Tackling Language Barriers at a Clinic Pharmacy: A Pictogram Medication Grid Pilot

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Health literacy, defined by the Institute of Medicine as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions", is an important component of health promotion and disease prevention within communities.[1] Low health literacy is prevalent throughout the United States and is a public health issue that must be addressed. The National Assessment of Adult Literacy (NAAL) reported that only 12% of adults have proficient health literacy levels (ability to perform more complex and challenging literacy activities) with the majority of patients having an intermediate level at 53% (ability to perform moderately challenging literacy activities). Twenty two percent of adults have basic (ability to perform simple and everyday literacy activities) and 14% have literacy levels that are less than basic (no more than the most simple and concrete literacy skills).[2] The NAAL also identified certain demographics within the general population that display lower health literacy skills, including adults who are 65 years or older, who did not complete high school, who live below the poverty level, or who speak English as a second language. Health literacy that falls below the basic level is also observed at higher rates among adults with Medicaid or Medicare as well as those without insurance. Additionally, Black, Hispanic, and Native American adults are more likely to have health literacy levels below basic than their White counterparts. Among racial and ethnic groups, Hispanic adults have the highest rates of below basic health literacy (41%). In Wisconsin, the NAAL estimated 39% of adults have below basic or basic literacy skills. A 2009 health policy brief estimates this level of low health literacy costs the state 3.4 to 7.6 billion dollars annually.[3,4] Healthy Wisconsin 2020 recognizes low health literacy as a statewide problem that must be addressed by increasing awareness of this problem and improving communication between patients and providers.[5]

FIGURE 1. A Sample Adapted AHRQ Pill Card Specific to the Spanish-Speaking, LEP Population. This template was used as the basis for each patient-specific medication grid created.

Name:
Nombre:

Date Created:
Fecha de creación:

Pharmacy phone number:
Número del teléfono de la farmacia: (608) 204-2680

Medicine name **Nombre del medicamento**	Use For **Usa Para**	Instructions **Las Instrucciones**	Morning/Breakfast **Mañana/Desayuno**	Afternoon/Lunch **Mediodía/Almuerzo**	Evening/Dinner **Tarde/Cena**	Night **Noche**

Health literacy status has a substantial impact on the delivery of health care. Patients with low health literacy are more likely to experience poorer health outcomes, including more hospitalizations and use of emergency care, fewer public health screenings, and a higher mortality rate among the elderly.[6] These patients also experience greater difficulty interpreting medication labels and using medications correctly. Overall literacy is also correlated with health literacy. One study revealed that in adults with adequate literacy (ninth grade reading level or higher), 89.4% could read medication instructions correctly and 80.2% could demonstrate appropriate use (e.g., showing correct number of pills to be taken in one day). In contrast, among adults with low health literacy (sixth grade reading level or below), 70.7% could read medication labels correctly and only 34.7% could demonstrate appropriate use.[7] Within Limited English Proficiency (LEP) populations, language barriers have resulted in decreased access to care, patient understanding, and patient satisfaction.[8] Overall literacy and LEP are factors that impact health literacy, which is subsequently correlated with patient understanding and medication adherence.[9] This relationship suggests that an intervention to improve health literacy, such as pictogram medication aids, may also lead to improvements in medication understanding and adherence.

Available literature supports the use of pictogram medication aids as a potential health literacy intervention to improve information recall, medication comprehension, and adherence.[10] In addition, combining written information with visual aids has demonstrated greater efficacy than either intervention alone. Kripalani and colleagues conducted a randomized controlled trial with patients seen in an inner city primary care clinic and who were enrolled in the Improving Medication Adherence through Graphically Enhanced interventions in Coronary Heart Disease (IMAGE-CHD) study to determine effectiveness and usefulness of illustrated pill cards.[11] Pill cards were a combination of pictorial images and short text labels developed by two physicians with expertise in medication adherence. Patients were randomized to one of four groups and received either usual care, illustrated pill cards, refill reminder postcards, or both pill cards and reminder postcards. Most of the patients were African American (92%) with inadequate health literacy (42%, sixth grade reading level or less) or marginal health literacy (37%, seventh to eight grade reading level). Of the 209 patients who completed the follow-up and received the pill card intervention, 83% reported initially using the pill card, which decreased to 60% at 3 months. Most patients rated the pill card easy to understand and reported that the card helped them to better remember medication information (92% and 94%, respectively). In addition, patients with low health literacy, cognitive impairment, or less than high school education were more likely to refer to the pill card on a regular basis initially and at 3 months ($p<0.05$). The trial excluded LEP patients who were unable to communicate in English. A limitation of this study is the possibility of recall bias, as patients were asked to report pill card usage over the 3-month time period.

Another randomized controlled trial (n=200) conducted by Mohan et al. compared a pictogram medication grid with bilingual text to usual care (written list of medications in the patient's preferred language) for Latino patients with diabetes in a safety net clinic.[12] Fifty-nine percent

FIGURE 2. A Database of Pictograms for Medication Indications Made Available to Pharmacy Staff to Edit into a Patient-Specific Medication Grid. These pictograms were used to fill out the "Use for" column of the adapted pill card in Figure 1.

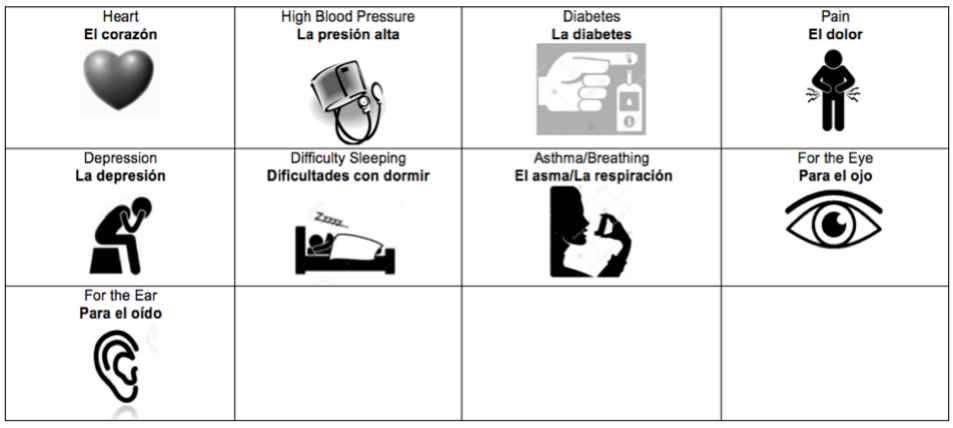
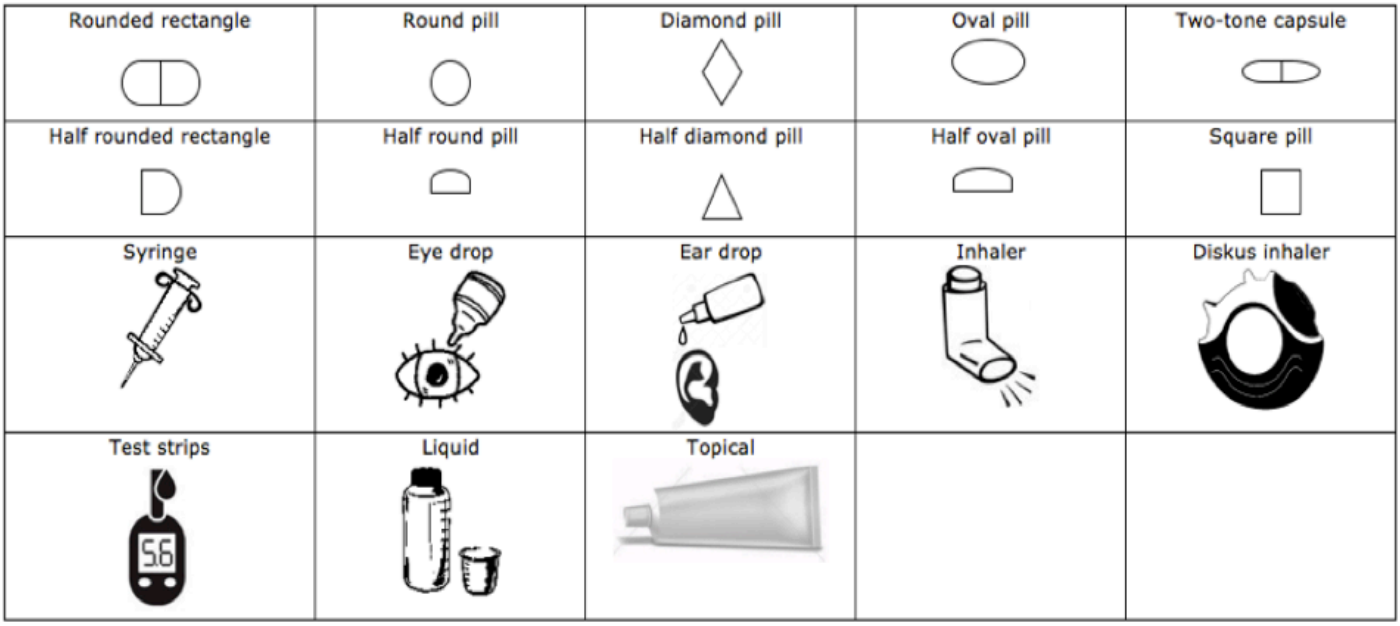


FIGURE 3. A Database of Pictograms for Medication Formulations to Ease Identification of Medications. These pictograms were used to fill out the last four columns of the adapted pill card in Figure 1 to show the appearance of the medication scheduled to be taken at the specified time of day.



of patients in both groups were identified as having limited health literacy. The medication grid included the medication name and strength, indication, instructions, and the grid demonstrating pictorially and verbally how much medication should be taken at each time of the day. Outcomes were evaluated via telephone one week later using the Medication Understanding Questionnaire to measure medication understanding, adherence, and patient satisfaction. Patients who received the pictogram intervention had improved medication understanding, including the ability to report the indication, strength, dosing, and frequency of administration ($p<0.05$). However, there was no difference between groups for self-reported adherence. Many patients were satisfied with the pictogram, as 99% reported the tool was clear and easy to read, and that it helped them recall which medications to take (97%) and when to take them (97%).

The Agency for Healthcare Research and Quality (AHRQ) has created a step-by-step guide for creating a personalized pill card for patients to help them better manage and keep track of their medications.[13] The pill card template utilizes both patient-friendly phrases and pictures to show the name and dose of each medication, the indication, and dosing instructions, including how and when to take the medication. Health care professionals may save an electronic template and customize the pill card for each patient. This tool provides patients with a visual representation of their medication regimen and makes medication-related information easily accessible. The AHRQ pill card template is a valuable resource for English-speaking patients with low health literacy; however, the pictogram could benefit a wider range of patients if available in additional languages with added graphics.

Objective

This article seeks to describe the process developed to adapt the existing AHRQ pill card for use with Spanish-speaking, LEP patients.

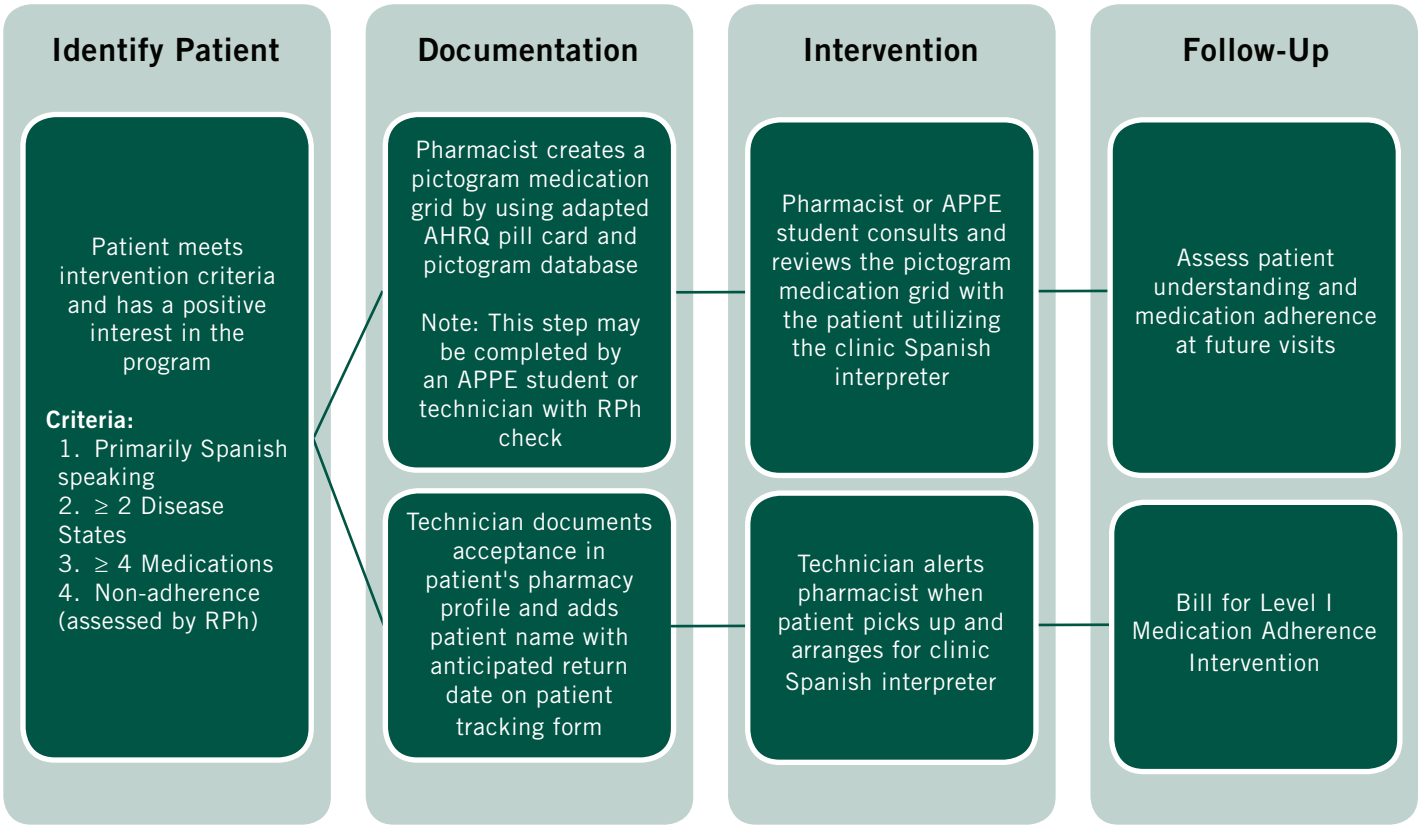
Practice Innovation/Methods

A pictogram medication aide intervention was designed and implemented in a community pharmacy servicing a clinic in Madison, Wisconsin. The clinic provides affordable health care to the Dane County area and serves patients with low socioeconomic status, and a substantial Spanish-speaking population. Services provided include pharmacy, dental, mental health, primary care, and care coordination. At the time of intervention, the pharmacy was staffed by one full-time pharmacist and technician, neither of whom were fluent in Spanish. On-site interpreter services are provided by the health clinic; however, this is often supplemented with video or telephone interpreter services based on clinic interpreter availability.

The clinic pharmacy expressed a need for overcoming communication barriers affecting medication use, specifically in the Spanish-speaking, LEP patient population. Working closely with the managing pharmacist, an intervention was identified: creating Spanish language pictogram medication grids for LEP patients. With available literature in support of this intervention, the student pharmacist team created the tools necessary to implement this service in the pharmacy.

The project goal was to implement Spanish-language pictogram medication grids adapted from AHRQ pill cards and to evaluate the feasibility of implementing them based on pharmacists' qualitative feedback. This project did not involve collecting identifiable health information nor constitute human subjects research; therefore, Institutional Review Board approval was not required. Methods to complete the project were: planning, implementing, and evaluating.

FIGURE 4. The Four Major Sections to the Pharmacy Workflow for Intervention Implementation: Identification of patients that would benefit, documentation of the pictogram medication grid and service provided, delivery of the intervention by communicating the medication grid to the patient, and follow-up to assess outcomes and bill for the intervention if appropriate.



Planning

In the planning phase, the target population was identified and the pictogram medication grid and training materials were created. Most of the time was spent adapting the AHRQ pill card with Spanish translations (Figure 1) and selecting pictograms for medication indications and formulations that would not be easily misinterpreted (Figure 2). Each selected pictogram for indication and formulation was also augmented with standardized Spanish translations. One student pharmacist fluent in Spanish performed the initial translation, which was subsequently reviewed by the clinic's medically-certified interpreters. To allow for personalization of medication grids for each patient, a database of pictograms was created that could be easily incorporated into a template medication grid. Some pictograms were pulled from the United States Pharmacopeia's pictogram library,[14] while some were created manually. When creating personalized grids, the "Nombre del medicamento" ("Medicine name") section of the grid would be filled with each medication name. The "Usa Para" ("Use For") section would be filled with a disease state pictogram from Figure 2. The pictograms from Figure 3 would be used to help in identifying formulations for each dose time in the "Mañana/Desayuno" ("Morning/Breakfast"), "Mediodía/Almuerzo" ("Afternoon/Lunch"), "Tarde/Cena" ("Evening/Dinner") and "Noche" ("Night") columns. The only section that required additional translating was the "Instrucciones" ("Instructions") column.

The intervention was also designed to attempt to optimize time spent by the pharmacist, technician, and clinic interpreter. The workflow can be broken down in to four distinct sections: identifying the patient, documentation, intervention, and follow-up (Figure 4).

Identify Patient

The Wisconsin Pharmacy Quality Collaborative (WPQC) reimbursement model for pharmacist interventions relating to adherence issues was utilized to identify and approach patients that would benefit from this service. Although not captured in the project evaluation, the long-term goal of this design was to encourage reimbursable WPQC cognitive services that could further support the sustainability of this program. For this pilot, pharmacists would identify patients with two or more chronic disease states and four or more medications. Spanish as a primary language was also required for eligibility. This manual patient identification was feasible in a small clinic pharmacy setting with a consistent patient population. Inclusion criteria also allowed for pharmacist discretion in selecting for patients with other medication adherence or communication barriers.

Documentation

Documentation included recording all patients offered the intervention with

FIGURE 5. The Electronic Survey Evaluating Intervention Tools and Workflow

1. On a scale of 1-10, where 1=not important at all and 10=extremely important, how likely are you to implement this project in the future?
2. On a scale of 1-10, where 1=not important at all and 10=extremely important, how useful would this tool be for you?
3. On a scale of 1-10, where 1=not important at all and 10=extremely important, how useful would this tool be for patients?
4. What impacts, both positive and negative, might this project have on your pharmacy?
5. What impacts, both positive and negative, might this project affect workflow efficiency?
6. On a scale of 1-10, where 1=not important at all and 10=extremely important, how important is it to have an intern, clerkship student, or resident available to help you with the project in the future (if implemented)?
7. Would you expect this to increase patronage at your pharmacy?
8. What advice do you have for us if we were to plan this type of project again?

their decision regarding participation in the pharmacy's dispensing system software. If a patient verbalized interest in receiving the intervention, their name would also be added to a written patient list. This list was posted in the pharmacy and was used to track the progress on each medication grid (i.e. in progress, completed) and the patient's anticipated return date. Given that creating a pictogram medication grid with multiple medications, instructions, and translations presented time constraints, the target completion date was the patient's next pharmacy visit. Inclusion of pharmacy technicians and student pharmacists in this portion of the service aimed to expand their roles and responsibilities while also optimizing the pharmacist's time. A pharmacist performed the final review of all grids.

Intervention

At the patient's next visit, the pharmacist or student pharmacist would provide the pictogram medication to the patient and discuss it using a telephone, internet, or in-person interpreter. This step could also be performed by a pharmacy intern or student pharmacist. The time constraints present for the shared in-person clinic interpreter were a potential limitation in delivering this intervention. In the absence of interpreter resources, the medication grid could still be provided as the document's translations provide an avenue for overcoming communication barriers. Additionally, the pharmacist or student pharmacist performing the intervention does not have to be Spanish language proficient.

Follow Up

After the interventions were completed, the student pharmacist group provided suggestions for pharmacy follow-up with patient outcomes and billing. This short pilot period did not allow time for the assessment of the financial value of this service.

Implementing

The implementation phase was a short, three-week trial period. About one week prior to implementation, the group visited the pharmacy and reviewed all training and tools directly with the managing pharmacist and technician. Throughout the duration of the project, no significant issues with following the specified workflow or utilizing the pictogram tools were identified.

Evaluation

In the week after the pilot period ended, the two staff pharmacists were surveyed with eight qualitative and quantitative items created by the student pharmacist team (Figure 5). These items evaluated the pictogram medication grid, the intervention process, and any intervention implementation issues. Only pharmacists were surveyed in this assessment as technician staffing and involvement varied greatly during the pilot period.

Results/Discussion

Two pharmacists used the pictogram medication grid with two patients. Both pharmacists reported the intervention tool was well-geared toward the targeted patient population. One pharmacist commented that the tool would be useful for Spanish-speaking patients with more complex medication regimens. It would also be useful as a document that caregivers can pass along to Spanish-speaking patients who may not be present at the time of counseling.

The main challenges reported were restrictions on pharmacist time and interpreter availability. The managing pharmacist provided feedback that one challenge in implementing this pilot project was the access to the Spanish interpreter services for the extended consultation that the pictogram tool required. On-site interpreters had to balance pharmacy consults with other obligations within the clinic, while telephone or even tablet-based interpreter services would struggle to follow the visual aspects of the pictogram tool. One potential suggestion was to incorporate this tool into a medication therapy management appointment or set aside time when the interpreter services could be scheduled in advance. This may assist in incorporating pictogram more seamlessly into a comprehensive medication review setting. Challenges presented by limited interpreter availability, as well as strategies for their management, should be prospectively identified in the design of future interventions.

Pharmacists reported the support of a student pharmacist, intern, or resident as crucial to the execution of this project. Moving forward, sustainability of the intervention could be improved by training student pharmacists or pharmacy residents on the creation of medication grids. The managing pharmacist reported, "With a pharmacy resident or intern, creation of patient-specific pictogram tools can have minimal impact on standard pharmacy workflows and can be incorporated into self-directed learning opportunities."

Furthermore, a re-design of the pictogram tool to incorporate computer-based functions, such as drop-down menus for the selection of medication names and pictograms, could improve efficiency. Promotion of widespread adoption of this type of intervention would require planning and marketing to alert both patients and providers about the intervention. Gaining the support of in-clinic providers could create an avenue for patient referrals and expansion of pictogram use.

The images used in the creation of the pictogram medication grids are intended to supplement the written text and further improve patients' understanding of their

disease states and medications. However, potential variations in the interpretation of these images among individuals and across cultures must be considered. Feedback from patient advocate groups would be useful to tailor the images appropriately. Since not all pharmacy sites have access to the telephone or in-person interpreters necessary to explain components of the medication grid and answer patient questions, dissemination of this service may be limited.

The small sample size and the short pilot period limit the ability to assess the impact of pictogram medication grid utilization on patient outcomes; further evaluation of these outcomes is warranted. Relevant outcomes include medication adherence, knowledge of disease states and medication purposes, perceived utility of pictogram, and satisfaction with pharmacist-provided care. Further, this pilot was tailored to Spanish-speaking patients. It will be useful to expand future studies to include patients who speak other languages.

Overall, pharmacists' response to workflow and resource design was positive, with concerns focused primarily on time restraints. The managing pharmacist was hopeful that this service would distinguish their pharmacy in terms of patient care and education in a high Spanish-speaking patient population. With some promotion of the service amongst patients and clinic providers, this service would hopefully lead to increased patronage and prescription capture rates.

Conclusion

Investigation of opportunities for health literacy improvement among LEP patients is a goal shared by many pharmacies throughout Wisconsin. Utilization of a pictogram medication aid is a promising strategy to help overcome health literacy barriers. Tools of this nature facilitate improved pharmacist-patient communication, and subsequently improved patient understanding of medication therapy. Additionally, providing patients with a visual representation of medication therapies may help to improve adherence. The student pharmacist team's positive experience with adaptation and implementation of this tool suggests it has the potential to support other pharmacies in enhancing communication with Spanish-speaking LEP patients.

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