



THE CARDIAC PATIENT IN ICU

DR JAMES MOORE
INTENSIVE CARE PHYSICIAN
WELLINGTON ICU

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Overview

- Common intersections of cardiology & ICU
- What can the ICU provide (& what we can't)
- Example of post-cardiac surgery care

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Common ICU-Cardiology Intersections


- Post-Cardiac Arrest
- Acute Coronary Syndromes
- Decompensated Heart Failure
- Post-Cardiac Surgery



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What is the ICU able to offer?

- Advanced Haemodynamic Monitoring



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What is the ICU able to offer?


- Organ Support



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What is the ICU able to offer?

- Intensive (1:1) nursing



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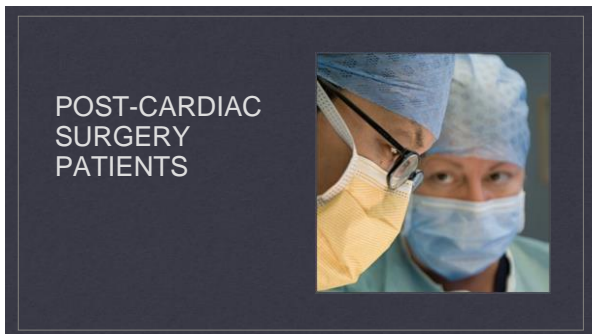


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So which patients should come to the ICU?

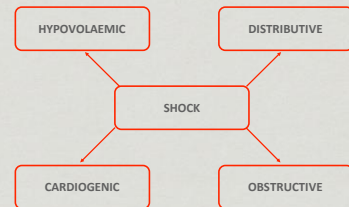
- Those who in need of organ support or intensive monitoring/nursing
- Take into account functional capacity/frailty; disease trajectory and patient's wishes
- Reversibility

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Shock following cardiac surgery



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It's all about the RV
... the 'forgotten' ventricle



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Preoperative RV dysfunction predicts postoperative failure (& mortality)

Hazard ratio for cardiovascular death within 3 years:
RV FAC <35% = 14.7 (p<0.001)
RV S' <10cm/s = 12.2 (p<0.001)

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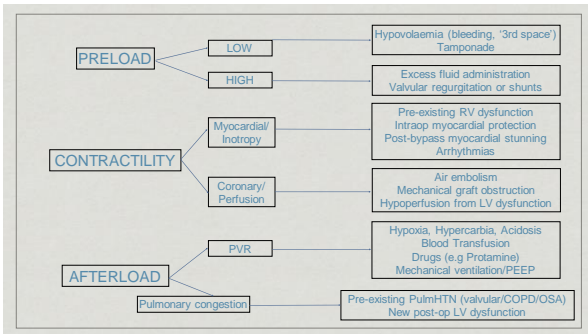
RV failure following cardiac surgery confers a high mortality rate (up to 75%)

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Pathophysiology of RV failure

- Preload
- Contractility
- Afterload

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PRELOAD

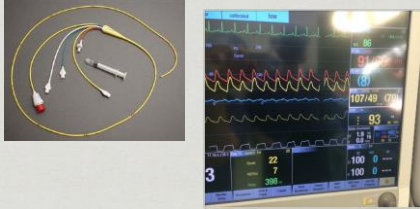
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Diagnosing RV failure

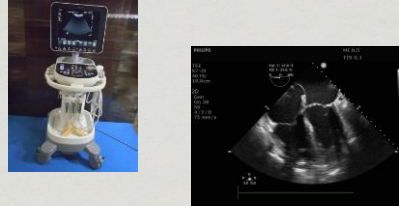
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Diagnosing RV failure



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Diagnosing RV failure



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Management principles

1. Optimise Preload/Volume Status
2. Augment Contractility
3. Reduce Afterload (PVR)
4. Maintain adequate systemic vascular resistance to ensure adequate RCA perfusion

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Preload optimisation

- Careful management of fluid boluses
- Avoid unnecessary fluid administration
- Small boluses
- Diuresis/Haemofiltration
- Guided by echo/PAC



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Support contractility

- Inotropes
 - Milrinone (PDE3 inhibitor)
 - Dopamine/Dobutamine

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Afterload reduction

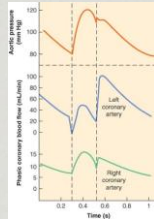
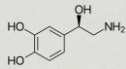
- Optimise PVR
 - Avoid hypoxaemia/hypercarbia/acidosis (yeah right!)
 - Minimise ventilation pressures/PEEP
- Pharmacologic
 - Inhaled iloprost
 - Sildenafil (PDE5 inhibition)
 - Nitric oxide



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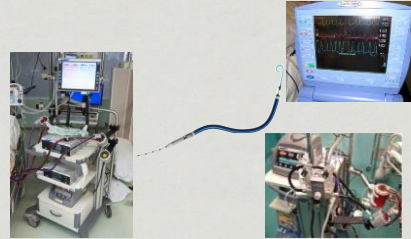
Maintaining adequate RCA perfusion

- Loss of flow to LV
- LV diastolic impairment (septal shift)
- Effect of drugs on SVR



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Mechanical Support



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KEY POINTS IN MANAGING POST-OP RV FAILURE

- Acute RV failure is a common mode of death following cardiac surgery, and a difficult syndrome to manage
- Cautious fluid management essential, guided by echo/haemodynamic monitoring
- Essential to defend aortic root pressure to prevent developing RV ischaemia
- Pulmonary vasodilators to reduce RV afterload
- Mechanical circulatory support may be an option
- Identifying the 'at risk' RV preoperatively very useful

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SUMMARY

- More & more interactions between cardiology & intensive care
- Limited resource - appropriate patient selection is key
- Example of critical care management of a cardiology patient

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References

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