An idea to assist communication through the language barrier between clinicians and hospital patients

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I recently learned of the trial use of GS1-128 barcodes within some National Health Service hospitals in the United Kingdom.

I am wondering whether the following idea could be useful and could be applied within that system. The idea is best explained using scenarios. Additional software would be needed yet the same barcode scanning equipment could be used, so perhaps the idea could be implemented using mostly equipment that is already present.

The existing situation

Suppose please that a nurse in a hospital asks a patient the following.

"Would you like a drink of water?"

If the nurse and the patient both understand English, then the situation is straightforward.

However, suppose that, say, the nurse understands English, yet the patient understands some other language, yet not English. There is a problem in communication.

A suggested system

My idea is that a system becomes implemented whereby, at the system implementation stage, the whole sentence "Would you like a drink of water?" is given a code number, an integer, and that that code number is incorporated into a barcode. If, at a later time, in an everyday situation, the nurse scans a barcode that is labelled as being for that sentence then the code number is entered into the computer system.

The system would encode a number of preset sentences. Some of those sentences could, where the patient is well enough to be able to use the equipment, be used by a patient to communicate with a nurse.

Each sentence needs to be grammatically stand-alone as that avoids various problems relating to translation when implementing the system.

After the barcode has been scanned there could then be several possibilities, depending both upon how the system is implemented and upon the choice of the nurse if more than one possibility is implemented.

The first possibility is that the computer system looks into a text file and selects the string of text that corresponds to the code number that has been scanned from the barcode, the particular file that the computer looks into being the file for the localization of the sentences into the language that the patient understands. The coding could be straightforward using a UTF-16 format text file such as can be produced on a PC by using the Microsoft WordPad software program and saving as a Unicode Text Document. For example, there could be, on each line of text, the code number for the

particular sentence, then a | symbol, then the localized text in the language being used in that particular file. The string of text is then applied either by display upon a screen or by using a text to speech system. Use of the UTF-16 format for the text file allows a very wide selection of languages to be possible.

The second possibility is that the code number is used to access a sound file, such as a .wav format sound file and that that sound file is played through an audio system.

Implementation of the system

The system would take a lot of work to set up. Yet once set up could be used many times without needing translation work every time communication through the language barrier is needed for many everyday situations.

The system would not cover every possible situation and people to translate would still be needed in many situations not covered by this system. Yet for situations of asking a patient if he or she would like a drink of water, whether he or she would like to go to the day room, whether he or she would like another blanket, and so on, the system could be very effective.

If implemented it would need to be decided how many preset sentences were to be encoded and what situations those preset sentences are about.

In order to implement the system a list of sentences would need to be produced, manually. Each sentence on the list would then be allocated a code number.

A computer text file of code numbers and text in English would then be produced. There would need to be care to avoid ambiguity of meaning. After that, versions of the file localized into a number of languages would be needed. In each case the code numbers would go straight through and remain the same in the localized version for each language.

If possible, a .wav sound file for each localized sentence would be prepared.

If there were n preset sentences in the system then there would for each language supported in the system be one text file that includes n lines of text, one line for each preset sentence; and, if sound files are used as well, n .wav sound files.

If the idea is implemented, the system should be implemented so that addition of more preset sentences from time to time, perhaps annually, would be possible, so the text files may each also contain some extra lines so that the international code for the language and the version number of the specification can be extracted both by a human and by a computer.

Implementation notes

I have only recently looked at the topic of GS1-128 barcodes.

If I understand that system correctly then the long-term way to encode the code number of a such a preset sentence for this application scenario into the barcode would be for the GS1-128 system specification to allocate an Application Identifier code number specifically for the purpose of encoding a particular set of preset sentences, such as a

United Kingdom National Health Service set of preset sentences, yet for experimental purposes and indeed for application within a hospital setting it would be possible to use an existing company internal information Application Identifier such as 91: if this is done it would be best to place in each such barcode a fixed code number before the code number for the preset sentence as a check to minimize the possibility of errors from scanning a barcode from another organization.

An experience that I had many years ago relating to a barcode is worth mentioning here. I was in a garden centre and I was buying a grow bag. I had loaded the grow bag onto a trolley and was now at the check out. I was about to lift the grow bag onto the desk for scanning of the barcode when the lady at the checkout said that there was no need to do that. She opened a folder and there was a sheet of paper upon which were printed two columns of information, barcodes at the left and the English description of the products at the right. The lady scanned the barcode for the grow bag that was printed upon the sheet of paper rather than scan the barcode on the grow bag. The list, once prepared, could be used many times for helping customers. I am thinking that perhaps that technique could be used for a list of sentences, a barcode at the left and the corresponding sentence at the right, localized into the language of the person using the list. There could be an English version for use by staff and there could also be a localized version for use by a patient where the patient were able to use the system. Maybe the list for a patient could be a subset of the whole list, the subset selected for the needs of the patient. The lists could be set out in the same format and perhaps printed out as needed. The language of the patient perhaps being obtained by scanning the wrist band being worn by the patient.

Conclusion

This document presents an idea. The author is not a clinician. The author presents here, for consideration for possible application in a hospital environment that uses barcodes, an idea that would apply his research on communication through the language barrier.