

CLINICIANS' CHALLENGE 2011

Case 1 – Early Warning Score system

Wellington Hospital recently introduced an Early Warning Score (EWS) system. The EWS system triggers a review of sick patients by senior nursing or medical staff based on their 'vital signs' (blood pressure, pulse rate, breathing rate, etc). Each vital sign has a weighting assigned to different values (e.g. a pulse rate of 40-49 is assigned an EWS of 3), which are then added up to produce a combined EWS which is used to trigger a system response. The higher the total EWS, the sicker the patient.

This system has been proven to reduce in-hospital cardiac arrests and to bring the necessary expertise to deteriorating patients in a rapid fashion. It is well documented in the medical literature that there is a system-wide failure to detect deteriorating patients & even if this is recognised by junior staff, the escalation of expertise is often not activated for various practical & political reasons.

At present the EWS is assessed using a colour-coded observation chart which relies on the bedside nurse to perform & document the observation on the chart, calculate the score correctly according to the correct colour-banded zone & then to follow a protocol to contact the necessary person (nurse in charge, junior doctor, senior doctor, medical emergency team, etc). The system fails the patient if the EWS is incorrectly scored or added up, or the escalation protocol is not followed.

My suggestion is for a hand-held portable device (PDA or Smartphone) into which the nurse enters the observations as he/she is doing them (via a simplistic drop-down menu). These are then transmitted wirelessly to a central location on the ward where they are collected and stored, and can be examined by anyone without having to find the individual patient's physical paper vital signs chart. More importantly, the score matrix is applied, the EWS calculated, and the correct person(s) notified by pager/text message automatically according to the total score.

This automatic correct notification and escalation of care for sicker patients removes human factors from the escalation system, bringing expertise to the bedside of deteriorating patients. We know from admissions to our Intensive Care Unit that the system fails when the incorrect observation chart is used or the EWS is either not calculated or calculated incorrectly. I believe this system will automate data collection allowing a formidable dataset to be collected for study, but more importantly has major patient safety implications.

Case 2 – Clinical Interpretation

New Zealand and especially Auckland is becoming increasingly multicultural. Public hospital communication resources to support this are not always available. As an intensive care specialist, I usually require clinical information urgently in my patient encounters. However patients may not have an interpreter present when I am called to see them. Hospital interpreters requested for the “usual” non English languages may take anywhere from 30 minutes to 2 hours to arrive. It is possible for interpreting to be done by phone but often speaker phones are unavailable and thus a phone handset needs to be passed back and forth – a very inefficient process. Even after resolving emergencies, there are still occasions where interpretation would help, but it is felt that the indication is insufficient to warrant the cost of an interpreter. This includes: clinical staff wanting to explain the supportive therapy they need to do, eg - physiotherapists; asking a patient to sit and lie in certain positions in the bed; patients indicating that they want to go the toilet, etc.

I would therefore appreciate a clinical interpretation program. This would not and could not take the place of a trained clinical interpreter, particularly for complex issues such as informed consent, or diagnostic explanations. Instead, it would be designed to get basic clinical information (i.e. enough for urgent therapy to begin), communicate simple clinical requests and therapies, and allow the patient to make simple requests or report problems.

I would envisage that the basic clinical information component would start off with explaining to the patient in the patient’s language audiovisually that they would be asked simple questions by the clinician, to which they had to reply either ‘yes’, ‘no’, or ‘I don’t know’. It would then list categories, e.g. - respiratory questions, cardiovascular questions for the clinician to select for interpretation. The questions would be as simple as possible, eg - “Are you short of breath now?”, “Are you usually short of breath?”. Short videos could accompany the printed questions, to make sure the patient and/or their relatives understood the spoken question.

Simple clinical communication would have a similar system: first, explanation of the type of request (eg - movement related), followed by a visual demonstration and oral request for eg ‘please lie down’, ‘please sit up’, ‘cough now’, ‘I need to put a drip in to give you medicine’. The patient requests part would allow them to communicate, eg - “I want to go to the toilet”, “Please call my family”.

I am aware of other clinical translation programs but I do not know of any that do all of the following: include Polynesian and South East Asian languages; inclusion of clinician to patient and patient to clinician interpretation; inclusion of both visual and auditory cues for the patient and relatives. In addition to high acuity situations, such a solution could also be adapted to work for screening situations (eg - a pre operation checklist) or extended for use in a standard medical/ surgical ward context.

Case 3 – eNotification

eNotification is the eReferral of legally reportable conditions to Medical Officers of Health.

Summary of the problem:

All NZ registered physicians are required to refer patients diagnosed with one or more of the 50 or so conditions designated as a “notifiable disease” to the Medical Officer of Health (MOsH) for the district in which the case resides. The current list of legally mandated referrals is available here http://www.moh.govt.nz/moh.nsf/wpg_index/About-notifiable+diseases. The purpose of these referrals is to enable Medical Officers of Health and their public health services to provide additional service to the patient and their family in order to prevent spread of the disease; to investigate the source of the infections such as contaminated food so as to prevent further cases, to identify well individuals who may have been exposed to the agent causing the condition for whom preventative services may be provided; and to monitor population level trends in the occurrence of these conditions.

In order to triage and prioritize investigation and management of these referrals public health physicians and their teams require certain demographic, risk factor and clinical data about cases. The current referral process often results in the provision of insufficient information on the initial referral for this triage to take place. As a result public health services are required to devote significant resources to contacting referring physicians by phone to collect missing information about cases. For more common diseases such as Campylobacteriosis public health staff do not have sufficient resources to call all referring physicians and letters to patients are used to try and collect missing information. The response rates to such letters are often very low and the responses are not sufficiently timely to enable timely public health action. This means that cases that may require urgent follow-up because of a risk of transmission in a work place or school setting may not be identified in a sufficiently timely manner.

An automated referral process based on HL7 messages from laboratories to a web based national notifiable disease database (EpiSurv) has been established and is partially implemented. These referral messages do not however contain sufficient clinical or risk factor data to enable Medical Officers of Health to triage cases. Important data elements required for triage of referrals include occupation (or workplace) of the patient and immunization status for vaccine preventable disease cases. Potentially vaccination status is available through the NIR but this currently requires a manual look up by public health staff.

Not all reportable conditions are detected through laboratory testing and often referral is required prior to laboratory confirmation being available (eg - for cases of vaccine preventable conditions such as measles). In some instances the referring physician will also wish to consult the Medical Officer of Health to obtain advice regarding immediate investigation and management at the time of initial diagnosis. In these instances the GP (or other referring physician) will often call the Medical Officer of Health and because of this be called upon to provide required referral data by phone. Referring physicians often find this process of manually passing on data that already existings within the patients ECR frustrating.

Many of the required data fields also constitute a national minimum dataset for the national collection of all referred cases. The required data elements for each condition have been agreed nationally and are specified here <http://www.surv.esr.cri.nz/episurv/crf.php>.

Not all data elements from the national dataset are drawn from the referring physician as some data are provided by the Medical Officer of Health after investigation and service provision by public health.

Time frames for referral also vary by condition with some conditions requiring urgent referral and management by public health. Systems must be in place to ensure urgent referrals are always reviewed by a Public Health Physician in a timely fashion. Diagnosing physicians may be hospital based physicians working overnight and a process for referring patients afterhours would be preferable to the practice of relying on handover to another staff member to refer cases during work hours.

Requirements

The challenge is to create a solution that streamlines the referral process for reporting doctors and ensures sufficient information is provided within the initial referral to enable MOsHs to prioritize and manage referrals efficiently and safely.

The solution will:

1. build on existing infrastructure by integrating the referral process with: existing eReferral protocols, the existing [web based](#) national reportable conditions data collection and reporting tool (EpiSurv); and local case management tools such as the NDCMS developed by ARPHS.
2. develop an interface for populating missing required data fields within the reporting physician's PMS (or clinical workstation for hospital physicians)
3. integrate data streams and records created through the laboratory reporting process with records generated for the same patient by a referring doctor.
4. provide for two way communication between Medical Officer of Health and referring doctor and include an acknowledgement message to be sent to referring physicians once the referral triage process has taken place
5. potentially include a notifiable disease specific version of an eDischarge once the case has been managed.

The successful vendor will work with a group of Medical Officers of Health and the EpiSurv system owner ESR to refine the eReferral requirements including: identifying critical data elements; alert requirements such as SMS notification; and receipt and acknowledgement processes.

Making a Submission

Vendors can make individual or group submissions.

Your submission should be a Word document, no longer than 8 pages. Please e-mail it to admin@hinz.org.nz by **3pm on 31 October 2011**. There will be no extensions.

The shortlisted vendors will be advised of the status by Friday 14th November.

The selected vendors, and the clinicians who put forward the successful case, will be required to give a 7 minute presentation to the judges at the HINZ Conference at 3.30 pm, Thursday 24th November at the Aotea Centre, Auckland.

The winner will be announced and judges will present certificates to the winner and two runners up at the HINZ dinner on Thursday 24th November at the Civic Wintergarden, Auckland.

The winning vendor and clinicians will be expected to undertake their proposed field trip/study within the next 12 months.

The winning vendor and clinicians will be expected to present the findings of their proposed field trip/study to a HINZ Seminar in 2012.

At this stage there will be no further information distributed regarding the cases. So feel free to make assumptions as necessary.