Latrobe Regional Hospital

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13 December 2021

Ms Georgia Briggs
Coroner's Registrar
Email: cpuresposes@coronerscourt.vic.gov.au

Dear Ms Briggs

Coroners Ref COR 2017 002931 – Death of [redacted] – Recommendations in Findings (Coroner Gebert)

I refer to your letter of 15 October 2021 directing Latrobe Regional Hospital as a public entity to respond to Coroner Gebert's recommendation arising from her findings into the death of [redacted].

> *LRH continue to conduct ongoing education for all levels of staff regarding the management of opiate toxicity, particularly as it applies to long lasting formulations.*

Latrobe Regional Hospital accepts this recommendation.

Details of the implementation are set out in the attached document.

Please note that any recommendation from an RCA, In Depth Review and Coroner are monitored by the Clinical Governance Unit to ensure implementation. The recommendation made by the Coroner will be subject to the same process in 2022.

Yours sincerely

Don McRae
Chief Executive

CORONER'S RECOMMENDATION COR 2017 002931

LRH continue to conduct ongoing education for all levels of staff regarding the management of opiate toxicity, particularly as it applies to long acting formulations.

EDUCATION RE OPIOID FOR ED NURSING AND MEDICAL PRACTICES – CHANGES AGREED FOR IMPLEMENTATOIN

The following changes have been or will be implemented by January 2022.

ED Nursing – Orientation & Nursing Clinical Guidelines

Anne Galletti, Nurse Unit Manager, has made changes to the ED Orientation Manual Nursing. This Manual includes Clinical Guidelines and is provided to all new and casual nursing staff. It is updated several times each year to reflect changes in nursing practice. Current nursing staff are alerted to the changes via group email. The latest change is to remind nursing staff of the importance of seeking advice from the Victorian Poisons Information Centre regarding potential drug overdoses – half life, long term effects and interactions. Nursing students are given a copy of the Guidelines and the contents are explained to students during orientation. The following has been added:

See **Attachment A** – Extract from Orientation Manual Education Department – Nursing Guidelines updated

This change was implemented on 26 November 2021. The Manual will be uploaded on the intranet in December 2021. It is currently included in the Guidelines given to nursing students. All existing nurses in The ED have been notified b group email.

ED Nursing – Education Program

Any change is further accompanied by a case study to explain why the change was made. This is part of the Education Program which is conducted during protected education time in the Education Unit and is run by educators and senior ED nursing staff. It will be led by Annette Blythman, ED Educator, who is familiar with the circumstances. This program will incorporate past changes (see below) made in the context of the events that occurred during the presentation.

See **Attachment B** – Case Study

This is now part of the Education Program and the first session commenced on 26 November 2021.

Medical Staff – Orientation

Dr Tony Chan, ED Co-Director, has made changes to the ED Orientation Manual for Junior Doctors. It has been revised to include reference to Victorian Poisons Information Centre.

See **Attachment C.**

The Manual is being totally revised and will be on the intranet no later than 5 January 2021.

Medical Staff and Nurses – Mortality & Morbidity Newsletter

Dr Jay Weeraratne, the ED Director of Clinical Training publishes a newsletter, *Mortality and Morbidity* or *M & M*, with recent developments and case studies of patients who presented at the LRH ED as well as unusual or interesting cases at other hospitals. The Director has prepared an *M & M* containing a detailed case study of the events surrounding Adrian Hanchard's presentation at LRH in 2017, specifically commenting on the management of opiate toxicity as it applies to long lasting formulations. This will be accompanied by 2 articles: Boyer, E., "Management of Opioid Analgesic Overdose", *N Engl J Med.* 2012; 367(2): 146-155 and Jordan, M and Morrisonpone, D. "Nalaxone: Continuing Education Activity", *NCBI Bookshelf*, 2021.

See **Attachment D.**

The *M & M* and accompanying articles will be available on the ED intranet not later than mid-December 2021.

ED Medical and Nursing – Zoom Case Presentation

Dr Weeraratne will host at least 2 Zoom meetings. One will be for the ED Consultant group. The second one will be for the LRH ED including junior doctors and ED nurses. These will occur in December 2021 and may be repeated. Dr Tony Chan, ED Co-Director will provide the information so that in these Zoom meetings include the other changes which were made earlier to improve the care of persons who have a suspected drug overdose.

The first session for ED Consultants will be held 16 December 2021.

ED Phones – Stickers for VIPC

We have requested the VIPC to provide us stickers with their number which we will affix to all phones in the ED.

These stickers will be placed on all telephones in the ED when received from VPIC.

ATTACHMENT A

LATROBE REGIONAL HOSPITAL EMERGENCY DEPARTMENT

ORIENTATION MANUAL

Name: _____

Commencement date: _____

Mentor: _____

ANNE GALLETTI – NURSE UNIT MANAGER EMERGENCY DEPT
ANNETTE BLYTHMAN- EMERGENCY DEPT CLINICAL EDUCATOR
Reviewed: December 2021

Appendix 4

Department of Emergency Medicine – Latrobe Regional Hospital

NURSING GUIDELINES:

Authorised by: Anne Galletti, NUM, Emergency Department

Written by: Annette Blythman, Educator ED .Updated 2021

NURSING GUIDELINES FOR PATIENT CARE IN THE EMERGENCY DEPARTMENT

1. Chest pain suggestive of ACS	17. Acute Behavioural Disturbance
2. Abdominal Pain	18. Cellulitis
3. Asthma / SOB	19. Chest Infection
4. Post Collapse (conscious)	20 ? Urinary Tract Infection
5. Head/neck injury	21. ? DVT
6. Trauma patient	22. Acute Allergic Reaction
7. Trauma of elderly (>65 yrs.)	23. Suspected Sepsis (adult)
8. Drug or alcohol overdose (or suspected)	24. Acute Gastroenteritis symptoms (adult)
9. Diabetes - DKA or HONK	25. Hyperkalaemia
10. Hypoglycaemia	26. Respiratory Distress (Paediatric)
11. Suspected Arrhythmia	27. Febrile Child (above 38.5 degrees)
12. Altered Conscious State	28. Vomiting or diarrhoea (paediatric)
13. PV bleeding	29. Paediatric Poisoning
14. Mental Health issues	30. Febrile Neutropenia
15. Possible dislocation / fracture (not # hip)	31. Stroke / TIA
16. Suspected # hip	

- Use **AMPLE** to help guide assessments (allergies, medications – prescribed and over-the-counter/herbal, past medical history, last ate/drank, events leading to presentation)
- Use **PQRST** to assess pain (whereabouts of pain, type/quality of pain, radiation?, associated symptoms, length of time pain has been experienced & ? ongoing)

8. *Drug and/or Alcohol overdose (or suspected)*

- Firstly, ascertain exactly which drugs, what amounts and when they were taken, if at all possible. If not forthcoming, consider contacting GP, friends, family. Find out what drugs are in patient's possession.
- **Any issue involving potential opioid overdose or interactions with other drugs, contact should be made by CIC or HMO with Poisons Information Centre (VPIC) , ph 131126. Information must be sought from VPIC regarding the drug combinations, half-life, and effect of long-acting formulations.**
- Attend full assessment, using DRSABC, for airway, breathing and circulation.
- Ensure airway patency especially if patient drowsy or altered conscious state and reassess airway regularly. Use recovery position to help maintain clear airway and raise head of bed around 20-30 degrees. Maintain position with pillows as necessary
- Give supplemental oxygen as required.
- Connect to cardiac monitor. Set alarms appropriately.
- Undress patient and place in a gown. Apply armband.
- Perform vital signs - temperature, pulse, respirations, blood pressure, oxygen saturation, and full neurological observations.

- Vital signs & observation of the patient's condition, using GCS must be at least every 15 minutes to ensure there is no deterioration, particularly airway. Once GCS <13, notify AUM and Consultant, as patient will require one-on-one nursing.
- Perform ECG; ensure it is shown to the AUM and HMO.
- Take patient's history - use AMPLE. (Use carer or NOK if required)
- Ensure IV access and obtain bloods, particularly for drug screening and alcohol level.
- Do random blood glucose level. Repeat a minimum of 2 hrly. If abnormal, monitor more frequently.
- Do full head to toe assessment to determine possible injuries.
- Consider necessity of an IDC. Do urinalysis as soon as practicable.
- Perform pressure & mouth care regularly.
- Document all care given.

ATTACHMENT B

NURSING EDUCATION CASE STUDY

A 50 year old man walked into ED c/o headache, Rt sided neck pain, chest pain/tenderness, severe lumbar pain and left lower leg weakness & numbness, following an MVA several days ago.

His past history included treatment for chronic pain (jaw, clavicle, back and neck), following a previous MVA, with current medications including Targin, Esomeprazole, naproxen, ibuprofen, zolpidem, quetiapine, indomethacin, clonazepam, mirtazopine, sildafenil, pregabalin and metoclopramide. He stated he had taken some of his Targin immediately prior to arrival.

Was put on a trolley and hard collar applied. Noted by HMO to be tender down entire spine, particularly lumbar, left chest wall, lower abdomen and had some mild weakness when moving hips.

[Question in **bold**, talking points in *italics*]

1. **Does anything alert you with this presentation?**
   - *Unknown dose of opioid prior to arrival and when. Try and ascertain what was taken, when, how much*
     - *How to obtain information about what patient taken? Bags, history, corroborating information, GP, family*
   - *Was that all he took?*
     - *Has he also ingested alcohol?*
   - *What are the effects of the drug ingested? What should nurses look out for?*
     - *Long term effects/half life, coupled with his normal doses*
     - *Respiration effect*
2. **Where nursing measures should be put in place?** -
   - *General Observations*
     - *Observe respiratory effect, agitation*
     - *Nurse patient one-to one, particularly if GCS decreases by 2 or more*
     - *Be aware if a pt is snoring, airway is therefore partially obstructed*
   - *Encourage respiratory effect*
     - *Lie flat*
     - *Tilt entire trolley at least 30 degrees*
     - *Hard collar in place, awaiting CT scan, encourage CT scan ASAP so hard collar can be removed ASAP*
   - *Placement*
     - *Resus area is ideal*
3. **What vital signs are required and how often? Why?**
   - *Vital Signs*
     - *Half hourly neurovascular obs (at a minimum)*
     - *Half hourly vital signs*
     - *Cardiac monitor and 10 minutely ECG's (at least while CP continues until instructed otherwise)*
     - *RBG regularly*
     - *Continual oximetry*
     - *Keep Philips alarms within a tight range to detect any pulse or resp changes*
4. **What pathology tests or radiology tests would you expect to be done and why?**
   - *Radiology*
     - *CT and Xray of head, neck, abdomen, pelvis, chest etc*
   - *Pathology*

- *Blood alcohol would be useful to help with diagnosis and likely outcome*
- *Serum Drug levels*

5. **Should any other nursing measures be implemented?**
   - *Close vigilance of any patient in a hard collar, especially if drug or alcohol affected*
   - *No food or drink while laying flat if possible – strongly consider IV fluids pro tem*
   - *Once CT scan clears neck and spine of injury, use recovery position and closely monitor resps and HR*
6. **What are the safety requirements for nursing a patient in a hard collar? Why?**
   - ***Closely** monitor (as previously discussed)*
   - *NEVER keep a patient laying completely flat*
   - *Ensure monitor alarms are appropriately set for that patient*
   - *On change of shift, do neurovascular obs and vital signs with incoming nurse to ensure consistency*
   - *Always ensure bed is equipped with working oxygen and suction*
   - *Ensure regular pressure care, especially of neck as collar can rub and cause pressure areas*

Extract from revised ED Orientation Manual for Junior Doctors

The Suspected Overdose Patient

- Ascertain exactly which drugs, what amounts and when they were taken, if at all possible.
- **It is important for the treating doctor (you) to know the half life, long term effects and interactions of those drugs. An excellent resource is the Victorian Poisons Information Centre ph 131126.** The VOIPC can provide 24/7 specialist high-level advice on the management of acutely poisoned patients, and information about the effects and management of chronic exposures, or specific formulations or products to assist in the identification and management of potential drug overdoses, drug combinations and investigations and treatment. This advice should be documented clearly in the patient's notes.
- Patients with altered or changing GCS require close observation of their vital signs and neurological status as airway or cardiovascular support or other life saving intervention may be needed.
- At the end of your shift the current status and the plan of management should be clearly handed over to the doctor taking over. Please refer to the handover section in this manual,

OPIOID TOXICITY – TIMELY REMINDER

The Coroner has recently handed down findings in relation to the circumstances leading up to the death of a young man in our Emergency Department.

This is a timely reminder for everyone to brush up on their knowledge of opioids, interactions with other drugs (licit and illicit), and understanding the importance of long acting formulations. It should also cause all staff to reflect on whether and what interventions could have been made or steps or actions omitted which could have prevented a death which the Coroner has found was preventable.

The first step in presentations where drug involvement is suspected is to determine what drugs are involved and to then obtain advice on their actions, interactions and length of effect. The easiest and most comprehensive and accessible source of information is the Victorian Poisons Centre.

There are always a range of factors affecting treatment which in this case could have averted the tragic outcome.

M and M case:

Patient male aged 37 presents to Latrobe Regional Hospital Emergency Department. He complains of headache, right sided neck pain, chest pain, lower back pain and left lower leg weakness. He states that he was in a motor car accident 4 days prior where he was a driver of a car which was t-boned by another vehicle on the front passenger side.

He has a past history of depression and post-traumatic stress. He suffers from chronic pain following a motor vehicle accident 10 years previously and has regularly seen pain specialists.

His medication list is:

Targin 20/10 BD and 10/5 BD

Ie total 60mg Oxycodone per day

Pregabalin 300mg daily

Mirtazapine 45mg nocte

Zolpidem 10mg nocte

Quetiapine 100mg nocte

Patient walks into the ED at 05:20. He leaves the ED at 08:00 to retrieve personal effects from his car (despite recommendations not to by the nursing staff) and on return states that he has 10/10 pain in his left leg which is numb.

At 09:50, he is witnessed by staff to take medications in his possession- this is identified by the patient as Targin. He subsequently becomes drowsy. It is unclear how many tablets he has taken.

Patient is examined by medical staff and because of multiple areas of pain in his spine, a pan CT scan ordered.

Note the following timeline:

Time	Event	Intervention
05:20	Arrival in the ED States that he has pain	

08:00	Goes to car Retrieves personal effects	
09:50	Observed taking own medications States it is Targin	
10:55	Recorded GCS 13 Drowsy, responsive to voice	IV Naloxone 400microg
10:59	Moved to Resus GCS 11 Normal RR Normal O2 sat	
11:49	Has returned from CT GCS 10 RR12 Normal O2 sat	IV Naloxone 400 microg
12:45	Snoring Rousable to touch O2 sats 89%	
13:00	Normal O2 sat and normal RR	
13:45	GCS 9 RR 12 O2 St 95%	
14:22	Nurse walks in and finds patient in Asystolic cardiac arrest Patient gray color, not breathing and unresponsive	Code Blue called Cardiac arrest Management
15:04	Patient declared deceased Coroner notified	

Coroner's finding:

Patient was the subject of a Coroner investigation and the established cause of death was due to a mixed drug overdose of oxycodone, quetiapine, pregabalin and clonazepam. The Coroner determined that there was a serum level of oxycodone that was consistent with excessive use and at a supratherapeutic level that was seen in cases of fatal overdose.

The use of additional central nervous system depressant drugs like quetiapine, pregabalin and clonazepam further depress the central nervous system in an additive and synergistic manner with Oxycodone.

Discussion:

There are many issues involved in this presentation and numerous opportunities for averting the outcome.

- What drugs had the patient taken?
- What was the effect of those drugs?
- Was this clearly communicated?
- When and what observations were made?
- How were they acted upon?
- Was the patient's deterioration noted and acted upon?
- What handover as provided by nursing staff, medical staff?
- Was change in GCS noted and acted upon?
- Why did no one respond to the alarms?

The Coroner adopted the view of the Coroners Prevention Unit which considered that the "*death was readily preventable with the application of basic knowledge or pharmacology and an appropriate level of monitoring and observation*".

Many of these issues have been responded to through changes to nursing and medical practices and are detailed in the Nurses Orientation Manual (Clinical Nursing Guidelines) HMO Orientation Manual, the new ED environment and new monitors.

A significant oversight noted by the Coroner is the failure by ED clinicians to contact the **Victorian Poisons Information Centre** (VPIC). This has led the Coroner to question whether senior medical staff were aware of the long acting nature of Targin.

It is not uncommon for a situation to arise where one clinician assumes that the other clinician has performed a particular task such as making a phone call when this has not happened. If a **critical task** is required to be performed, it is important to check and confirm that the task has been performed satisfactorily.

VPIC is staffed by Pharmacists and Toxicologists and provides around-the-clock and state-of -the-art advice.

Expertise in understanding the pharmacokinetics and pharmacodynamics of opioids is critical for managing opioid overdose. This expertise is available from VPIC and they should be contacted and recommendations documented in the notes.

Patient received two bolus doses of IV naloxone. Is it reasonable to think that the naloxone administered at those intervals should have been enough to treat AH?

Why did the patient die despite receiving the Naloxone?

Cardiac arrest from opioid toxicity commences with a **respiratory arrest** which if untreated progresses to cardiac arrest. The mechanism is the effect of opioid narcotics on the mu receptor in the respiratory center of the brain stem which ultimately suppresses the central respiratory drive response to hypercarbia and hypoxia.

Naloxone is important in the resuscitation of opioid overdose but naloxone boluses alone are not a stand-alone substitute for good resuscitative care that involves management of the airway and breathing.

In a patient with suppressed respiration, the ED clinician will need to establish an airway (eg gurdels or nasal airway) deliver supplemental oxygen, use suction of airway secretions and pay close attention to the posture of the patient- pillows propping up the patient and having the external acoustic meatus at the level of the sternal notch. An advanced airway such as endotracheal tube may be required.

The pharmacokinetics and pharmacodynamics of Oxycodone and Naloxone:

Targin comprises oxycodone and naloxone. The oxycodone is a long-acting modified release opioid analgesic medication. Naloxone is an opioid antagonist which when administered orally counteracts the constipation effects of oxycodone. The naloxone that is within Targin is minimally absorbed from the GIT and does not act centrally.

Naloxone has a half-life of between **30 and 80 minutes.** Naloxone is well tolerated but may precipitate acute narcotic withdrawal and in rare instances may be associated with non-cardiogenic pulmonary oedema. If a patient has ingested an overdose of a long-acting opioid, re-sedation of the patient is expected within 2 hours after the administration of Naloxone.

This is from the article from Boyer, N Engl J Med. 2012 July 12; 367(2): 146–155 with regard to **Oxycodone**:

In the case of an oxycodone overdose, high concentrations of the drug may overwhelm the ability of an enzyme to handle a substrate, a process known as saturation.

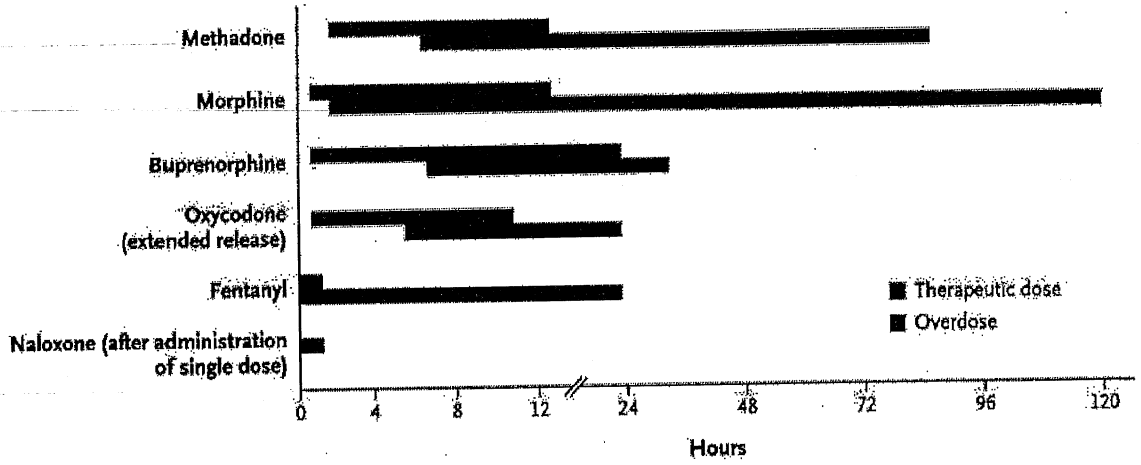
Saturated biologic processes are characterized by a transition from first-order to zero-order elimination kinetics. Two phenomena occur in zero-order elimination. First, small increases in the drug dose can lead to disproportionate increases in plasma concentrations and hence to intoxication.

Second, a constant amount (as opposed to a constant proportion) of drug is eliminated per unit of time. Collectively, these toxicokinetic effects converge to produce opioid toxicity that may be severe, delayed in onset, and protracted as compared with the expected therapeutic actions.

In other words, there is an increased and unpredictable prolonged duration of effects of oxycodone in overdose. Oxycodone's half-life may be increased to more than **10 hours.**

See the table below from same article that highlights that oxycodone, methadone, fentanyl and Buprenorphine have significantly longer half lives in the context of overdose.

Onset and Duration of Action in Therapeutic Dosing and Overdose of Selected Opioid Analgesic Agents



So how should Naloxone be used in Opioid overdose?

This information is from Jordan and Morrisonponce, StatPearls Publishing; 2021 Jan.

If a patient is suspected to have taken an overdose of a long -acting opioid, the patient needs to be kept in the ED for **12 hours of monitoring**.

For those patients in the ED who have required multiple doses of naloxone, a continuous **naloxone infusion** may be necessary. The typical dose for this infusion is determined by calculating the wake-up dose needed for the patient and administering two-thirds of that dose per hour via continuous infusion.

The following constitutes reasonable grounds for **discharge from the ED**:

For those who completely reverse with 0.4 to 2 mg of naloxone, observation in the ED for two to four hours is prudent. If the patient is stable, then discharge is recommended. In general, patients considered for discharge after reversal of the opioid overdose with naloxone should:

1) Be fully mentally alert with a Glasgow coma scale of 15
2) Not require further dosing of naloxone in the ED
3) Have an oxygen saturation of at least 92% on room air
4) Have a respiration rate of no less than ten breaths per minute
5) Have a pulse rate of no less than 50 or no more than 120 beats per minute
6) Have a blood pressure between 110/90 to 140/90 mmHg
7) Be able to tolerate clear liquids, ambulate, and have no withdrawal symptoms
8) Have someone drive the patient home and monitor the patient for the next 12 to 24 hours