

Should systematic risk assessment and immediate intervention of the acutely ill patient replace the traditional management paradigm?

J Kellett

Abstract

The outcome of the traditional diagnostic history and physical depends entirely on the availability, ability and diligence of an individual doctor. An alternative is a team-based approach that performs the following tasks: a focused assessment, monitoring of the response to initial treatment, and then determining what further management is appropriate (calling for urgent help if it is required). This concept is based on risk prediction rather than diagnosis, and is captured by the mnemonic FAITH3 (Focused Assessment, Initial Treatment, hAssessing response, calling for Help and HAnding over care).

The Seminal Event

Shortly before I retired from full-time clinical practice a 52 year old gentleman presented to my hospital's emergency room at 9.25 am complaining of epigastric pain and vomiting for the last 24 hours. All his vital signs were normal. He had no past history of note, and was taking no medication. The surgical registrar was called to examine him and found that he had normal bowel sounds, a negative Murphy's sign and no evidence of rebound tenderness or other signs of an acute abdomen. A diagnosis of peptic ulcer disease was made, an intravenous infusion started, and blood for a full blood count, urea, electrolytes, amylase and liver function tests was drawn. The patient remained in the emergency room until 11.30 am by which time a chest x-ray and plain film of the abdomen had been performed and reported as normal. He was then transferred to the surgical ward for intravenous fluids, pain relief and further investigations. It was not until 2.30 pm that a routine ECG was performed, which showed an acute anterior myocardial infarction with extensive ST elevation with reciprocal changes.

What went wrong?

Why did this patient's management go so badly wrong? Firstly the registrar made, in this case, the near fatal mistake of making a diagnosis. Making a diagnosis often has catastrophic consequences because it stops further consideration of other possibilities as it is *difficult to remember what you have forgotten*, and any changes in the patient's clinical course is interpreted as some kind of manifestation of whatever diagnosis was made (i.e. *you only see what you are looking for*).

The second error was a failure to appreciate the prevalence of common serious diseases outside one's area of expertise – coronary artery disease is very common and is present in 20% of men in our patient's age group.

The third error was that no system was followed. This is ironic since on every ward in our hospital (including the emergency room) large posters are placed of a treatment algorithm to be followed on all patients. The first line of this algorithm states that patients with ST elevation should go directly to our coronary care unit. If this simple algorithm had been followed this patient's acute myocardial infarction would have been identified within minutes of his presentation.

The diagnostic history and physical examination – still the paradigm

Formal medical education is still wedded to the concept of the “complete history and physical”. This assumes that exhaustive knowledge will lead to complete understanding, and that all information, no matter how trivial, is of value. This strategy of exhaustion is still thought to be the “right way” to care for patients by many doctors and most of their teachers. However, crucial information, especially early in a presentation, may not be available or wrong – the patient may be anxious, in pain or demented, or just an inaccurate witness. Similarly collateral history may be unreliable or unavailable. Even if a diagnosis is correct, the patient can still have something else wrong with them from which they can die. When I was a medical student I was admonished to make only one diagnosis. In an era when most patients are elderly with multiple co-morbid conditions this advice is no longer tenable. Moreover, although some diagnoses may remain uncertain even after autopsy, given enough time most diagnoses become obvious – but treatment impossible. Finally, even when a diagnosis is certain the outcome may not be. For the acutely ill in particular the risk of death will depend more on the degree of illness rather than the diagnosis *per se* (e.g. how much heart failure? how ketotic? how high a viral load? etc.)

Dr. John Kellett,
MD FACP
Consultant Physician,
Department of Medicine,
Nenagh Hospital,
Nenagh,
County Tipperary,
Ireland
Email: jgkellett@eircom.net

Should systematic risk assessment and immediate intervention of the acutely ill patient replace the traditional management paradigm?

Although its origins can be traced back to antiquity, most medical schools teach their students to perform a history and physical augmented by a few items of equipment that could be brought to the bedside in a small Gladstone bag, based on the scheme proposed by the French physician Louis Martinet in 1827.¹ This approach served the medical profession well when there were few effective treatments and speed was hardly ever of importance. A physician's ability depended on their extensive clinical experience, an elephantine memory and the skill and dedication to perform a meticulous physical examination. Nowadays, however, medical computer resources have trumped personal experience and knowledge (although maybe not the wisdom to interpret them). They have a far larger capacity than any human memory, are authoritative, and will always be, as the name of the market leader implies, more up to date.

A better alternative?

The major flaw of our traditional processes is that their outcomes are entirely dependent on the skill, ability and diligence of the particular doctor available at the time – if the patient is lucky and is cared for by a good doctor the outcome will probably also be good. Making a diagnosis is the paramount objective of the history and physical examination – this requires expertise that the attending doctor may not have. Furthermore, it is often not the presenting diagnosis that kills the patient, but an overlooked co-morbidity. Therefore, performing an exhaustive systematic history and physical examination does not ensure that systematic appropriate investigation and timely treatment will take place – indeed in our hierarchical medical system it may well result in further consultation, discussion, deliberation, investigation, procrastination and delay. Although abnormal observations may be made and documented, their importance is often not recognized. Although plausible diagnoses and treatment plans may be formulated the real risk of imminent death is not accurately quantified and, therefore, help not called for until the patient is moribund. As a result a lot of clinical activity may be “futile cycles” thoughtlessly directed at the patient without anything of therapeutic benefit being delivered.² An alternative is a team-based approach that performs the following tasks: a focused assessment, monitoring of the response to initial treatment, and then determining what further management is appropriate (calling for urgent help if it is required). This concept is based on risk prediction rather than diagnosis, and is captured by the mnemonic FAITH3 (Focused Assessment, Initial Treatment, hAssessing response, calling for Help and Handing over care).

Focused Assessment

The initial assessment of the patient should be focused on their presenting complaint and estimating the imminent risk of death (i.e. what's

the problem, and is it serious?). The majority of patients who require hospital admission will have one of six presentations: abnormal vital signs, pain, breathlessness, altered mental status, weakness and/or bleeding. In addition there are a small number of presentations that demand immediate attention in the emergency room: cardiac arrest, life threatening arrhythmias, fits, hypoglycemia, diabetic keto-acidosis, acute intoxications, and vomiting and diarrhoea. There is worrying evidence that many physicians do not know and may have never been taught how to recognize and treat these common serious life threatening illnesses.³

All animals are designed to die once and, for teleological reasons, to die quickly.⁴ Therefore, speed is essential to defer death, especially in the elderly. The assessment of illness severity in the elderly is often difficult, but can be greatly helped by explicit actuarial calculations of life expectancy, meticulous examination, the accurate measurement of vital signs and the use of well validated scoring systems.⁵ The main drivers of in-hospital mortality are co-morbidity, functional capacity and the severity of illness.⁶ Determining functional capacity requires the identification of delirium, dementia, mental illness and frailty. The severity of illness is easily determined from the patient's vital signs which can be combined into a variety of well validated predictive scores of mortality.⁷

Initial Treatment

Initial management should be directed at reducing the risk of death and rapidly relieving distress. An ECG should be performed in all patients on admission to hospital to rule out acute myocardial infarction. Patients in pain should be recognized and given relief and breathlessness, hypoxia, hypotension and tachycardia promptly treated. If infection is suspected appropriate antibiotic therapy should be started. In patients with chest pain the probability of acute coronary syndromes and pulmonary embolus should be estimated using a validated scoring system to determine if immediate treatment with aspirin, beta-blockers, low molecular weight heparin etc. is needed. Patients with altered mental status should be examined for intoxication, neck stiffness, pupil abnormalities, rashes and trauma – a firm decision should then be made as to whether and when a CT brain scan should be obtained.

hAssessing response to treatment, calling for Help and Handing over care

After initial treatment the following should be determined: the patient's response to treatment, what further treatment is appropriate, and when and where it should take place. Patients who improve quickly are likely to do well, those who do not fare badly. However, for many patients transfer to a higher level of care may not be appropriate or desirable. Medicine now has an enormous capacity to delay death and

Should systematic risk assessment and immediate intervention of the acutely ill patient replace the traditional management paradigm?

prolong suffering. Intubation, ventilation, renal dialysis, tube feeding and a full cardio-respiratory resuscitation may not be appropriate for frail elderly patients with mild cognitive decline suffering from an acute exacerbation of one of their multiple co-morbid conditions. Therefore attempts should be made to determine as quickly as possible the ceiling of care that is desired and appropriate for each individual patient. In order to do this the patient and/or their family need to be given some kind of estimate of the likely outcome and the benefit, if any, of any interventions. Prognostication is the most neglected and poorly taught skill of the modern doctor.⁸ However, doctors should know a few basic facts, such as the normal life expectancy for the patient's age group; that patients with cancer who become bedridden usually die within a few weeks; and that patients with dementia who stop eating have only a few months to live. They should also know the limitations and risks of various forms of intervention such as tube feeding, invasive ventilation for COPD etc.

The advantages of FAITH3

FAITH3 is a system-based rather than an experience-based or evidence-based process and has several advantages over the traditional approach. A full history and physical can take a considerable period of time. The subsequent formulation of a diagnosis

is often deferred until laboratory data and diagnostic imaging becomes available. After the diagnosis is made a treatment plan may be prescribed, but it may take some time for the doctor's orders to be "picked up" by nursing and paramedical staff and the treatment actually delivered. The whole process is hierarchical and prone to delay as it depends on the competence of an individual doctor who must successfully complete each of its sequential steps. Paradoxically, although the physician may appear to be at the top of this hierarchical pyramid, in reality the pyramid is inverted, with all the responsibility and blame for a poor outcome being entirely placed on the doctor. In contrast the FAITH3 paradigm is a team-based co-operative concurrent process which seeks to answer a few basic questions (Figure): why does the patient need to be in hospital, how likely are they to die, what needs to be done NOW to prevent death, who should provide the rest of their treatment and where should they do it? Recent studies have confirmed the strong relationship between delay in the treatment of acute illness and poor outcomes. The speed, efficiency and effectiveness of care delivered by the FAITH3 paradigm will depend on the quality of its risk prediction scoring systems, treatment checklists and algorithms. These can be improved by ongoing audit and research, and should be minimally influenced by the competence and skill

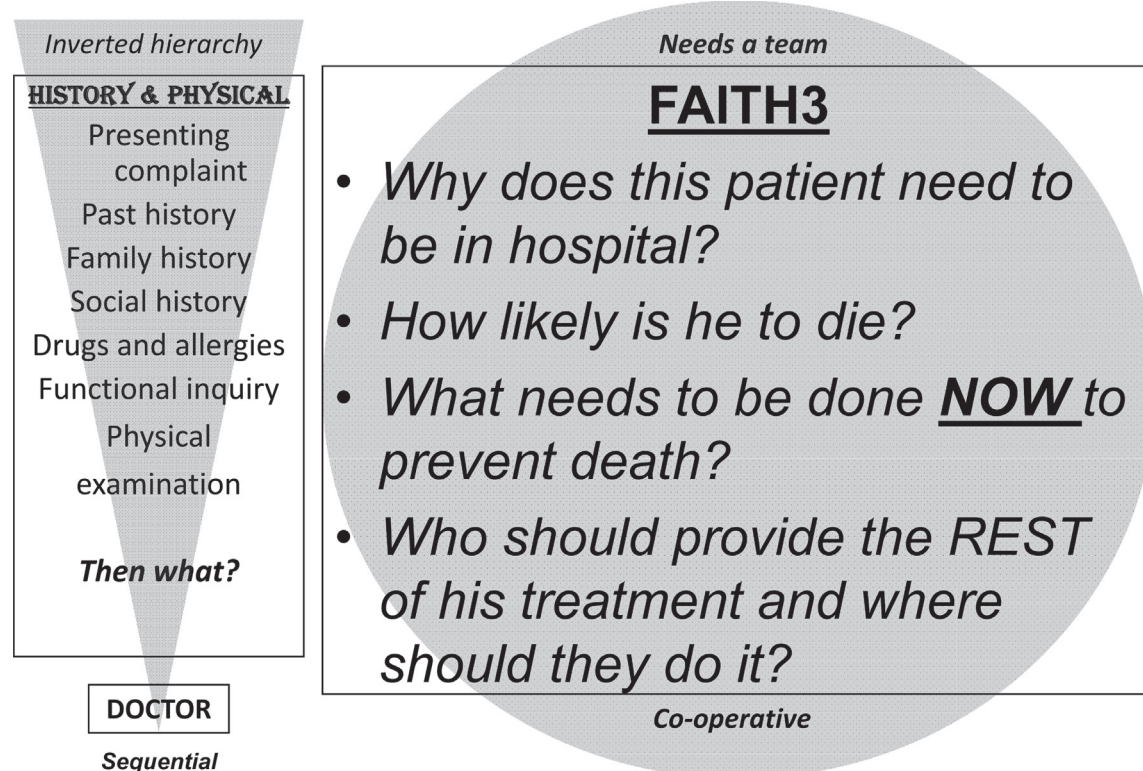


Figure 1. The FAITH3 process compared with the traditional history and physical examination. The traditional paradigm is sequential and its outcome depends on the availability, ability and diligence of an individual doctor. In contrast the FAITH3 approach is team-based, concurrent and its outcome depends on the team's performance as well as the quality of its scoring systems and protocols.

Should systematic risk assessment and immediate intervention of the acutely ill patient replace the traditional management paradigm?

of any one individual member of a team. If put into practice and repeated day in and day out it seems self-evident that the FAITH3 approach is more likely to consistently deliver better outcomes than the step-wise traditional approach stumbled through at different rates by different physicians with varying abilities as their assistants patiently wait for their next false move.

Acknowledgments

The author would like to acknowledge the help and advice of Dr Christian Subbe at Bangor University, Wales, Robyn Duffus student nurse practitioner and Dr Arnold Kim from Thunder Bay Regional Health Sciences Centre, Canada, Robin Adams medical student at Flinders University, Australia, Carmel Gordon-Dark Critical Care Outreach Sister at the London Clinic and John Welch, Nurse Consultant University College London Hospitals.

References

1. Walker H.K. The origins of the history and physical examination. In: Walker H.K., Hall W.D., Hurst J.W. eds. *Clinical Methods: the history, physical and laboratory examinations*, 3rd Edition. Boston: Butterworths; 1990: 5-21
2. Buist M, Harrison J, Abalo E, *et al*. Six year audit of cardiac arrests and medical emergency team calls in an Australian outer metropolitan teaching hospital. *BMJ* 2007; **335**: 1210-2.
3. Smith GB, Poplett N. Knowledge of aspects of acute care in trainee doctors. *Postgrad Med J* 2002; **78**: 335-8.
4. Mackowiak PA. Fever: blessing or curse? A unifying hypothesis. *Ann Intern Med* 1994; **120**: 1037-40.
5. Skrastins R., Merry G.M., Rosenberg G.M., *et al*. Recognition and assessment of critical illness. Clinical assessment of the elderly patient. *CMAJ* 1982; **127**: 203-206
6. Pompei P, Charlson ME, Douglas RG Jr. Clinical assessments as predictors of one year survival after hospitalization: implications for prognostic stratification. *J Clin Epidemiol* 1988; **41**: 275-84.
7. Smith G.B., Prytherch D.R., Schmidt P.E., *et al*. Review and performance evaluation of aggregate weighted "track and trigger" systems. *Resuscitation* 2008; **79**: 11-21.
8. Kellett J. Prognostication – the lost skill of medicine. *European Journal of Internal Medicine* 2008; **19**: 155-164.