

Future Leaders Communiqué

**January
2020**

www.thecommuniques.com

**NEXT EDITION
APRIL/2020**

Guest Editorial

Erin Maylin

In this edition of the Future Leaders CommuniQué we present a complex case highlighting the importance of acknowledging our limitations as clinicians. The case also calls attention to how we seek help when we are not sure of the significance of clinical findings.

The case in this edition involves delayed post-operative complications following spinal cord decompression surgery. This is a highly specialised field of surgery but a wide range of clinical teams were involved in the patient's care in the post-operative period, including general practice, paramedicine, emergency, radiology and orthopaedics. Each team brought their own expertise to the care of the patient and relied on the expertise of the others to guide management.

As junior doctors we often grapple with deciphering subtleties in a patient's presentation. Disparate, sometimes conflicting assessment findings require synthesis, every investigation requires analysis. The skill of interpreting this myriad of information is mastered through years of clinical practice. Expertise is acquired through knowledge and experience in equal measure. As William Osler observed; *"To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all."*

We only offer ourselves the opportunity to learn by reflecting on our practice and identifying where our gaps in knowledge lie. Knowledge gaps may range from subtle nuances in the management of familiar scenarios to unprecedented events far outside of our prior experience. In the case of the latter, these shortcomings in our expertise are referred to as 'unknown unknowns'. They represent the greatest challenge in the risk management of our own limitations and can only be ameliorated through reflection and appraisal of our practice. Discussing a case with a senior colleague can be used to reflect on our clinical decisions through the lens of their experience. Discussing a case with a peer from another discipline facilitates reflection from a different perspective. To learn from these discussions, we must be able to recognise and communicate the boundaries of our abilities.

Poor communication is a major contributor to adverse patient outcomes. Common pitfalls in communication between healthcare professionals include not identifying one's level of experience, and not articulating one's request with sufficient clarity. Recent empirical research supports the use of clinical tools to improve the clarity of information conveyed. Using a structured handover tool such as ISBAR (Identify, Situation, Background, Assessment and Recommendation), is important in preventing essential clinical information from being missed. The ISBAR clinical handover tool seems the most widely used in Australian hospitals and provides a structure for summarising and conveying the salient points to another healthcare professional.

The case in this edition of the Future Leaders' CommuniQué highlights the pitfalls of gaps in communication and the importance of being aware of the limitations in experience and knowledge that are inherent to any junior doctor.

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PUBLICATION TEAM

Consultant Editors:
Joseph E Ibrahim
Nicola Cunningham
Brendan Morrissey

Designers:
Samuel Gillard
Paul Ikin

The Future Leaders CommuniQué is distributed by the not for profit group 'The CommuniQués Australia Inc'. (COI--A0106775D)

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Editorial

by Brendan Morrissey, Joseph Ibrahim and Nicola Cunningham

Welcome to the first edition of the Future Leaders Communiqué for 2020. This edition's guest editor is Dr Erin Maylin, who will be discussing a coroner's investigation into a death that followed delayed complications from spinal decompressive surgery. This informative case highlights common systemic issues and learning points in the shared care of patients across multiple clinical teams that we hope will resonate with all junior medical officers.

Dr Erin Maylin is a Medical Registrar and third year Basic Physician Trainee working at St Vincent's Hospital Melbourne, who is undertaking additional training in intensive care medicine. Erin has a keen interest in acute medicine including rapid identification of deteriorating patients and early initiation of management, family discussions, and patient-centred care. Having grown up in a regional coastal town in New South Wales, and then undertaking her medical degree and the first part of her training in Ballarat in Victoria, Erin is also a keen advocate for rural and regional health care.

This edition focusses on a missed diagnosis and failures of communication. We are rarely the sole care provider to our patients. Their management is commonly shared across multiple settings, services and disciplines. We rely on clear communication between all parties to ensure the quality and cohesiveness of care is maintained. Unfortunately, as George Bernard Shaw famously observed:

"The single biggest problem in communication is the illusion that it has taken place."

The transfer of information between clinicians is a fragile process and can fall short for a cavalcade of reasons. We should endeavour to achieve consistency in robust communication by using a standard template (such as the ISBAR format) and 'closing the loop' whenever possible to ascertain whether a shared understanding of the salient issues has been achieved.

Erin has drawn on the expertise of Professor John Botha, the Clinical Director of Intensive Care at Peninsula Health, who provides an invaluable discourse on the clinical features and common pitfalls in the management of complications following spinal cord decompressive surgery. He also provides measured reflections on the importance of inter-disciplinary communication in complex cases such as this.

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The Perils of Clinical Handover

Case Number TASCD 003, Tas
Author **Dr Erin Maylin**
BSc (Hons), MD

i. Clinical Summary

Mr C was a 40 year old obese man who presented to the emergency department of a small private hospital with numbness and pins and needles in both hands. Magnetic Resonance Imaging (MRI) identified compression of the cervical spinal cord at the levels of C3/4 and C5/6.

Three days later at the recommendation of a private orthopaedic and spine surgeon, Mr C underwent spinal cord decompression surgery. The surgery and post-operative recovery was uneventful. Mr C was discharged home five days after surgery with regular oxycontin and oxycodone *pro re nata* that is, as needed (PRN) for analgesia. Information about the dosages was not recorded in the public court documents.

Three days after discharge, Mr C presented to his general practitioner (GP) accompanied by his wife who was concerned about aspects of his recovery. The GP inspected the wound site and found no signs of infection, and no swelling or tenderness to soft palpation, so he prescribed an increased dose of oxycontin to manage pain, recommended limiting endone to four (4) tablets per day, and suggested adding an over-the-counter anti-inflammatory medication.

'Neither of these two medical practitioners were particularly familiar with the surgery that Mr C had undergone.'

In the early hours of the following morning, Mr C's wife became concerned about Mr C "crying and babbling" and thought he was hallucinating. Mrs C called an ambulance, and on arrival the paramedics found Mr C was febrile with a temperature of 38.1 degrees Celsius.

The paramedics administered midazolam, before transporting him to the emergency department (ED) of a large tertiary hospital.

In the emergency department, Mr C was managed by a number of doctors across a change in shift. His care was initially provided by the emergency team on nightshift and subsequently handed over to the morning team, to be looked after by an emergency registrar reporting to an emergency consultant. Neither of these two medical practitioners were particularly familiar with the surgery that Mr C had undergone. Mr C had a computed tomography (CT) scan of the head and neck, which showed some soft tissue swelling in front of the cervical spine, as well as a haematoma around the surgical site that was larger than expected. The radiologist called the ED registrar and relayed the findings. Being a weekend, no formal or interim radiology report was available at this time.

While waiting, Mr C's wife called the surgeon who had done the operation to advised him that Mr C was in hospital. This surgeon was on annual leave and driving to a holiday destination. As such, he arranged for an orthopaedic registrar, whom he described as highly competent, to review Mr C.

The orthopaedic registrar identified that Mr C had some discomfort on swallowing and was not having any difficulty breathing nor did he appear to be confused. Mr C was afebrile and his oxygen saturations were within normal limits. The registrar also reviewed the CT scan. The registrar considered Mr C's presentation was due to a drug interaction, probably related to the addition of an anti-inflammatory. He discussed this assessment with the orthopaedic surgeon, and it was agreed that the anti-inflammatory medication should be ceased and Mr C could be discharged home that afternoon.

Later that evening Mr C had difficulty swallowing his dinner and vomited after the meal. Mr C went to bed around 10pm but awoke at 11:30pm to use the toilet, at which time he was unsteady, felt cold and was shaking. A little while later, he awoke again with a fever and was able to return to sleep.

The next morning around 11am Mr C's daughter came into the bedroom. Mrs C awoke but Mr C was not rousable and "cold to touch". Cardiopulmonary resuscitation (CPR) was commenced and an ambulance called however, Mr C could not be revived.

ii. Pathology

A post-mortem examination including an autopsy and an analysis of blood toxicology was completed. The likely cause of death was aspiration pneumonia due to the combined effects of drug intoxication with oxycodone and midazolam, anterior cervical canal fusion, obesity, and tracheomalacia (a floppy, narrow trachea), leading to hypoxia, cardiac arrest, and death.

iii. Investigation

The focus of the coroner's investigation was the management of Mr C in the general practice and then in the emergency department. In particular, the failure to diagnose the potential surgical complication of prevertebral swelling. There were also a number of questions that were explored around the after-hours reporting of the CT scan, how the information about the imaging investigations was relayed, and how explicit the radiologist should have been in describing the potential for the airway to be compromised. Independent medical evidence was provided by a specialist radiologist, and the tertiary hospital's director of clinical services.

The coroner reviewed Mr C's emergency department admission record, noting that the paramedics' notes were not available to the medical staff. Mr C had a fever at home when the paramedics arrived but was afebrile on presentation to the emergency department. This raised the question of whether or not the medical staff remained unaware of the fever.

Another complicating factor during Mr C's presentation to hospital was a change of shift in the ED. This required Mr C's care to be handed over to another ED registrar and consultant for ongoing management.

Several questions were raised surrounding the reporting of the CT scan. Specifically, what information was relayed? and to whom?

'The report did not include any comment relating to the significance of the prevertebral changes.'

The radiologist who reported the CT scan of the neck considered that the haematoma which was visible on the scan had the potential to threaten the upper airway. He phoned the emergency registrar to verbally report the findings of the prevertebral changes. The radiologist did not explicitly explain these findings as threatening the upper airway, he assumed this would be known.

An expert opinion from another radiologist stated that the information contained in the report of the CT scan was correct. However, the report did not include any comment relating to the significance of the prevertebral changes.

For example, details about the unusual amount of swelling present at this point in the post-operative course, the severity and potential for infection and oedema.

The expert considered this information should have been included in the report which should have stated that the swelling was encroaching on the airway, leading to compromise. Further, that the reporting radiologist should have alerted the clinicians that the patient was at risk of a respiratory arrest. The expert stated that the radiologist should have recognised the likelihood of a post-operative complication and should not have permitted Mr C's discharge, and that based on the radiology alone, immediate intubation of the patient was warranted.

The intensive care specialist's opinion was that the soft tissue swelling should not have been present nine days post-operation. He would have expected the orthopaedic registrar to have been very concerned and remarked that he himself would have been "terrified" by the image.

The director of clinical services felt that a combination of systemic failures led to Mr C's premature discharge. These included a failure to communicate radiology results leading to a failure to recognise a surgical complication.

In addition to a failure to diagnose and a failure to communicate the diagnosis, there was a significant issue with inappropriate delegation of care. A clinical review of the patient was delegated to a more junior doctor to rule out surgical complications, who was not particularly familiar with the surgery and not confident in reviewing the CT scan images. Due to the missing documentation he was apparently unaware of Mr C's complaints of breathing difficulties and difficulty swallowing, and his febrile episode.

The intensive care specialist believed that Mr C should not have been discharged from the ED, and that it is likely he was septicaemic from an infection of the metal ware used in the procedure, resulting in features of sepsis, swelling and difficulty swallowing.



Failures in process included no integrated process for Mr C's care, and no procedures in place to notify the ED consultant prior to Mr C being discharged.

The coroner made five recommendations.

iv. Coroner's Findings

The coroner found that death was preventable. Although the primary cause of death was aspiration pneumonia, attributable to an episode of vomiting, it was the presence of multiple secondary factors which predisposed Mr C to this risk. The coroner found that Mr C "died of aspiration pneumonia due to the combined effects of drug intoxication (oxycodone and midazolam), anterior cervical spinal fusion, obesity and tracheomalacia."

Additionally, the coroner found that multiple failures on the part of the tertiary hospital contributed to Mr C's death. These included insufficient availability of information including ambulance notes and timely documentation, and absence of a record of communications after-hours between radiologists and clinicians. There was a failure to diagnose the impending airway obstruction, in part due to a failure of medical staff in the ED to appreciate the implications of the CT findings, and a specialist-in-training advising on Mr C's care who was unfamiliar with the procedure and its' complications.

The first recommendation was that processes are in place in the health service to ensure that a patient's ED notes are complete, contemporaneous, and provided in a form best able to aid the treating clinicians. This includes adding a copy of forms such as ambulance records into the patient file.

The second recommendation had four components including that the hospital concerned improve procedures for reporting of radiology to comply with the Royal Australian and New Zealand reporting guidelines. The coroner specifically mentioned the need for radiologists to include their interpretation of the image(s) when any moderate to significant finding is made on both verbal or written reports.

The third recommendation was to consider putting in place a structure whereby the consultant-in-charge is aware of and has the opportunity to participate in all decisions to discharge patients from the ED.

The fourth recommendation was directed at the Department of Health to extend access to the Picture Archiving Communications System so that medical practitioners are able to view radiology images by portable devices.

The final recommendation was aimed at medical specialists and directed that they should have firm clinical cover arrangements to ensure that specialist post-operative care is available to their patients when they are unable to provide that care in person.

v. Author's Comments

On reading this case I was struck by the multiple problems faced in arriving at a diagnosis for Mr C, and the frequent instances of communication breakdown. There were three separate systemic issues – failure to diagnose, failure to communicate, and inappropriate delegation.

'No one involved in the care of Mr C appeared to appreciate the significance of the prevertebral swelling visible on CT scan.'

Communication is a cornerstone of medical practice, and protocols already exist to better facilitate clinical handover and communication between teams. The missing ambulance documentation at the time of presentation meant that the treating doctors were largely unaware of Mr C's temperature of 38.1 degrees Celsius at home. There were multiple doctors involved in the care of Mr C while he was in the emergency department.

Furthermore, during his management there was a change of shift in the ED and he was handed over to an ED registrar and consultant for ongoing management.

Accurate and detailed handover between the paramedics and the emergency department staff would have ensured the medical staff were aware of the fever observed when Mr C was at home.

As junior doctors we need to be aware of two important things. Firstly, that the onus of patient care ultimately falls on doctors under whom the patient is being managed. Secondary, it is vitally important to understand the clinical question being asked when investigations are ordered. No one involved in the care of Mr C appeared to appreciate the significance of the prevertebral swelling visible on CT scan.

At the same time, we rely on our colleagues to communicate with clarity and in a timely manner about critical concerns arising from investigations. The radiologist assumed staff had the knowledge and skill to appreciate the implications of the CT scan findings rather than ascertaining if they did. As we progress through our careers gaining experience and knowledge, we should remember that clinical nuances that become obvious are not always so for junior staff.

We should never be reticent to seek further clarification if the implications of a test are not clear. While the coroner commented that it was "...regrettable, and surprising" that the ED registrar directly managing Mr C did not appreciate the significance of the

prevertebral swelling on CT, the registrar had appropriately sought the advice of his consultant, after which point the orthopaedic team were involved. This demonstrates the importance of an awareness of one's own limitations in clinical practice, and the need for appropriate clinical escalation when deficits in knowledge or experience are identified.

There is an argument to be made that patients with red flags on objective measurements of clinical deterioration should be reviewed in person by a senior clinician in the field. In this case, a junior doctor, with less knowledge regarding Mr C's relatively specialised procedure made the bedside assessment. The private surgeon had the best knowledge of what had occurred during Mr C's operation, and there may have been a better outcome if a surgeon that could have consulted at the bedside was involved in the decision-making instead.

As junior doctors, we can learn from the pitfalls in this case and further develop our communication skills. We should apply rigour to our clinical handover remembering to seek information from all sources when reviewing patients, and not be afraid to ask for help. In this way, we are better prepared and can cast a safety net for the clinical subtleties at risk of being missed, and we just may save a life.

vi. Keywords

Surgery, orthopaedics, prevertebral swelling, radiology, clinical handover, post-operative complication



Post-Operative Complications in Cervical Spine Surgery

Prof John Botha,
MBChB, M Med FCP(SA), FRACP,
FCICM, DipNeph (London),
PG Dip Echo
Adjunct Clinical Professor,
Monash University
Clinical Director ICU,
Peninsula Health

The incidence of spinal cord decompression surgery is increasing and it is commonly performed with the advent of neurological symptoms. Most patients who have upper cervical cord decompression are observed overnight in a high dependency ward and are usually transferred the following day to the wards, prior to discharge home. The life-threatening complications that mandate a period of close observation are post-operative haemorrhage. Formation of a haematoma has the potential for neurological sequelae, swallowing difficulties and life-threatening upper airway obstruction.

The presence of associated co-morbidities such as diabetes mellitus, obesity, sleep apnoea,

obstructive airways disease and ischaemic heart disease may necessitate high dependency care. Also, optimal post-operative analgesia for a procedure that is potentially painful is best managed in an acute care environment. Fortunately, the vast majority of patients are discharged from the high dependency unit and hospital without complications and make a progressive slow recovery.

'The clinical symptoms of dysphagia and dyspnoea are of particular concern as is fever in these post-operative patients.'

Immediate post-operative complications are often recognised early as the staff managing these patients are familiar with the usual post-operative sequence of events. On the other hand, delayed or late complications are often more problematic as the presentations may be gradual and subtle. Also, the patient assessment is often performed by healthcare professionals unfamiliar with the procedure performed

as well as being unversed in specific radiological and clinical manifestations or changes arising from the procedure that should generate concern.

The clinical symptoms of dysphagia and dyspnoea are of particular concern as is fever in these post-operative patients. These manifestations require urgent assessment by the treating surgeon. The importance of treating surgeons having a suitably qualified colleague to manage their cases in their absence cannot be over-emphasised.

Cervical spine surgery and the potential complications related to this procedure remain the domain of a select small group of doctors. Complications, although uncommon, may have life-threatening implications. It is imperative that when these complications do occur patients have access to clinicians competent in the recognition and management of these situations.

Dysphagia as a late complication should be considered as a serious complication, warranting urgent attention. An associated fever should be very concerning. The subsequent clinical assessment should be thorough and comprehensive with careful attention to any signs of a wound haematoma or infection. The physical examination should include a neurological assessment and general examination looking for sources of sepsis.

If radiological imaging is obtained, the implications of the results should be clearly understood. Interpretation of the scan by inexperienced clinicians is fraught with danger and direct communication between the radiologist and responsible clinician is mandatory. Should the pathophysiology be unclear, hospitalisation with close observation is mandatory.

The prescription of symptomatic medication should be judicious and benzodiazepines should be prescribed with extreme caution in unmonitored situations. The potential of these agents to cause somnolence and airway obstruction is often unappreciated and confounded by the concurrent administration of opiates.

'Despite reservations about seeking senior advice after hours, this course of action must be followed if required.'

As was postulated in the case under discussion, a drug reaction as a cause for post-operative confusion and agitation should only be entertained after exhaustive exclusion of more common life-threatening complications.

The case highlights the complexity of upper cervical spine surgery and the importance of timely comprehensive post-operative care. It also illustrates the life-threatening complications that may occur and how significant clinical and radiological expertise is mandatory in identifying and managing complications. Communication remains essential and vital information such as fever in this instance should never be omitted.

Escalating concerns to senior colleagues

It remains important to appreciate that irrespective of the circumstances surrounding the presentation of a medical case, we have a responsibility towards the patient and their family when they present to us. Unfortunately, situations will arise when communication between medical colleagues and the availability of the responsible consultant is not optimal.

As a junior member of the medical team it behoves us to escalate our concerns to senior colleagues within our service. Regrettably, there may be situations where we experience a reluctance to contact senior medical staff after hours. The literature has cited various reasons for this behaviour including fear of portraying uncertainty and lack of confidence. Despite reservations about seeking senior advice after hours, this course of action must be followed if required.

Occasionally, there may even be the requirement to escalate to the head of a department or seek help off campus if the advice offered and commitment to the case in question is not considered optimal or helpful.

Ultimately, our responsibility remains with those who have entrusted their care to us. Any subsequent social or political ramifications are of secondary concern. Criticism is never pleasant but suboptimal medical care is indefensible.

Further Reading

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Acknowledgements

This initiative has been made possible by collaboration with Monash University, the Victorian Institute of Forensic Medicine, 'The Communiqués Australia Inc' and funding from the Department of Health and Human Services (Victoria) and the Victorian Managed Insurance Authority.

Comments From Our Peers

“As junior medical doctors, an aspect of our role is to advocate for the patients we admit and manage. If this entails waking up the Head of Department in the middle of the night to review a scan or discuss a patient, then this needs to be done.”

“When the family is concerned about their relative, it often is an indication that something serious has occurred.”

“In post op complications I think it is always important to involve the treating team, not only as a courtesy but to seek their expert advice.”

“‘Unknown unknowns’ is a fantastic term. It’s something I have reflected on a lot recently. I was just reflecting on my own self confidence this time last year –just post-exams and feeling on top of the world! As I have found out since starting my advanced training - you are forever ignorant of your ignorance. It is hard as a doctor - not just a junior doctor - to balance the need to be cautious and tread carefully forward in our decision-making with the expectations of those around us - patients, nurses, allied health - that we as a profession should be confident and ‘know the answers.’ Content is ever expanding, and it is impossible to ever be fully on top of everything. Learning to recognise our limitations and, our individual blind-spots are an incredibly important part of maturing as a doctor.”

“As a physician trainee I often feel nervous assessing post-operative patients, let alone those who’ve had surgery in high risk sites (wherein a compression event may have dire complications). My fallback is to be honest with surgical colleagues about my inexperience and fears for the patient, even if it means clarifying a point which appears to be painstakingly obvious to a surgeon on the other end of the phone line.”

“This case serves as a reminder that when a presentation just doesn’t feel ‘right’, we should utilise the option of watchful waiting in a monitored environment.”



Write for FLC

In other news, we have a fabulous opportunity for junior doctors to partner with us as a guest editor to produce an issue of the Future Leaders Communiqué.

We are seeking six guest editors who will be mentored by our senior editor group to publish the issues in 2021 and 2022.

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