Task and Finish Group for Critical Care:

Workforce Sub stream, final report

Dr J Highfield, Version 15th March 2019

Summary

This document gives an overview of the current general critical care clinical workforce in Wales. It offers a summary of expected clinical workforce standards, the current clinical workforce in place, estimations of requirements, and innovations to utilise current workforce more effectively to improve demand and capacity in critical care.

Introduction

In Wales, the critical care bed capacity per capita is one of the lowest in Europe and the demands on critical care continue to increase. ICNARC released a statement in 2014 estimating overall bed days to increase by 4% per annum. Since the publication of "Designed for life: Quality Requirements for Adult Critical Care in Wales", in 2006, it has been clear that critical care staffing is compromised in Wales and frequently has not been sufficient to meet recommended critical care professional standards.

The Royal College of Anaesthetists developed a Faculty of Intensive Care Medicine (FICM) in 2010 which has undertaken several medical workforce censuses. FICM engaged with Welsh Government, the Critical Care Networks, Wales Deanery, Health Boards and the Welsh Intensive Care Society to conduct a wider medical workforce mapping and results were published as FICM Regional Workforce Report-Wales, 2018. The results reveal that the current workforce is beginning to experience the added stresses and uncertainty of working in critical care at a time where demand is not being met with increased provision, there are immediate and long term gaps in the medical workforce, and there are significant issues around workload and on-call work.

The supply of junior medical staff delivering a service has diminished due to the European Working Time Directive, changes in anaesthesia training, inability to recruit staff from outside European boundaries, and Deaneries imposing hours limits on junior's service. Each junior now delivers 50% fewer service hours than in the past.

The National Critical Care Nursing and Outreach Workforce survey was released in 2018 by the Critical Care National Network Nurse Leads Forum (CC3N). The summary picture across the UK was of increasing vacancies (average 8.35%), often needing to be filled by overseas staff, a reduction in agency use (but likely linked to agency caps), high turnover, a younger age profile and general loss of experienced nurses (many losses going to the introduction of Advanced Critical Care Practitioner posts), and although there is engagement with more academic courses funding for general continued professional development has been cut. The Nurse Staffing Levels Act (Wales, 2016) places a duty on health boards and NHS Trusts to calculate and maintain nurse staffing levels in adult acute medical and surgical inpatient wards. Although the act does not specify the ratios in critical care settings, it does place a responsibility upon health boards to maintain safe staffing.

There are standards available that indicate optimal safe levels of staffing for a critical care unit, outlined in more detail below. Safely staffing a critical care unit is not only about providing high quality care, but it is about an engaged workforce that wants to excel. Without the employment "slack" in the system, additional positive components of work are undermined, such as mandatory training, professional development, PADRs etc. Working longer hours affects critical thinking skills and increases stress levels, making staff more likely to make mistakes, take unnecessary risks, and engage in "survival" behaviours which undermine the values of the directorate. In short overstretched staff may become disengaged and are at risk of being unsafe in delivering care. These deleterious effects of understaffing are far reaching, with examples from across Wales such as:

- Staff are asked to come in to do more overtime shifts. Although many nursing staff enjoy the benefits of some additional overtime work, a balance is required. Staff require time for rest and recovery between shifts so they can be at their peak performance at work. Over-worked staff have reduced cognitive capacity for safe decision making, and this impacts on the ability to form positive team relationships.
- Many staff have reported they feel pressurised into doing additional shifts, which puts a strain on their relationship with the shift coordinators.
- Staff are called away from mandatory training, clinical updates and personal developments to fill the gaps in the rota. They feel undervalued and risk being under-developed.
- Agency staff, who are unfamiliar with the unit supplement the numbers, impacting on patient continuity and patient safety.
- Education, research and outreach teams are pulled in to the clinical numbers frequently, impacting upon the quality of education, cancelled education, reduced opportunities for research and development, and limitations on the outreach services (impacting on the wider hospital and patient safety.
- Consultants are unable to meet their developmental and research needs and become under-stimulated and apathetic, a frequent phrased use is "maxed out".
- Allied health professionals such as physiotherapy and pharmacy are underfunded. Core establishments do not comply with professional standards. These shortfalls impact upon the provision of core services (Monday to Friday) and the development of 7-day services. Without the input from AHP`s` patients do not receive the rehabilitation they require. This impacts upon flow, ongoing healthcare needs and discharge destination.
- Management teams are called in to manage continuous operational crises at a time where their strategic thinking should be deployed to expand and develop their unit.

Overview of Critical Care Workforce Standards

There are professionally agreed National UK standards published for critical care multi-disciplinary staffing. These are covered in the Joint Faculty of Intensive Care Medicine (FICM) and Intensive Care Society (ICS) standards, published in 2015 (*Guidelines for the Provision of Intensive Care Services*- GPICS 1). The second edition, GPICS 2, is currently in consultation and is due to be published January 2019. It is anticipated GPICS 2 will not differ significantly from GPICS 1 for the multi-disciplinary staffing required. In addition, in Wales there is the Designed for Life Quality Standard for ICU, Wales

(2006), the standards of which are reiterated in the Strategic Vision for Adult Critical Care in Wales (2013).

Nursing:

The GPICS Standards outline critical care safe nursing numbers as follows:

- 1:1 nursing for level 3,
- 1:2 for level 2.
- A sister/ in-charge nurse for every 6-7 beds,
- A clinical coordinator in units for more than 6 beds.
- 3 supernumerary float or support staff for 31-40 beds.
- I practice educator for every 75 members of nursing staff, 1:50 for larger units
- No more than 20% agency staff

The Designed for Life: Quality Requirements for Adult Critical Care in Wales (2006) state:

- Staffing levels must be at least 7.0 WTE per level 3 bed
- at least 70% having specialist qualification in critical care nursing

FICM (2013) guidelines suggest 1:75 Practice Educators: Nursing staff, with further consideration of 1:50 ration when there are local needs such as rapid staff turnover and large numbers of junior staff which is typical of larger units.

National standards advise a 24hour 7 day a week Critical Care Outreach service.

Medical Staffing

GPICS (2015) indicate:

- Care must be led by a consultant in Intensive care medicine.
- A consultant in Intensive care medicine is a consultant who is a Fellow/Associate Fellow or eligible to become a Fellow/Associate Fellow of the Faculty of Intensive Care Medicine. A consultant in Intensive Care Medicine will have Daytime Direct Clinical Care Programmed Activities in Intensive Care Medicine written into their job plan. These programmed activities will be exclusively in ICM and the Consultant may not cover a second speciality at the same time.
- Consultant work patterns should deliver continuity of care.
- In general the consultant/patient ratio should not exceed a range between 1:8 – 1:15, and the ICU resident/patient ratio 1:8.
- A consultant in ICM must be immediately available 24/7, be able to attend within 30 minutes and must undertake twice daily ward rounds.
- Junior medical staffing resident:patient ratio should not exceed 1:8.

For remote and rural smaller units as in many ICUs in Wales:

- The service must be led by consultants trained in Intensive Care Medicine.

- There must be access to appropriate advice from a consultant in Intensive Care Medicine at all times.
- Dedicated daytime care must be provided by a consultant trained in ICM with no other commitments.
- There must be an airway-trained doctor resident within the hospital.
- There must be a 24/7 dedicated resident on the critical care unit. Medical resident cover should normally include a person dedicated to the critical care unit, however currently in very small isolated hospitals roles it may be necessary to combine roles providing processes are in place to call additional staff if required.

Allied Health professionals

Compliance with the standards outlined within GPICS 2015 requires: -

- 1 WTE Physiotherapist for every 4 beds.
- 0.1WTE 8a Specialist Clinical Pharmacist per level 3 bed, and per 2 level 2 beds. Larger hospitals require teams of pharmacists across bands 8c-band 7. A pharmacy technician is also to be considered for stocks and administration.
- 1WTE Practitioner Psychologist per unit in large units (0.05WTE per 3 level 3 beds in The Designed for Life: Quality Requirements for Adult Critical Care in Wales, 2006)
- There should be access to SLT services
- The British Dietetic Association recommends there should be 0.05-0.1 WTE dietitian per bed, with a band 7 lead.
- 0.22WTE Occupational Therapy per bed

Costs of Staffing

It costs approximately a minimum of £3,790,000 to fully staff a pod of 6 beds of which £2.5million is nursing staffing as costed in the table below. This includes nursing leadership, zone leaders and education, and so local arrangements may differ in what is already available.

Illustrated costs are also given for allied health and HCPC registered practitioners in table two. This an example of the staffing required to support an uplift of 6 beds. It highlights that a range of grades are required across a range of AHP professions. The costs are only an example, and likely to represent the maximum level, as the higher grades may not always be required. For example, if the beds were additional rather than a new unit, there may be a robust leadership structure in place and therefore higher grades may not be required

Table one: Nursing costs for a 6 bedded ICU (figures at top of scale)

NURSING	WTE	Banding/Enh	Total per WTE	Total
band 7 nurse	1.20	Unsocial Working Enh	58,560	70,273
band 6 nurse	16.32	Unsocial Working Enh	53,809	878,170
band 5 nurse	24.48	Unsocial Working Enh	43,216	1,057,936
HCSW band 2	5.69	Unsocial Working Enh	27,484	156,383
Zone leader band 6	5.69	Unsocial Working Enh	53,809	305,913
Education band 6	1.00	Basic Only	45,991	45,991
Education band 7	1.00	Basic Only	54,223	54,223
WTE total	**55.38**		nursing sub total	**£ 2,568,889.49**

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Table two: Illustrated costs of a potential full MDT for 6 level 3 ICU beds

AHP	WTE	Cost per WTE	Total Cost
Physio Band 8a*	0.50	63,138	31,569
Physio Band 7	0.25	54,223	13,556
Physio Band 6	0.25	45,991	11,498
Physio bands 5	0.25	36,937	9,234
Physio band 3	0.25	25,150	6,287
Psychology bands 8c*	0.30	90,513	27,154
Pharmacy 8c*	0.20	90,513	18,103
Pharmacy 8a	0.20	63,138	12,628
Pharmacy band 7	0.20	54,223	10,845
SLT bands 8a*	0.30	63,138	18,941
Dietetics band 8a*	0.10	63,138	6,314
dietetics band 7	0.10	54,223	5,422
dietetics band 6	0.10	45,991	4,599
Occupational therapy band 7	0.44	54,223	23,858
occupational therapy band 6	0.88	45,991	40,472
		TOTAL	**£ 240,478.96**

***** Higher grades may not be required if robust professional leadership is already in place for these workers.

Current Workforce for Wales

Table three summarises the reported workforce for adult critical care units across Wales October 2018. The detailed figures are given in appendix one. This does not include the separate cardiac ITU units. It also does not take into account uplifts in bed numbers and staffing numbers that were able to occur in response to initial Welsh Government monies as part of the Task and Finish Group.

Table three: Summary workforce mapping for critical care across Wales

UHB:	ABUHB	ABMUHB	BCUHB	CTUHB	CVUHB	HDUHB
total level 3 capacity funded and staffed	19	27	25.5	14.5	26*	22
medical staffing WTE consultants	19	17	10.75	8	16.3	20
Total budget nursing establishment	127	190.8	200	94	232.59	144.03
Total WTE Allied Health Professionals	6.65	10.75	3.4	4	7.3	13.9

*C&V were able to extend to 32 beds by Feb 2019 with interim monies

Anticipated Need

The anticipated need for critical care beds will be covered in more detail within the critical care capacity work-stream report.

Table four: Anticipated bed number expansion

	AB	ABM	BC	CAV	CT	HD
Current level 3 equivalent bed numbers (Sept 2018)	19	27	25.5	26	14.5	22
2019/2020	25	40	29	32(in progress for Feb 2019)	16.5	No plans for expansion
Beyond 2021	30		33	40-50		

In 2014, the Critical Care Networks carried out a study into unmet demand for critical care on behalf of the Critical Care Implementation Group. The study showed that, using conservative estimates and assuming no change in current practices, 73 additional critical care beds would be required across Wales immediately with an ultimate increase of 295 beds on the 2013 bed numbers required by 2023. During data collection, these are the narrative descriptions of service expansion given, which are covered in more detail in the Mapping Modelling Capacity Workstream.

Concerns, Barriers and Risks to Workforce

The following issues were collated from the results of the FICM/ Network audit of medical staffing (2014), the CC3N nursing staff report (2018) the Network staffing survey (2018) and an emailed survey of staffing from the Workforce Workstream (2018).

Nursing Staff

1. Staffing to standards

Designed for Life Quality: Requirements for Adult Critical Care in Wales indicates that a level 3 bed should be staffed at 7 WTE qualified nursing. The UHBs each reported how they aim to staff and therefore define each level 3 bed:

- ABM: 6WTE in Morriston, 6.5WTE in PWH
- AB: 6.5TWTE
- CAV: 6.4WTE at UHW, 5.69WTE at UHL
- CT: 6.5WTE
- HD: 5.69WTE
- BC: 6WTE

No HB is therefore compliant with the standards for nursing. This results in under-establishment, and then over use of bank and agency to fulfil need .e.g. GGH and WGH. There is inconsistent meeting of the standard to provide a shift/ clinical coordinator/ zone leader/ admitting nurse. Units manage understaffing by staffing to the number of current admissions, not to bed space, leading to staffing shortages when patients need to be admitted, and paying above the odds via last minute agency bookings. Those units who choose to staff to the establishment and bed space often suffer the consequences of staff shortages elsewhere in the organisation, leading to staff being rotated out to cover other areas. This removes opportunities for education, research, service development and team building- vital in a fast paced highly skilled area such as critical care.

2. Skill Mix

Recruiting to standards and issues with retention may threaten the skill mix. It is common now to recruit novice nurses, so experienced staff are managing their own patient and supervising junior staff. This places pressure on the experienced nurses, risks patient safety, and can lead to tensions in the workplace.

3. Age profile

Figure one: Age profile of CAVUHB Nurses

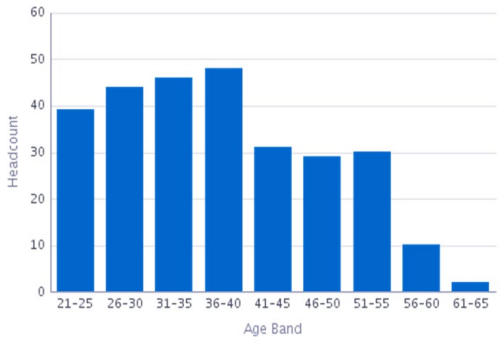
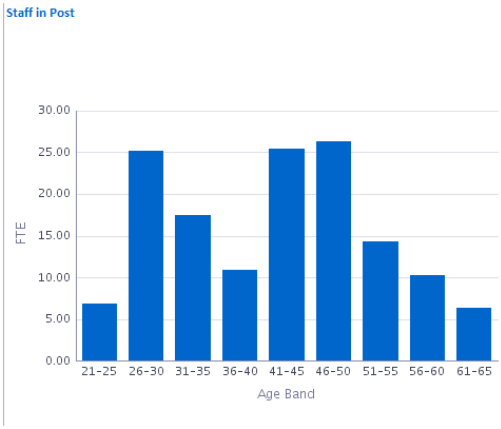


Figure two: Age Profile of HDUHB Nurses



4. Recruitment

Success in recruiting staff is variable across Wales. There are fewer issues in recruiting nursing at band 5, but this anecdotally is harder in smaller units. There are issues recruiting at higher bands. For example, recruiting band 7s is difficult due to drop in enhancements/ unsocial hours pay from the expected working hours of a band 7.

5. Retention

Retaining staff is an issue but this varies across each health board. Each health board reported on the number of nursing losses from critical care in the last 12 months, and detailed in the table below. Losses varied from 6-23%.

Table five: Nursing staff turnover

	ABM	CT	AB		HD	CAV	BC
			NHH	RGH			YGC
Nursing losses in 12 months	44	12	3.8	5	31	34	4
% loss by establishment	23	13	9	6	22	17	6

Each health board cited several common reasons for leaving:

- Lack of promotion and career pathways/ opportunities
- Internal issues in critical care
- Relocation
- Different working hours/ more flexible working
- Retirement: Number of experienced nurses over 50 e.g. PPH
- Uncertainty around services
- Deployment to the wards

CAVUHB conducted a 10 year audit of critical care nurse leavers, the results of which are similar to those cited above, indicated these are typical over time.

6. Bank and agency

UHBs reported difficulties in meeting agency requests

7. Senior Nursing Time

UHBs reported inconsistencies in being able to offer management time at band 6/7 level, resulting in difficulties delivering PADR and sickness follow ups. In addition the nurse in charge frequently has to relinquish a supernumerary role to take a patient. Ironically this occurs most frequently when the Units are at their busiest i.e. when there is the most need for a supernumerary nurse to be shift leader.

8. Access to education

For a critical care nurse, the standard is 6 weeks supernumerary at recruitment plus a foundation training, usually delivered over the first two years.

UHBs reported:

- Underfunded nursing/ nursing vacancies leading to cancelled education
- Lack of investment in education posts
- Lack of access to additional funds for external education
- Limited opportunities for ad hoc teaching due to lack of built in slack in the staffing
- Last minute cancellations of course attendance to cover staff gaps

Medical Workforce

There remains a steady increase in NHS workload owing to the ageing population and associated complexity of patients and there is a move towards an increased expectation of out of hours care being delivered by consultants. In 2014, an audit of medical workforce was carried out in Wales in collaboration with WICS and the Networks. The audit results are summarised in the table below- those units highlighted in red fail to meet audit standards. Key findings were:

- 50% of Welsh Critical Care units did not meet the GPICS v1 Intensive Care Medicine (ICM) consultant staffing standards
- Little progress had been made in meeting ICM consultant staffing requirements in the 8 years since Welsh critical care standards for consultant staffing were originally published
- Largest cause of failure to meet standards was Tier 3 units being staffed out of hours and weekends by non ICM trained consultants
- 50% of units shared their out of hours resident (junior) cover with theatres or obstetrics
- 80% of units did not meet all the standards for junior staffing – either shared cover 6/14 or covering too many patients out of hours 3/14
- Too many units across Wales were reliant on anaesthetic junior cover with a dwindling work force due to the EWTD, a reduction in the stipulated critical care commitment by trainee anaesthetists by the Royal College of Anaesthetists and an inability to recruit non-training grade staff to cover critical care
- Given the total numbers, trainees alone could not staff the number of level 3 units in Wales

Table six: Intensive Care Medicine (ICM) Consultant staffing of Critical Care Units in Wales. April 2014

Hospital	Tier of critical care delivered	Is patient care led by an ICM consultant 24/7	Does the critical care consultant provide blocks of care	Are non ICM consultants providing out of hours cover	Does the ICM consultant to patient ratio exceed 1:15	Is an ICM consultant immediately available 24/7 within 30 minutes	Are level 3 patients seen x2/daily by an ICM consultant	Are level 2 patients seen x1/daily by an ICM consultant	Do ICM led MDT ward rounds occur daily	Meets consultants standards appropriate for Tier
CTUHB PCH	3	N	Y	Y	N	N	N	N	N	N
CTUHB RG	3	N	Y	Y	N	N	N	N	N	N
CVVUHB UHW	3T	Y	Y	N	N	Y	Y	Y	Y	Y

CVVUHB LUH	2	Y	Y	N	N	Y	N	Y	Y	N
CVUHB cardiac	3T	Y	Y	N	N	Y	Y	Y	Y	Y
ABMUHB Morriston	3T	Y	Y	N	N	Y	Y	Y	Y	Y
HDUHB Withybush	3	N	Y	Y	N	N	N	N	N	N
HDUHB Glangwili	3	Y	Y	Y	Y	Y	Y	Y	Y	N
HDUHB Bronglais	3	Y	N	N	N	Y	Y	Y	Y	N
ABUHB NHH	3	Y	Y	N	N	Y	Y	Y	Y	Y
ABHB RGH	3	Y	Y	N	N	Y	Y	Y	Y	Y
BCUHB YGC	3	Y	Y	N	N	Y	Y	Y	Y	Y
BCUHB YG	3	N	N	Y	N	N	N	N	N	N
BCUHB WM	3	Y	Y	N	N	Y	Y	Y	Y	Y

Further concerns highlighted in the workforce workstream survey included:

- There are near future concerns of an aging workforce consultants over 55
- Consultants wishing to drop sessions or return to anaesthetics.
- Difficulty recruiting to posts was reported by AB, CT, CAV, and HD.

In Wales there was an 11.6% increase in consultant numbers between 2007 and 2010 and a 13.8% increase between 2010 and 2015. Despite this, there are a number of unfilled non-trainee posts (England 6.6%, Scotland 5.9%, Wales 9.2% and Northern Ireland 2.2%). In Wales this represents 19 unfilled consultant posts, 19 unfilled SAS posts and 17 unfilled trust grade posts according to the Royal College of Anaesthetics Census 2015. Key issues are:

- The number of female consultants in Wales has increased, however, participation rates for males and females in Wales is broadly the same at 0.95 fte for males and 0.90 fte for females. Across the UK nearly three-quarters (74%) of consultants currently work more than ten sessions and of these 75% are male and 25% are female.
- Approximately 3.88% of consultants and SAS anaesthetists in Wales have retired and returned to work. Males are nearly twice as likely to retire and return as females.
- For Anaesthetics, the CCT output is an average of 20/21 per annum (attrition rate of 3 per annum). The majority of trainees are still taking up posts in Wales. The CCT output for ICM, which is a new programme, is likely to average 2 per annum, with the first two trainees anticipated to reach CCT in August 2018.
- In 2015 there were 25 trainees on the ICM training programme
- Average time to train in Anaesthetics is 7 years (8 years via the ACCS route), however the actual average time to train is currently 8.5 years due to the impacts of LTFT training etc. There are currently no problems with fill rates to CT1 and ST3 in Anaesthetics.
- Average time to train as a single CCT in ICM takes on average 7 years from CT1 to CCT and Dual CCT programmes take on average 8.5 years from CT1 to CCT and 4 years where ICM is the dual specialism.
- Up until 2012, trainees wishing to train in ICM were recruited from a number of specialties at ST5, gaining a joint CCT. From 2012, a single specialty was approved, with trainees

recruited from Core Anaesthetics Training, Core Medical Training, Acute Care Common Stem (Anaesthetics) and the Defined Route of Entry into Emergency Medicine.

- As well as training solely in ICM, trainees can undertake a Dual CCT programme with a range of other specialisms including Anaesthetics, Acute Medicine, Emergency Medicine, Renal Medicine and Respiratory Medicine. This ability to gain dual accreditation will develop a workforce better able to care for acutely unwell patients and those undertaking dual accreditation with a medicine specialism are more likely to take up consultant posts in those areas rather than in an ICU. There is no information available yet on whether any of these trainees take up posts in ICUs.
- Due to the transition from the Joint CCT to the new programme for ICM there has been a foreseen UK wide undersupply between 2016 and 2018. The fill rates for training were low at the beginning of the programme.
- Fill rates for Anaesthetics and ICM are relatively good in NHS Wales. Currently, a large proportion of ICM trainees are choosing to dual accredit with Anaesthetics and this choice coupled with the newness of the ICM training programme in Wales means that it is currently difficult to quantify whether current supply will be adequate to meet demand.
- Analysis of the UK wide 2016 recruitment data for ICM has highlighted that the majority of trainees wish to obtain a dual CCT. There have been some current difficulties in filling Consultant ICM posts in Wales with 4 ICUs reporting difficulties in filling posts. However, there is an anticipated output of 6 CCT holders between 2018 and 2020.
- The impact of Brexit on future recruitment and retention is not yet fully understood - 12.6% of doctors on UK Specialty Register are EEA graduates and in Wales this is 14.5%
- There has been some localised difficulty in filling vacant Anaesthetics and Pain Management posts which is likely to be a short-term issue resulting from the volume of posts advertised and an adequate supply of trainees is anticipated to fill future posts.
- In the past, the majority of SAS doctor posts were filled by overseas applicants that is no longer the case. Recruitment difficulties at SAS level are coupled with high levels of retirements as this workforce ages. SAS doctors deliver planned work.

More broadly across the UK the following issues in the demand for medical workforce has been identified:

- Recent changes to pension tax rules on annual allowance and personal allowance rules coming into force from April 2019 means that those individuals doing more than 10 sessions will pay 75-80% tax on anything earnt above 10 sessions. This may encourage consultants to drop sessional commitment. Some consultants may also choose to retire earlier.
- Development of peri-operative medicine as a sub-speciality (some hospitals in Wales already have some sessions). The Royal College of Anaesthetists' vision is for an increase in the number of consultant sessions devoted to pre-operative assessment and post-operative care in dedicated Post Anaesthesia Care Units due to the complexity of patients presenting for surgery increasing. These patients require individualised care in order to minimise complications and in order to use NHS resources efficiently.

- The CfWI review of anaesthetics and ICM (2015), identified an unmet need of 15% in anaesthetics and 25% in ICM across the UK.

- Increase in requirements for consultant for out of hours cover and potential for 7 days per week cover. Whilst some ICU in Wales deliver 24 hour cover at consultant level, there are gaps in the consultant out-of-hours or on-call rotas; the Royal College of Anaesthetics 2015 census estimate of the frequency with which departments have to cover gaps in the consultant rota once a week by UK nation were England 26%, Scotland 30%, Wales 59% and Northern Ireland 50%.
- There continues to be a rise in the number of Consultants aged 55+ and in the number of Consultants aged between 45 and 54 and as the profession is delivered on a sessional basis, an increasing age profile and changes to pensions arrangements may lead to older Consultants choosing to reduce sessions. There is also an established practice of retire and return.
- The SAS workforce is ageing and both recruitment and retention are proving challenging in a number of areas. Smaller and more rural hospitals are more dependent on the SAS workforce and SAS doctors currently make up approximately 23% of the non-trainee workforce in Wales. Continued failure to recruit to vacant SAS posts could lead to some of these clinical sessions having to be covered by consultants.

Junior Medical Workforce

In the past, before the European working time directive was implemented, the resident on the intensive care unit was exclusively a junior doctor who did 24 hour shifts and unlimited hours a week meaning that only 3-4 doctors were needed per unit. The Working Time Directive and Junior Doctor contract have required a change in working practices for junior medical staff, including restrictions on hours work and working patterns. This has necessitated the introduction of shift system limiting a working week to 48 hours and a maximum of a 12.5 hour shift. This shift pattern requires a minimum of 8 doctors per unit, and led to a requirement for additional medical staff across Wales over the past 10/15 years. Additionally, there has been a change in training requirements from the Royal College of Anaesthetists. Traditionally intensive care and anaesthetics have been closely linked, however in recent years the two specialties have been diverging. These changes have led to a reduction in the availability of junior doctors to provide service cover and has led to significant rota gaps and a requirement to innovate- such as the role of the Advanced Critical Care Practitioner.

Units report difficulties in the predictability of ICM trainee placement and significant difficulty in recruiting to junior rotas to cover gaps not covered by trainees. In some hospitals there has been a shift to use of ACCPs, foundation doctors and/or clinical fellows to help with these gaps.

Allied Health Professionals

Allied Health Professionals include Physiotherapists, Pharmacists, Dietetics, Speech and Language therapists, Clinical Psychologists and Occupational therapists. Within every Health Board these professions are under established and, in many instances, units only have access to a generic hospital staff pool rather than dedicated Critical Care staff. These specialist staff will have the skills required to deliver safe and effective care to this complex patient group.

Historically services are funded for 5 days , there is limited ability to offer a 7 day service, and where this is offered this is often a limited weekend on-call service .

- A shortage of senior roles affects recruitment as staff have no visible career progression.
- Experienced AHP`s have the skills to deliver new emerging roles eg Outreach/ ACCP
- Shortfalls in AHP staffing restrict engagement of AHP`S with the wider MDT eg Board rounds, Q&S and service improvement initiatives.
- Some services are often provided by a single person, with no cover for sickness or annual leave and no succession planning, and often less than 5 day services.
- Compliance with GPICS Rehabilitation Standards cannot be achieved with current AHP staffing levels. Patients do not receive the specialist rehabilitation they require .Timely rehabilitation is proven to impact upon length of stay, discharge destination and ongoing dependency/ health needs.
- Typically these are female dominated professions so are impacted by maternity leave with no cover.
- Temporary increases in AHP establishments eg winter pressures is not a sustainable model of service provision. Staff with specialist critical care skills are limited and temporary funding will not attract these staff to work within Critical Care units. Permanent funding is required to address the shortfall in staffing and enable recruitment of staff with the required skill set. Under-provision impacts patient length of stay. For example:-
    - a lack of psychology can leave staff unable to engage slow to wean patients with associated psychological difficulties. In addition Psychologists play a key role in staff wellbeing- vital for retention.
    - Speech and language Therapist assessment and intervention addresses the increasingly complex communication, swallowing and tracheostomy weaning needs of Critical Care patients. No SLT service means that patients don't have access to early voicing via the use of in line speaking valves impacting significantly on the effectiveness of their communication and psychological wellbeing. From a swallow perspective, no SLT input means no access to specialist clinical evaluations of swallow function. This places patients at increased risk of poor oral health, prolonged NBM/tube feeding, aspiration and compromised nutrition.
    - Physiotherapy provides respiratory care and early rehabilitation in this complex group of patients. Specialist respiratory interventions optimise patient`s respiratory function. Patients may avoid intubation, whilst for others these interventions will support successful weaning and extubation. Early rehabilitation has been proven to impact upon length of stay within Critical Care preventing secondary musculo-skeletal complications associated with extended Critical care stay.
    - There is a high complexity of medicines use in Critical Care in the context of organ dysfunction, significant co-morbidity, pharmacodynamic and pharmacokinetic instability, polypharmacy including high incidence of parenteral drug delivery and frequent use of recognised high-risk regimens including insulins, high dose opioids, anticoagulants, midazolam, and renal replacement therapy. Absence of trained pharmacists can lead to drug errors and reduced patient safety
    - Provision of nutrition in critical illness is complex and not all patients will benefit to the same degree. The Dietitian plays a key role in assessing risk of malnutrition and

advising on appropriate nutrition regimen and feeding routes to achieve nutritional targets. Analysis from the International Nutrition Survey continually shows there is a direct correlation between the total amount of funded dietitians in Critical Care and the better provision of nutrition support and earlier initiation of enteral nutrition (GPICS 2015).

Recruitment Processes

- Recruitment processes cause delays
- Newer posts to meet GPICS standards have to go through the process of business cases that cause significant delays in the appointment and recruitment of any new staff

BREXIT

The percentage of the critical care workforce from European countries is not collected by the electronic staff record, so it is not possible to accurately assess the impact that Brexit will have on the critical care workforce. All units have a reliance on some European staff.

Changes to hospital/ UHB structures likely to impact upon workforce

AB: Opening of the Grange Hospital will mean more individual/single rooms- need more WTE nurses and HCSWs. Some staff will not relocate to the new site

CT: POWH will fall under CTUHB in the future. There are no plans to change the ICU beds in the UHB, but staff are concerned that this may change.

HDUHB: Recently trying to recruit to GPICS standards for nursing. Pressure on practice education and junior staffing creating poor skill mix and pressures on more experienced staff. 22WTE vacancies in the GGH site in 2017 which resulted in over 50% agency staff on per shift.

CAV: Recently trying to expand: pressure on senior staff to support new recruits**.** Tertiary services developed without CC being factored in.

Service Developments

Three key linked services to critical care were identified by the Task and finish group (Post Anaesthetic Care Units, Outreach, Long Term Ventilation). The workforce models are outlined.

1. Regional Transfer Service

Detailed requirements for a regional transfer service can be found in the Transfers Workstream final report.

2. Post Anaesthetic Care Unit (PACU)

The details for the workforce for PACU are in the PACU Work stream Report. Workforce requirements are given in the table below. Approximately 14.91 staffing would be required to run a 6 bed PACU.

Key points:

- Close nursing care is essential with a 1:2 nurse to patient ratio with an additional HCSW for higher risk patients.
- If agreed that no patient should receive invasive ventilation, haemodiafiltration, haemodialysis or is managed with an intra-aortic balloon pump, consideration should be given to increase this ratio to 1:3, with a minimum of 2 nurses in the area could be done with caution and monitoring for mortality/
- The ratio will be informed by the number of beds in the PACU and whether PACU is in the same area as HDU.
- A six bedded stand-alone PACU should have as the bare minimum 2 nurses and 1 HCSW.
- In Smaller PACU's it will be more difficult to increase the ratio unless co-located in either HDU or Theatre Recovery. If PACU consists of 3 spaces in an established HDU potentially only 1 nurse will be needed for 3 patients
- Experience from Cardiff shows that Critical Care nurses are a limiting resource. Future PACU's should be developed by attracting and training nurses from surgical wards, recovery and other areas.
- Intensive care units can also consider rotating their staff through PACU. PACU is a less pressured environment and it may be beneficial for staff to have periods away from the business of ICU and may prevent burnout. It will also enhance the skills for all nursing staff involved.
- Other groups whose input are essential for a good patient experience and outcome include, physiotherapy, the acute pain team, dieticians, pharmacy and admin staff.
- Input from Intensivists will be beneficial, but is not essential, provided that there is a designated Intensivist that can be contacted for advice and escalation of care. Clear accountability for deteriorating patients is paramount. Basic medical cover can be provided by the patient's peri-operative team (Surgeon and Anaesthetist).
- PACU patients cannot be covered by hospital at night doctors as they may not have the expertise to deal with the patients' needs. Senior on-call trainees from Surgery Anaesthesia or Critical Care should be contacted after hours.

3. Outreach

The task and Finish Outreach sub-stream have reported on the survey of the current provision of Outreach Teams across hospitals in NHS Wales. The following are key points of note for workforce:

- There is not a consistent model or availability for Outreach in Wales, so these services will need to be developed or further improve which will impact upon workforce.
- The outreach teams typically comprise a combination of Band 6 and 7 nursing staff
- Staffing does not typically rotate staff between Critical Care and the outreach team ("stand-alone"). There may be opportunities for more rotation between outreach and critical care
- The outreach teams have an interdependency with the Hospital at Night teams

- Outreach across the UK is mainly delivered by ICU nurses but that there are opportunities for a wider contribution from other professionals.
- Findings from the National Critical Care Nursing and Outreach Workforce survey (2018) indicate that there has been a move towards Outreach teams being available 24/7 with the majority working as stand-alone teams and smaller numbers being part of Hospital at Night and/or other teams.
- A full outreach model required 6.5WTE band 7 nurses. This should be doubled in larger tertiary centres.

4. Long Term Invasive Ventilation (LTiV, South Wales)

The details for the workforce for LTiV are in the LTiV Work Stream report. Key points are:

A rehabilitation model should include the following professions:

- Nursing at a 1:2 ratio. Nurses do not need to be drawn from the critical care core nursing staff but need to be ventilator competent so having former ICU nurses or some staffing with ICU experience per shift is beneficial.
- Physiotherapy
- Dietetics
- Speech and Language Therapy
- Clinical Psychology
- Occupational therapy
- Medical team. Access to cover for medical emergencies is key. The medical team contribute to the weekly monitoring of patient rehabilitation goals.

Innovation and Improved Workforce Utilisation

The following are ideas for utilising and managing the workforce differently to improve the staffing issues in Wales.

1. Improving the capacity and flow of critical care to reduce the needs for expansion through a better utilisation of current available workforce	
Discharge coordinator post Cardiff and Vale are piloting a band 7 discharge coordinator to aid the unit with timely discharge and DTOC reduction. The results of the pilot will be available February 2019.	**Benefits:** • Single point of discharge coordination- better planning for the patient, better relationships across services • Potential to reduce hours lost to DTOCs **Costs:** • Loss of band 7 from clinical area • 1.0 WTE Band 7 (currently £ 53,146.89 at basic rate top of scale)
AHPs staffed to standards A fully functioning MDT of allied health professionals staffed as per the guidelines improves the biopsychosocial care of the patient in ICU. This MDT approach enables better flow of patients, reduced length of stay and better functional outcomes.	**Benefits:** • Improved flow of patients & reduced length of stay • Earlier mobilisation and rehabilitation improves functional outcome **Costs:** • Approximate cost of £40k per bed for a full MDT team (Physiotherapy, Psychology, Speech Therapy, Dietetics, Pharmacy and Occupational Therapy).
Band 4 Rehab/ Therapies/ Integrated Therapy Practitioner There is a plan to develop a new band 4 integrated therapy practitioner who would have 'transferable' skills from physiotherapy to speech and language therapy to occupational therapy and dietetics These are utilised elsewhere e.g. stroke	**Benefits:** • Supports the qualified allied health professional team • Allows for longer periods of rehabilitation • Lower costs **Costs:** • Risk of using as a substitute for qualified staff • 1.0 WTE band 4

2. Use of extended roles and advanced practice	
Advanced Practice North Wales developed a training program in conjuncture with Bangor University for the training of Advanced Critical Care Practitioners (ACCPs) who would take on the traditional doctor roles to compensate for rota gaps caused by workforce issues and European Working Time Directives. ACCPs are drawn from a nursing critical care background (although it is open to senior physiotherapists) who train for 2 years partly in the tertiary education centre (Bangor University) and partly in the clinical setting of intensive care. The third year is spent working clinically as a qualified ACCP at a band 8a level and working towards their Masters at the same time. Their role is to diagnose, prescribe, treat and stabilise patients under direct or indirect supervision of a consultant. They have all become an indispensable part of the team whose non-clinical duties also include teaching and data interpretation	**Benefits:** • This role presents a tremendous opportunity to nurses/AHPs to extend their clinical role. • There are very few nursing jobs which allow the person to remain clinical on a band 8a so it helps retention. • These posts are permanent so once trained, they give many years of service, whereas junior doctors move on in short time frames. • After their 2 years training we expect them to have the skills of a junior registrar although they do not have the advanced airway skills of an anaesthetist. **Costs:** • The role creates a different professional identity for former nurses/ physiotherapists, so care must be taken to promote their support systems, governance and professional identity. • This role is new, and the stress levels are similar to those found in Middle Grade doctors. Therefore opportunities for time out from work, shared roles, sabbaticals etc should be considered to maintain wellbeing and engagement. • This role takes time to train, and staff are supernumerary for the first two years, requiring significant investment from the health board. • This role recruits from senior staff, which while offering an opportunity, does take senior staffing away from bedside nursing and physiotherapy. • COST: 1.0WTE 8a ACCP approximate costs £63138
Extended Practice Work to explore the potential for a more flexible provision of extended practice skills and competences across Wales is currently ongoing with the Intensive Care senior nurses invited to a workshop hosted by HEIW. This follows the development of a more flexible route to the development of extended skills to support training for Emergency Nurse Practitioners	**Benefits:** • In house training and faster routes to staff gaining additional/extended skills. • No need to develop full Advance Practice **Costs:** • Individuals are limited in ability to contribute to the non airways junior medical rota

3. Commissioning a piece of work to explore management of staffing across health boards	
Welsh government could commission a piece of work to explore cross UHB staff management Working across Wales to assist in career planning which can have a positive impact on recruitment/retention and skill mix. Leveraging the totality of Critical Care within the context of All Wales to offer broader careers for the benefit of Staff and Organisations. We could work to develop Staff collaboratively across Health Boards. It would need a formal piece of work determining how working together could look. **Ideas include:** **Nursing Bank** **Consultants:** Sharing/ contracts across specialties **Junior Medical Workforce** • Making use of the MTI (Medical Training Initiative) programme • Funding clinical fellow placements internally to guarantee staffing for the rota independent of Deanery allocation • Allowing for Welsh trainees to stay in either North or South Wales, with North Wales posts being able to extend to Northern England **Staffing to beds not patients** Many critical care units staff to their current admissions, which is hard to predict and can change several times throughout the day. Time is then used to increase the staffing to admit patients, increasing temporary staffing costs. Units should at least staff to have admission capacity to their average admission rates.	**Benefits:** • Offers predictability in staffing & ability to admit • Saves time searching for staff • Offers time to allow for training, team days, innovation etc • opportunity for junior nurses to work with seniors caring for more complex patients allowing them to complete and sign off competencies • Saves money on agency costs • Allows for a more balanced job- with different areas or in different sized units • Benefits to staff wellbeing and reducing risk of burnout • Improves longevity of employment • Improves relationships across UHB and/or specialties **Costs:** • Complex work due to varying HR practices and contracts across UHBs • **Project manager for 6 months exploring staffing models- anticipated 0.2WTE 8c (approximately £9000)**

4. A longer-term cross Wales programme developed to improve the retention of current staffing	
Welsh government could commission a piece of work to explore cross UHB staff retention strategies **Honest Recruitment and Career Progression with sustainable education** From workforce turnover, it would seem that approximately 15-20% of core band 5 and 6 workforce will move on, and planning for this anticipated turnover would be beneficial. Some staff may have unrealistic expectations of critical care nursing, and therefore more honest recruitment processes and gauging expectations would be beneficial. There are also likely to be regretful leavers, such as those leaving due to lack of promotion opportunity. Cardiff and Vale found that staff were most likely to leave around 4-6 years where there is a lull between initial education and career progression. Mapping career pathways may help. This would include a structure programme of education which is adequately funded. Cross UHB secondment opportunities could also be explored. **Retention Strategies** In addition to recruiting a wider workforce it is important to work on retaining staff. There is lots of literature from the wider NHS that has been summarised in the context of critical care by Julie Highfield, following her work with workforce wellbeing and retention in CAVUHB. Examples include: -staff engagement sessions - mapped career pathways -use of secondments -use of project work as personal developments -use of Clinical Psychologists for staff wellbeing	**Benefits:** • Those that work in critical care are clear on what to expect and the demands of the job • May reduce turnover to other areas. • lower costs of recruiting and training new staff • retains a skill mix • encourages further staff to apply for posts due to critical care becoming a more attractive place to work. • Higher access to development opportunities **Costs:** • It would need a formal piece of work determining how working together could look. **Project manager for 6 months exploring staffing models- anticipated 0.2WTE 8c (approximately £9000)** • Staff concerned about working too far from home • North/South Wales geographical limits • May not reduce turnover between critical care units • May put off some individuals who might benefit the system from being a critical care nurse for a limited number of years. • Retention strategies require whole-system engagement • Retention strategies take time.

Summary Recommendations

The current workforce for critical care is under strain and needs to be able to manage future expansion of critical care. Key recommendations to manage this are:

1. Improving the capacity and flow of critical care to reduce the needs for expansion through a better utilisation of current available workforce
    a. UHBs are encouraged to develop discharge coordination posts
    b. UHBs are encouraged to review their allied health workforce and put in post sufficient numbers which will improve rehabilitation and reduce length of stay
2. Use of extended roles and advanced practice
3. A commissioned piece of work to explore management of staffing across health boards
    a. Cross UHB staffing management
    b. Shared contracts across units
    c. UHBs are encouraged to staff to average bed utilisation
4. A longer term cross Wales programme developed to improve the retention of current staffing, exploring the following.
    a. Education and opportunities
    b. Staff wellbeing initiatives
    c. National career planning and retention strategies
5. Utilising non critical care staff for critical care related service developments (e.g. transfers PACU, LTiV and Outreach).

Appendix One Workforce mapping for critical care

Unit	ABUHB		ABMUHB		BCUHB			CTUHB		C&VUHB		HDUHB			
	NH	RGH	M	PoW	YG	YGC	WMH	RGH	PCH	UHW	UHL	G	W	PP	B
level 3 beds	6	9	18	4	6	6	5	6	6	22	4	8	3	1	2
Level 2 beds	2	6	10	4	5	5	7	4	1	0	0	6	4	4	2
total physical bed capacity	8	17		9	13	16	12	12	9	33	6	17	9	6	5
total level 3 capacity funded and staffed	7	12	23	4	8.5	8.5	8.5	8	6.5	22	4	11	5	3	3
medical staffing WTE consultants	7	12	14	3	2	4	5.4	4	4	16.3		20			
WTE junior medical staffing	7	13	23	3		2.5	6.1			24		24			
ACCP/ ANP	2	4	5		1.94		2	0	0	3		0	0	0	0
Total budget nursing establishment	43	84	190.8		64.28	68.5	64.39	42	52	232.59		144.03			
band 8 nurse			1	1	1	2	1	1		2			1		
band 7 nurse	3	3.96	9.2	5.57	8.96	5.8	6.65	3.8	3	11		2	1	1	1
Band 6 team leaders/ zone leaders	7.44	13.32					0								
band 6 nurse	11.16	10.96	21.5	3.06	25.32	17.4	20.62	91.62		70.74		10.14	7.92	3.2	7.32
band 5 nurse	21.68	32.28	138.4	32.35	29	33.3	28.35			125.65		54.28	24.31	18.66	10.47
HCSW band 3	0				0	5	1.69	0	0	3.76		0	0	0	4
HCSW band 2	2.02	6	9	3.03	0	0	2	4	1.6	12.84		6.55	1.61	0	1
Practice educator	1		3			1		0	0				1.76		
Outreach	1.6	1.8	4	2	0	5	6WTE	6	3	6.6	0	0	0	0	0
PACU	Yes- CC staff		No		No		Yes theatres-	no		Yes separate		no	no	no	no
Physiotherapy	3.5		4.5	0.5	3			0.5	0.5	4.2		11.8			
Psychology	0.5		0	0	0			0	0	0.6		0			
SLT	0		0	0	0			0.5	0.5	0		0			
Pharmacy	1.25		0.5	0.3	0.34 unfunded WM			0.5	0.5	1.5		1			
Dietetics	1.4		0.75	0	0.4			0.5	0.5	1		1.1			
Occupational Therapy	0		0	0	0			0	0	0		0			

Appendix two: Stakeholders consulted in the writing of this report

Name	Job Title	Health board
Julie Highfield	Consultant Clinical Psychologist & Associate Director	C&V
Clem Price	Workforce	HEIW
Martin Driscoll	Director of Workforce & OD	C&V
Michael Ware	Information Manager	C&V
Carole Jones	Physiotherapy Clinical Service Lead	C&V
Matt Dallison	Regional Advisor and Training lead for ICM in Wales/Consultant	ABM
Ed Farley Mills	Network/ Consultant	BC
Chris Thorpe	FICM Board member; Consultant in Intensive Care	BC
Nia Bromage	Advanced Critical Care Practitioner	C&V
Richard Self	Clinical Lead for Critical Care	ABM
Carly Buckingham	Service Delivery Manager, Critical Care	HDU
Lisa Lewis	Senior Nurse Manager, Critical Care	HDU