendars in the remaining 24 patients is as follows:

|                                                                           |            |
|---------------------------------------------------------------------------|------------|
| Improvement in medication compliance                                      | 9 patients |
| Patient request secondary to better understanding<br>of medication dosage | 9 patients |

|                         |            |
|-------------------------|------------|
| Patient deceased        | 2 patients |
| No improvement noted    | 3 patients |
| Patient moved from area | 1 patient  |

There have been some difficulties noted in the use of the med calendars. As previously stated, safety in the presence of small children is a major concern. Some patients have become very dependent on the med calendar. This in turn becomes time consuming for the Public Health nurse who must visit every 2-4 weeks to refill the unit dose packages. The unit dose packages have occasionally failed to remain secure. Finally, the large size of the calendars can create difficulty in transport and are sometimes objectionable to the patient.

#### CONCLUSION

In conclusion, a med calendar was designed and used to improve medication compliance among Indian patients on the Navajo reservation. In two separate time periods statistics indicated improvement was noted in over 70% of the patients. It is believed the benefits far outweigh the difficulties encountered with this system. In this day and age of hundreds of multi-colored pills with hard to pronounce names, the med calendar has proved itself helpful in assisting the Navajo Indian patients (many of whom are elderly and with low literacy skills) to improve medication compliance and ultimately improve their physical well being.