Coding and VAED reporting of ventilatory support

Updated July 2019

Introduction

The purpose of this article is to provide clarity for Victorian coders regarding the current Victorian Admitted Episodes Dataset (VAED) rules for reporting of continuous ventilatory support (CVS) and noninvasive ventilation (NIV) and clarity for code assignment according to Australian Coding Standards (ACS) and conventions. The article was originally published in 2012, was updated in 2015 and 2017 and has been updated again now to provide additional examples of the coding and reporting of NIV including NIV with tracheostomy or trache-shielding, and CVS in contracted care and posthumous organ procurement episodes.

This article contains the following sections:

Coding of Continuous Ventilatory Support (CVS)

1. Intubation codes are only assigned when intubation occurs without ventilation – all patients

2. No codes are assigned for the tube or mask that is used to deliver the ventilatory support

3. There is no differentiation of coding rules based on age

4. Ventilation/intubation is not coded if it is for <1 hour prior to transfer to another hospital

5. **Surgical Patients:** The ventilatory support that is provided to a patient during surgery is associated with anaesthesia and is considered an integral part of the surgical procedure. Therefore, the following points apply for calculation of the duration of ventilatory support for these patients:

    5.1. Ventilatory support initiated in a ward (including Short Stay Unit (SSU)), continuing through surgery. These patients are assigned a code based on total hours since intubation, rounding down for incomplete hours.

    5.2. Ventilatory support initiated in the Emergency Department (ED), continuing through to surgery. These patients are assigned a code based on total hours from the time of admission (i.e. excluding time in ED), rounding down for incomplete hours.

    5.3. Ventilatory support initiated in theatre: These patients must have >24 hours of ventilatory support post surgery before a code can be assigned. Once >24 hours of ventilatory support have been provided post surgery, the duration is counted from the time of intubation in theatre.

    5.4. Ventilatory support initiated in theatre for multiple visits to theatre with extubation between visits:

        5.4.1. For each visit to theatre the patient must have >24 hours of ventilatory support post surgery before those hours can be counted for coding. If this criterion is met, the hours are calculated from the time of intubation, for each qualifying period of ventilatory support.

        5.4.2. CVS hours for all visits to theatre that meet this criterion are combined to calculate the cumulative hours for coding, rounding down for incomplete hours.

    5.5. Ventilatory support initiated in theatre, for multiple visits to theatre, without extubation between visits:

        5.5.1. The CVS that is continuous since the original surgery is considered to be continuous ventilation for respiratory support rather than for anaesthesia as otherwise patients would be extubated between visits to theatre.

        5.5.2. The patient must receive >24 hours ventilatory support post original surgery before the management of CVS code can be assigned. The calculation of duration of CVS starts with the intubation time for the original surgery and continues through all the subsequent visits to theatre, rounding down for incomplete hours.

6. NIV or trache-shielding should be counted in the CVS hours only when it is clearly documented that it has been used as part of weaning to a maximum of 24 hours (see also ACS 1006 *Ventilatory support*). The presence alone of devices such as trache-shields or tracheostomy collars should not be used to infer that weaning is taking place.

7. When both CVS and NIV are used for treatment (not weaning), code each type separately. Use the appropriate duration extension on each code to indicate how many hours the patient received each type of ventilatory support, rounding down for incomplete hours.

8. **Non-Surgical Patients**: Where ventilatory support is not initiated for anaesthesia but for respiratory support, all hours of CVS from the time of admission are used for code assignment, rounding down for incomplete hours.

9. **Neonates:** Neonates who receive both CVS and NIV in the same episode of care and together the total is ≥ 96 hours, assign 92211-00 Management of combined ventilatory support, ≥ 96 hours in addition to the CVS and NIV codes.

Reporting duration of CVS hours in ICU/NICU to VAED

Instructions relating to this data item can be found in the VAED Manual, Section 3 – Data Definitions. Please refer to the HDSS website https://www2.health.vic.gov.au/hospitals-and-health-services/data-reporting/health-data-standards-systems for detailed information about the calculation and reporting of this data item.

The reporting of duration of CVS provided in ICU or Neonatal Intensive Care Unit (NICU) is mandatory.

Note: The counting of duration of CVS in ICU or NICU for reporting is independent of the counting of hours of CVS for coding. Thus, hours of CVS can be reported to the VAED where they do not qualify for coding.

Counting duration of CVS in ICU/NICU for VAED reporting

1. CVS hours for reporting are to commence once a ventilated patient has been admitted to an ICU/NICU.
2. If the patient has more than one period of CVS in ICU/NICU during an episode, the total duration of the combined periods is reported, rounding up for incomplete hours.
3. Where a patient is intubated and CVS commences in theatre, the counting of the duration of CVS for reporting commences when the patient enters the ICU/NICU.
4. Where a ventilated patient is absent from ICU/NICU (for example, for a visit to theatre) and is still ventilated on return to ICU/NICU, the count of CVS hours is continuous. It is not necessary to stop the CVS count when a ventilated patient is transferred from ICU to theatre and back.
5. Where a patient receives CVS in a combined ICU/CCU, report the ICU/CCU hours in the ICU field and not the CCU field.

Coding of Noninvasive Ventilation (NIV)

As per ACS 1006 *Ventilatory support, "Noninvasive ventilation* refers to all modalities that assist ventilation without the use of an ETT or tracheostomy. For the purpose of this standard, noninvasive devices may include: face mask, mouthpiece, nasal mask, nasal pillows, nasal prongs, nasal tubes, nasal high flow cannula (high flow therapy) and nasopharyngeal tubes, however clinical coders should ensure that NIV is being provided via the device, and not assign a code for NIV based on the device alone".

1. NIV initiated in a ward (including Short Stay Unit (SSU)): assign a code based on total hours since commencement, rounding down for incomplete hours.
2. NIV initiated in the Emergency Department (ED): assign a code based on total hours from the time of admission (i.e. excluding time in ED), rounding down for incomplete hours.
3. When both CVS and NIV are used for treatment (not weaning), code each type separately. Use the appropriate duration extension on each code to indicate how many hours the patient received each type of ventilatory support, rounding down for incomplete hours.

4. Neonates who receive both CVS and NIV in the same episode of care and together the total is ≥ 96 hours: assign 92211-00 Management of combined ventilatory support, ≥ 96 hours in addition to the CVS and NIV codes.
5. Subsequent periods of NIV, when used for treatment should be added together.
6. For the purpose of calculating the NIV:
    6.1 Hours of NIV should be interpreted as completed cumulative hours
    6.2 A period of ≤ 1 hour between cessation and then restarting NIV should be accounted for in the duration, i.e. continue counting the duration.
    6.3 Removal and immediate replacement of airway devices (tubes, masks) should be accounted for in the duration, i.e. continue counting the duration.
7. Do not code NIV when the patient brings their own ventilatory support devices (e.g. CPAP machine) into hospital and the patient operates the device.
8. Where NIV is delivered via a tracheostomy this is coded to mechanical ventilation as per ACS 1006 *Ventilatory support*.

Reporting duration of NIV (CPAP and BiPAP) in ICU/PICU to VAED

Instructions relating to this data item can be found in the VAED Manual, Section 3 – Data Definitions. Please refer to the HDSS website https://www2.health.vic.gov.au/hospitals-and-health-services/data-reporting/health-data-standards-systems for detailed information about the calculation and reporting of this data item.

The reporting of duration of NIV provided in public hospitals in an approved Intensive Care Unit (ICU) or combined Intensive Care Unit/Coronary Care Unit is mandatory. This includes NIV provided in a Paediatric Intensive Care Unit (PICU).

Only the number of hours of NIV given via Continuous Positive Airway Pressure (CPAP) or Bi-level Positive Airway Pressure (BiPAP) are reported in this data item. This excludes high flow therapy.

Counting duration of NIV (CPAP and BiPAP) in ICU/PICU for VAED reporting

Count all hours of NIV (CPAP and BiPAP) received in ICU:

1. Count NIV hours to the nearest whole hour, rounding up for incomplete hours.
2. Counting NIV starts when a patient first receives NIV in ICU
3. Counting NIV stops when a patient stops receiving NIV in ICU
4. Counting of NIV continues when a patient receiving NIV in ICU is transferred from ICU to theatre and back to ICU
5. If a patient is coming on and off NIV whilst in ICU:
    - When the patient comes off NIV for periods of more than 1 hour, then count the actual number of NIV hours received (i.e. Stop counting when the patient is taken off NIV and continue counting when they are recommenced on NIV).
    - When the patient comes off NIV for periods of less than or equal to 1 hour, then count as though NIV was received continuously.

Excludes:

- NIV given for purpose of weaning from mechanical ventilation
- Where NIV starts outside ICU (such as in an operating theatre, ward or emergency department) the counting of the duration of NIV starts only when the patient enters ICU
- NIV provided via any modality other than CPAP or BiPAP.

CVS examples for surgical patients

The following examples are provided to help coders understand the calculation of CVS hours for surgical patients.

CVS initiated prior to patient going to theatre

1. Patient intubated and ventilated in ED on 1/7 at 12:00 and departed ED at 13:00 to inpatient ward. At 16:30 the patient was taken to theatre for 4 hours. Transferred to ICU at 20:30 and was extubated at 23:50 on 1/7.

Intervention	Location	Time commenced	Coding calculation - CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV	ED	1200 1/7	Not counted		Not counted	
MV	Inpatient Ward	1300 1/7	3	30		
MV/surgery	Theatre	1630 1/7	4			
MV	ICU	2030 1/7	3	20	3	20
Extubation	ICU	2350 1/7				
Total			10	50	3	20
			10 (round down)		4 (round up)	

Assign 13882-00 Management of continuous ventilatory support, ≤24 hours.

Hours in ED are not counted as they are not part of the admitted episode. Hours in theatre are counted for coding because ventilatory support was initiated in ED prior to surgery for respiratory support, not for anaesthesia.

2. Patient intubated in ED at 03:00 on 6/8. Transferred to ICU at 04:00 on 6/8 still intubated. At 13:00 went to theatre for 3 hours. Returned to ICU at 16:00 and was extubated at 12:00 8/8.

Intervention	Location	Time commenced	Coding calculation – CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV	ED	0300 6/8	Not counted		Not counted	
MV	ICU	0400 6/8	9		9	
MV/surgery	Theatre	1300 6/8	3		3	
MV	ICU	1600 6/8	44		44	
Extubation	ICU	1200 8/8				
Total			56		56	

Assign 13882-01 Management of continuous ventilatory support, > 24 and < 96 hours.

Hours in ED are not counted as they are not part of the admitted episode.

CVS initiated in theatre

3. Patient intubated in theatre at 09:00 on 1/7. After 3 hours in theatre was transferred to ICU at 12:00 still intubated. Patient was extubated at 11:20 on 2/7.

Intervention	Location	Time commenced	Coding calculation – CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV/ surgery	Theatre	0900 1/7	Not counted		Not counted	
MV	ICU	1200 1/7	23	20	23	20
Extubation	ICU	1120 2/7				
Total			Nil		24 (round up)	

No procedure code assigned as patient was not ventilated for **>24 hours** post surgery.

4. Patient intubated in theatre at 12:00 on 6/8. In theatre for 3 hours. Went to ICU at 15:00 for 8 hours and remained ventilated. Patient then returned to theatre at 23:00 for 6 hours and went back to ICU at 05:00 hours on 7/8. Patient was extubated at 17:00 on 7/8.

Intervention	Location	Time commenced	Coding calculation -CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV/ surgery	Theatre	1200 6/8	3		Not counted	
MV	ICU	1500 6/8	8		8	
MV/surgery	Theatre	2300 6/8	6		6	
MV	ICU	0500 7/8	12		12	
Extubation	ICU	1700 7/8				
Total			29		26	

Assign 13882-01 Management of continuous ventilatory support, > 24 and < 96 hours.

Even though the CVS was initiated for surgery, it continued for >24 hours post surgery (including subsequent surgical episodes). The initiation time is taken from the intraoperative intubation, therefore cumulative hours are 29.

26 hours are reported for VAED as the count starts from the first entry to ICU and continues through return visits to theatre (6 hours) from ICU, where CVS continued.

5. Patient intubated in theatre on 1/8 at 06:00. In theatre for 6 hours. Went to ICU at 12:00, ventilated for a further 20 hours. Patient extubated on 2/8 at 08:00. Patient returned to theatre on 2/8 at 13:00 and was re-intubated and in theatre for 5 hours and returned to ICU at 18:00. Patient was extubated at 14:00 on 3/8.

Intervention	Location	Time commenced	Coding calculation – CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV/ surgery	Theatre	0600 1/8	Not counted		Not counted	
MV	ICU	1200 1/8	20		20	
Extubation	ICU	0800 2/8				
Intubation/MV/ surgery	Theatre	1300 2/8	Not counted		Not counted	
MV	ICU	1800 2/8	20		20	
Extubation	ICU	1400 3/8				
Total			Nil		40	

No procedure code is assigned as in both post-surgical periods, the patient was not ventilated for >24 hours post-surgery. Each post-surgical period must be greater than 24 hours to assign the procedure code.

6. Patient intubated in theatre on 1/8 at 06:00 for 6 hours. Went to ICU still intubated at 12:00 for 13 hours before returning to theatre on 2/8 at 01:00 for a further 2 hours. Patient transferred back to ICU still intubated on 2/8 at 03:00 for a further 16 hours before extubation on 2/8 at 19:00.

Intervention	Location	Time commenced	Coding calculation – CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV/surgery	Theatre	0600 1/8	6		Not counted	
MV	ICU	1200 1/8	13		13	
MV/surgery	Theatre	0100 2/8	2		2	
MV	ICU	0300 2/8	16		16	
Extubation	ICU	1900 2/8				
Total			37		31	

Assign 13882-01 Management of continuous ventilatory support, > 24 and < 96 hours.

Even though the CVS was initiated for surgery, it continued for >24 hours post surgery (including subsequent surgical episodes).

Count for CVS hours in ICU continues when patient returns to theatre.

7. Patient intubated in theatre on 1/8 at 06:00. Was in theatre for 6 hours. Patient transferred to ICU while intubated at 12:00 on 1/8, stayed intubated for 20 hours, extubated on 2/8 at 08:00. Patient returned to theatre on 2/8 at 20:00 and was re-intubated for surgery. Was in theatre for 3 hours, returned to ICU at 23:00 on 2/8 and remained intubated for 30 hours before being extubated on 4/8 at 05:00. Patient returned to theatre for a third time on 4/8 at 12:00 and was re-intubated for a procedure that lasted for 4 hours and returned to ICU at 16:00 where patient remained intubated for another 23 hours and was extubated at 15:00 on 5/8.

Intervention	Location	Time commenced	Coding calculation – CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV/surgery	Theatre	0600 1/8	6		Not counted	
MV	ICU	1200 1/8	20		20	
Extubation	ICU	0800 2/8				
Intubation/MV/surgery	Theatre	2000 2/8	3		Not counted	
MV	ICU	2300 2/8	30		30	
Extubation	ICU	0500 4/8				
Intubation/MV/surgery	Theatre	1200 4/8	4		Not counted	
MV	ICU	1600 4/8	23		23	
Extubation	ICU	1500 5/8				
Total			33		73	

Assign 13882-01 Management of continuous ventilatory support, > 24 and < 96 hours.

The second period of CVS meets the criterion for assignment of the CVS procedure code as CVS continued >24 hours post surgery.

The other two periods were not ventilated for greater than 24 hours post surgery, and the ventilation was not continuous, therefore cannot be included in the total calculation of CVS hours for coding.

8. Patient intubated for a procedure in theatre on 25/9 at 13:30. Patient was extubated in theatre at 15:45. Re-intubated in recovery at 17:00 on 25/9. Patient was then transferred to ICU on the 26/9 at 07:08. The patient was extubated in ICU on 26/9 at 18:55.

Intervention	Location	Time commenced	Coding calculation – CVS		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV/surgery	Theatre	1330 25/9	Not counted		Not counted	
Extubation	Theatre	1545 25/9	Not counted		Not counted	
Intubation	Recovery	1700 25/9	14	8	Not counted	
MV	ICU	0708 26/9	11	47	11	47
Extubation	ICU	1855 26/9				
Total			25	55	11	47
			25 (round down)		12 (round up)	

Assign 13882-01 Management of continuous ventilatory support, > 24 and < 96 hours.

Do not include the hours where patient was intubated for the initial procedure as was extubated in theatre.

Patient was re-intubated in recovery more than one hour following extubation in theatre at 17:00; therefore start the count from the recovery intubation time to assign the appropriate procedure code.

9. Patient was intubated for surgery in Hospital A and was transferred immediately to Hospital B ICU at 1500 on 4/9 for post-operative management. In Hospital B ICU the patient was extubated after 9 hours on 5/9 at 00:00/24:00 with no further ventilation support required; the patient was then transferred back to Hospital A. There was a contracted service arrangement between Hospital A and Hospital B for the provision of ICU services post surgery.

Intervention	Location	Time commenced	Coding calculation		VAED calculation	
			Hours	Mins	Hours	Mins
Hospital A- contracted service arrangement for ICU			9		9	
Hospital B - CVS	ICU	1100 4/9	9		9	
Extubation	ICU	2400 5/9				

Hospital A: assign 13882-00 Management of continuous ventilatory support, ≤24 hours.

Hospital B: assign 13882-00 Management of continuous ventilatory support, ≤24 hours.

Both hospitals assign a code for CVS as per VAED Manual, Section 3 – Data definitions which states: "A patient who receives MV in an ICU in Hospital B during a contracted service episode has the duration of that MV reported by Hospital B; Hospital A also reports the MV hours received in Hospital B in addition to any MV hours the patient received in an ICU at Hospital A".

Other examples

Tracheostomy and weaning

10. Patient with a permanent tracheostomy in situ arrived ventilated via ambulance and admitted directly to ICU on 2/8 at 15:00. Patient remained ventilated for 92 hours until started trache-Shielding (T/S) for weaning purposes on 6/8 at 11:00 for 23 hours. Patient returned to receiving CVS at 10:00 on 7/8 for another 21.5 hours before being placed back on T/S on 8/8 at 07:30 for the remainder of their admission.

Intervention	Location	Time commenced	Coding calculation – CVS		VAED calculation	
			Hours	Mins	Hours	Mins
MV	ICU	1500 2/8	92		92	
Trache-shielding (weaning)	ICU	1100 6/8	23		23	
MV	ICU	1000 7/8	21	30	21	30
Trache-shielding	ICU	0730 8/8	Not counted			
Total			136	30	136	30
			136 (round down		137 (round up)	

Assign 13882-02 Management of continuous ventilatory support, ≥ 96 hours.

The 23 hours of trache-shielding is included in the total hours of CVS, as this was documented as being for weaning purposes from CVS but resulted in the patient going back on CVS for a further period.

Placing the patient back on trache-shielding on 08/08 at 07:30 was not documented as being for weaning purposes, so no further hours of CVS are counted.

Both CVS and NIV

11. 25 day old newborn admitted from the ward to PICU and commenced on CPAP. At 11:15 on 26/04. Remained on CPAP until 16:45 when transferred to theatre and intubated. Returned to PICU still intubated at 21:30. Remained on CVS until extubated at 06:00 on 28/04 and put straight onto CPAP. Reintubated at 16:00 on 28/04 then extubated to CPAP at 06:00 on 29/04. Transferred from PICU back to the ward still on CPAP at 11:30 on 30/04. CPAP ceased on 03/05 at 13:45.

Intervention	Location	Time commenced	Coding calculation				VAED calculation			
			CVS		NIV		CVS		NIV	
			Hrs	Mins	Hrs	Mins	Hrs	Mins	Hrs	Mins
CPAP	PICU	1115 26/4			5	30			5	30
Intubation/MV/surgery	Theatre	1645 26/4	4	45						
MV	PICU	2130 26/4	32	30			32	30		
Extubation→CPAP	PICU	0600 28/4			10				10	
Intubation/MV	PICU	1600 28/4	14				14			
Extubation→CPAP	PICU	0600 29/4			29	30			29	30
CPAP	Ward	1130 30/4			74	15				
Cessation CPAP	Ward	1345 3/5								
Total			51	25	119	15	46	30	45	0
			51 (round down)		119 (round down)		47 (round up)		45	

Assign:
13882-01 Management of continuous ventilatory support, > 24 and < 96 hours
92209-02 Management of noninvasive ventilatory support, ≥ 96 hours
92211-00 Management of combined ventilatory support, ≥ 96 hours

As per ACS 1617 *Specific diseases and interventions related to the sick neonate*, the code for combined ventilatory support is assigned when the hours of invasive and noninvasive ventilatory support are added together and the total is ≥ 96 hours.

12. Patient admitted to ICU on 1/8 at 02:00 and placed on CPAP. Patient then intubated in theatre at 06:00. In theatre for 6 hours. Went to ICU at 12:00, ventilated for a further 20 hours. Patient extubated on 2/8 at 08:00 after 4 hours of CPAP. Patient returned to theatre on 2/8 at 13:00 and was re-intubated and in theatre for 5 hours and returned to ICU at 18:00. Patient was extubated at 14:00 on 3/8. Patient went back on CPAP at 18:00 until 22:00 then received mask oxygen until being transferred to the ward.

Intervention	Location	Time commenced	Coding calculation		VAED calculation	
			CVS	NIV	CVS	NIV
CPAP	ICU	0200 1/8		4		4
Intubation/MV/surgery	Theatre	0600 1/8	Not counted			
MV	ICU	1200 1/8	20		20	
Extubation	ICU	0800 2/8				
Intubation/MV	Theatre	1300 2/8	Not counted			
MV	ICU	1800 2/8	20		20	
Extubation	ICU	1400 3/8				
CPAP	ICU	1800 3/8		4		4
Cessation CPAP	ICU	2200 3/8				
Mask oxygen	ICU	2200 3/8				
Total			Nil	8	40	8

Assign 92209-00 Management of noninvasive ventilatory support, ≤24 hours

No procedure code assigned for CVS as each period of ventilation post surgery is less than 24 hours.

Mask oxygen is not NIV so is not coded nor reported.

Tracheostomy and NIV

13. Patient with a permanent tracheostomy in situ was admitted to non-ICU ward on 6/7 at 10:30. The patient was commenced on high flow therapy (HFT) via tracheostomy on 8/7 at 12:30. On 9/7 at 09:00 the patient was commenced on Trache-Shielding (T/S) for weaning purposes. Patient returned to HFT via tracheostomy at 12:30 later that day. The patient fluctuated between HFT and T/S for the next 24 hours until he was successfully weaned and de-cannulated.

Intervention	Location	Time commenced	Coding calculation		VAED calculation	
			CVS	NIV	CVS	NIV
HFT via tracheostomy	Ward	1230 8/7	20.5		Not reported	
Trache-shielding (weaning)	Ward	0900 9/7	3.5			
HFT via tracheostomy/ T/S	Ward	1230 9/7	24			
Weaned	Ward	1230 10/7				
Total			48			

Assign 13882-01 *Management of continuous ventilatory support, > 24 and < 96 hours*.

Ventilation hours (CVS or NIV) are only reported to the VAED if carried out in ICU.

NIV via tracheostomy is considered to be CVS rather than NIV.

The period of weaning is included in the count of the duration of CVS.

14. Patient with a permanent tracheostomy was admitted to ICU routinely post surgery. The patient was commenced on high flow therapy via tracheostomy for four hours whilst in ICU. The patient remained on room air for the remainder of their ICU and ward admission.

Intervention	Location	Duration	Coding calculation		VAED calculation	
			CVS	NIV	CVS	NIV
HFT via tracheostomy	ICU	4 hours	4		4	
Total			4		4	

Assign 13882-00 Management of continuous ventilatory support, ≤24 hours

Trache-shielding with high flow oxygen delivery

15. Patient intubated in theatre on 16/12 08:50. The patient went to ICU still intubated at 16:00 and was extubated on the 17/12 at 13:00. Following extubation, the patient was placed on HFNP at 14:00. HFNP was ceased on 19/12 at 15:00. The patient was re-admitted to ICU on the 23/12 at 06:25 and re-intubated at 15:20. The patient was subsequently transferred to theatre for ECMO at 16:45 and returned to ICU at 20:15 still intubated, with oxygen via ETT).

    Whilst still in ICU, the patient was transferred to theatre for insertion of surgical tracheostomy on the 3/1 at 16:00 and returned to ICU at 16:55 on 3/1/19 receiving fluctuating ventilation modes of Pressure Support Ventilation (PSV) and High-flow Trache-shielding (HFT/S) independently. (For example HFT/S at 10:35 and then back on PSV at 12:45, this continued throughout). On the 12/1 whilst still in ICU, the last HFT/S recorded was at 15:00, tracheostomy in-situ with PEEP/FLOW at 40L of oxygen. The patient was then transferred to the ward on the 12/1 at 15:00 and continued to have HFT/S of 30L oxygen via tracheostomy. HFT/S via tracheostomy ceased on 17/1 at 11:45. Tracheostomy de-cannulated on the 17/1 at 11:45.

Intervention	Location	Time commenced	Coding calculation		VAED calculation	
			Hours	Mins	Hours	Mins
Intubation/MV	Theatre	0850 16/12	Not counted		Not counted	
MV	ICU	1600 16/12	21		21	
Extubation	ICU	1300 17/12				
High flow nasal prongs	ICU	1400 17/2	49 NIV			
Cessation of HFNP	ICU	1500 19/12				
Intubation/MV	ICU	1520 23/12	1	25	1	25
MV	Theatre	1645 23/12	3	30		
MV	ICU	2015 23/12	259	45		
MV	Theatre	1600 3/1		55		
HFT/S and MV	ICU	1655 3/1	214	5	479	40
HFT/S	ICU	1500 12/1				
HFT/S	Ward	1500 12/1	116	45		
Cessation HFT/S	Ward	1145 17/1				
Total			*593*	*3 hrs 25*		
			596	25	500	40
			MV 596 (round down) NIV 49		MV 501 (round up)	

Assign:
13882-02 Management of continuous ventilatory support ≥ 96 hours
92209-01 Management of noninvasive ventilatory support, > 24 and < 96 hours

The first period of CVS is not coded as it did not continue for more than 24 hours post the initial surgery. CVS was re-commenced prior to the subsequent visits to theatre therefore the count of CVS hours is continued through these.

NIV/high flow therapy in ICU

16. A patient was transferred to ICU on 21/7 at 15:00 with aspiration pneumonia and was commenced on CPAP/BiPAP for 12 hours followed by high flow oxygen therapy via nasal prongs for 55 hours.

Intervention	Location	Time commenced	Coding calculation - NIV		VAED calculation	
			Hours	Mins	Hours	Mins
CPAP/BiPAP	ICU	1500 21/7	12		12	
Cessation CPAP/BiPAP	ICU	0300 22/7				
HFNP	ICU	0300 22/7	55		Not reported	
Cessation HFNP	ICU					
Total			67		12	

Assign 92209-01 Management of noninvasive ventilatory support, > 24 and < 96 hours

HFNP hours in ICU are not reported to the VAED.

17. A patient was admitted with pneumonia/COPD. The patient was transferred to ICU at 10:30 on 5/8 and received 9 hours of BiPAP. Patient then had an additional 21 hours of CPAP in ICU from 19:30 on 5/8 where staff operated the patient's own CPAP machine.

Intervention	Location	Time commenced	Coding calculation - NIV		VAED calculation	
			Hours	Mins	Hours	Mins
BiPAP	ICU	1030 5/8	9		9	
Cessation BiPAP						
CPAP	ICU	1930 5/8	21		21	
Cessation CPAP						
Total			30		30	

Assign 92209-01 Management of noninvasive ventilatory support, > 24 and < 96 hours

CPAP from the patient's own machine but operated by hospital staff in ICU is coded and reported to the VAED as per VICC #3292.

Posthumous Organ Procurement episode

Posthumous organ procurement is the procurement of human tissue for the purpose of transplantation from a donor who has been declared brain dead (see VAED Manual, Section 3 – Data Definitions – Care type). Episodes in which posthumous organ procurement is conducted are registered by the hospital, and reported to the VAED, although they are not admitted episodes.

Diagnosis and procedure codes for activity to facilitate posthumous organ procurement, including mechanical ventilation and tissue procurement, are recorded in accordance with the relevant ICD-10-AM Australian Coding Standards.

Apply the same rules for counting and reporting CVS hours as for admitted patients.

18. Patient intubated for respiratory support. Patient declared brain dead whilst receiving continuous mechanical ventilation (mode of SIMV via ETT) in ICU at 14:54 on the 26/2. Patient's criterion for admission "K: Posthumous Organ Procurement" episode admission date and time begins at 26/2 at 14:54. Patient remains ventilated in ICU to facilitate posthumous organ procurement which is undertaken in theatre at 08:45 on the 27/2. The deceased patient's organ procurement procedure ceases at 13:10 on the 27/2.

Intervention	Location	Time commenced	Coding calculation		VAED calculation	
			Hours	Mins	Hours	Mins
MV	ICU	1454 26/2	17	51	17	51
MV	Theatre	0845 27/2	4	25		
Cessation procedure	Theatre	1310 27/2				
Total			22	16		
			22 (round down)		18 (round up)	

Assign 13882-00 *Management of continuous ventilatory support, ≤ 24 hours*

References:

VAED Manual Edition 2019-20, Section 3 – Data definitions, 29th Edition, 2019-20, Version 1.0
https://www2.health.vic.gov.au/hospitals-and-health-services/data-reporting/health-data-standards-systems
ACS 1006 *Ventilatory support*
ACE Coding Rules Q2953 High flow therapy
ACE Coding Rules Q2879 Interpretation of completed cumulative hours in ACS 1006 *Ventilatory support*
ACE Coding Rules Q3053 Oxygen use in weaning
VICC query #3513 Coding and VAED reporting of ventilatory support in contract care episodes
VICC query #3292 Coding and reporting of noninvasive ventilation hours for patient's own CPAP machine in ICU