VACAR Annual Report 2013-2014

VACAR Annual Report 2013-2014



Li"t o6 Ta le"

Participating 6ir"t re"pon! er" ! i"patc' e! to car! iac arre"t e0ent" in Victoria.	Page 12
VACAR inclu"ion criteria.	Page 12
VACAR e, clu"ion criteria.	Page 12
Num er an! proportion of mi""ing ! ata for "elect regi"tr# 0aria le"82013-2014.	Page 13

Li"t o6 5igure"

Cru! e inci! ence of a! ult an! pae! iatric E&; atten! e! OACA in Victoria Binclu! e" E&; 2 itne""e! e0ent"C.	Page 1\$
Dearl# cru! e inci! ence o6 E&; atten! e! e0ent" acro"" metropolitan an! rural region" o6 Victoria Binclu! e" E&; 2 itne""e! e0ent"C.	Page 1*
Cru! e inci! ence of E&; atten! e! e0ent" acro"" (epartment of Aealt' region"82013-2014.	Page 1*
Age ! i"tri ution of E&; atten ! e! OACA e0ent"82013-2014.	Page 13

A! ul6t !0 Bu()80-18 Td [(A)1.429(!)-1.2ioi! r





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T' e "tate of Victoria8 Au"tralia ' a" an e"timate! population of %.\$ million8 2it' \$4F li0ing in t' e "tate6" capital cit# of &el ourne. T' irteen per cent of t' e population are age! o0er 4% #ear". T' e emergenc# me! ical "er0ice E&; c compri"e" am ulance parame! ic" 2' o ' a0e "ome a! 0ance! li6e "upport "-ill" Blar#ngeal ma"- air2a#8 intra0enou" epinep' rineC an! &)CA parame! ic" 2' o are aut' ori"e! to perform en! otrac' eal intu ation8 rapi! "eHuence in! uction8 Pneumocat' I in"ertion an! a! mini"ter a 2i! er range of me! ication".

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Au"tralia oper0.771 (-)3.4* (i)-7.674 (566.716 (0.7714308 (i)7(p)3.69 ()] TJ T* [(t(0.7(n))

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Victorian Am ulance Car! iac Arre"t Regi"tr#



Ao2 ! oe" VACAR operateL

Eligi ilit#

T' e VACAR capture" ! ata on all OACA patient" 2' ere E&; are in atten! ance. 5or t' e purpo"e" o6 t' i" report8 E&; i" ! e6ine! a" AV an! participating 6ir"t re"pon! er organi"ation" B"ee Ta le 1C. T' e VACAR ! e6ine" t' e "tate o6 car! iac arre"t a" t' e ce""ation o6 car! iac mec' anical actiOit# a" con6irme! # a "ence o6 "ign" o6 circulation8 inclu! ing t' e a "ence o6 a ! etecta le caroti! pul"e8 unre"pon"iOene"" an! apnoea or agonal reat' ing. Patient" eligi le 6or inclu"ion in or e, clu"ion 6rom t' e VACAR are ! e"cri e! oppo"ite B"ee Ta le" 2 7 3C.

(ata capture

T' e regi"tr# i" a"e! on t' e internationall# recogni"e! Ut"tein template an! ! e6inition" BJacobs et al. 2004C. Am ulance Victoria6" in-6iel! recor! ing o6 patient ! ata i" performe! electronicall# u"ing VAC); ?8an electronic ! ata capture "#"tem. All electronic patient care recor! " BPCRC are "#nc' roni"e! ! ail# 2it' organi"ational ! ata a"e"8 pro0i! ing an e66ecti0e me! ium o6 clinical an! a! mini"trati0e ! ata capture. To en"ure t' e capture of all OACA ca"e" atten! e! # AV8a roa! electronic "earc' i" con! ucte! o6 clinical ! ata a"e" utili"ing "peci6ic "earc' criteria. T' i" "earc' "trateg# i" 6ocu"e! at i! enti6#ing potential car! iac arre"t ca"e"8 2' ic' ma# e eligi le 6or re0ie2. Paper PCR" ma# e u"e! in ca"e" 2' ere in-6iel! electronic ! ata capture i" not po""i le.)n t' e"e in"tance"8 parame! ic team manager" are reHuire! to 6or2ar! all potential car! iac arre"t ca"e" to VACAR 6or re0ie2. A 'an! "earc' of all paper PCR" for 2 ar! e! to t' e AV Account" ! epartment i" performe! perio! icall# to en"ure complete ca"e capture.

50llo2ing re0ie2 of potential ca"e"8 eligi le car! iac arre"t ca"e" are entere! into t' e VACAR ! ata a"e8 2it' PCR ! ata eing "upplemente! # in6ormation 6rom communication centre ! i"patc' recor! ". T' e VACAR participating 'o"pital" Bi.e. et' ic" approOe! participationC are contacte! 6or "urOiOal "tatu" an! patient ! i"c' arge ! irection. A cro""-matc' of VACAR recor! " 2it' t' e Victorian Regi"tr# o6 + irt' "8 (eat' " an! & arriage" i" un! erta-en 6or Oeri6ication o6 ! eat' ". ; tructure! telep' one inter0ie2" are con! ucte! 12 mont' " po"t car! iac arre"t 6or patient" i! enti6ie! a" ' a0ing "ur0i0e! to ' o"pital ! i"c' arge. T' e inter0ie2 Hue"tionnaire" u"e! inclu! e=t' e E, ten! e! >la"go2 Outcome ; cale B>O; -ECB 12-item ort 5orm B; 5-12C' ealt' "urOe# an! EuroEol% (imen"ion BEE-%(CHue"tionnaire".

!8 Participating 6ir"t re"pon! er" **!** i"patc' e! to car! iac arre"t e0ent" in Victoria.

1. & etropolitan 5ire +riga! e

2. Countr# 5ire Aut' orit# BLimite! pilotC

3. Communit# Emergenc# Re"pon"e Team"

8 VACAR inclu"ion criteria Ball of t' e 6ollo2ingC.

1. Patient" o6 all age" 2' o "u66er a ! ocumente! car! iac arre"t.

2. Occur" in t' e "tate of Victoria 2' ere Am ulance Victoria i" t' e primar# care gi0er. Car! iac arre"t" occurring in neig' ouring "tate" of Ne2 ;out' 1 ale" an! ;out' Au"tralia are con"i! ere! for inclu"ion 2' ere Am ulance Victoria i" clearl# ! ocumente! a" t' e primar# care gi0er.

3. Patient" 2' o are pul"ele"" on arri0al o6 E&; M

Patient" 2' o ecome pul"ele"" in t' e pre"ence o6

(ata Hualit#

T' e VACAR un! ergoe" rigorou" ! ata Hualit# control to en"ure t' e accurac# o6 ! ata collecte!. (uring ! ata entr#8 automate! Oali! ation rule" an! error me""age" are em e!!e! into t'e VACAR !ata a"e to capture erroneou" Oalue" or "eHuence". Eualit# control au! it" are con! ucte! mont' l# on a ran! om "ample of 10F of ca"e" to Oali! ate t' e accurac# o6 ! ata co! ing # t' e VACAR re"earc' team. Veri6ication o6 ! ata entr# un! ergoe" routine au! it to i! enti6# incon"i"tencie" 2it' ! ata co! ing. Tren! anal#"i" i" per6orme! on a Huarterl# a"i" to en"ure con"i"tenc# o6 ca"e num er"8 patient outcome" an! re"pon"e time". Compari"on" o6 t' e"e re"ult" are ma! e 2it' national an! international ! ata. VACAR ' a" un! ergone t20 in! epen! ent e, ternal au! it" o0er t' e la"t ! eca! e8 inclu! ing an au! it #t'e Victorian Au! itor->eneral6" O66ice. Car! iac arre"t ca"e" al"o un! ergo clinical au! iting # AVG" clinical "upport officer" BC; O"C. All ca"e" 2' ere a patient reHuire" ! e6i rillation or 2' ere a ! eat' occur" in AV care un! ergo au! it # a C; O.

T'e!ata in t'e regi"tr# i" "u «ct to ongoing au! it an! Hualit# control8 2it' an# nece""ar# c'ange" eing incorporate! ac- into t'e regi"tr# a" nee! e!. Eualit# a""urance mea"ure" are con! ucte! routinel#8 lea! ing to impro0ement" in t'e integrit# o6 t'e!ata 2it' time. A" "uc' 8! ata pre"ente! in t'i" report ma#!i66er "lig' tl# 6rom pre0iou"l# pu li"'e!!ata. Pre0iou" #ear"6! ata i" "u «ct to up! ate" an! i" mo"t current 2it' in t'i" report. (ata on "ur0i0al to 'o"pital !i"c'arge i" al"o eing continuall# up! ate! an! 'ence "' oul! e treate! an! interprete! 2it' caution.

Et' ical re0ie2

T' e regi"tr# maintain" et' ical re0ie2 a" a Hualit# a""urance initiati0e 6rom t' e (epartment of Aealt' Auman Re"earc' Et' ic" Committee. T' e VACAR i" "upporte! # almo"t 100 et' ic" appro0al" 6rom)n accor! ance 2it' t'e National Aealt' an! &e! ical Re"earc' Council6" National ; tatement on Et' ical Con! uct in Auman Re"earc' &all paper an! electronic ! ata are "ecurel# "tore! at Am ulance Victoria& 2it' "trict acce"" to aut' ori"e! VAe to &o

A out t' i" Report

T' e American Aeart A""ociation "tate" t' at monitoring t' e treatment of out-of-' o"pital car! iac arre"t # E&; agencie" coul! e t' e "entinel mea"ure of t' e Hualit# of E&; care in our communitie".

1 ' ile car! io0a"cular mortalit# ' a" ! ecline! o0er t' e la"t t' ree ! eca! e"8 t' e ca"e-6atalit# rate o6

VACAR Annual Report 2013-2014

VACAR Annual Report 2013-2014

Page 14

)nci! ence 7 (emograp' ic"

- ' !8 Cru! e inci! ence o6 a! ult an! pae! iatric E&; atten! e! OACA in Victoria Binclu! e" E&; 2 itne""e! e0ent"C.

)nci! ence o6 all a! ult 7 pae! iatric e0ent" ^p

)n 2013-20148 Am ulance Victoria atten! e! %%44\$ OACA e0ent"8 of 2' ic' %%%*1 B3*.%FC 2ere ! e6ine! a" a! ult" age! greater t' an 1% #ear" or patient" 2it' un-no2n age. T' e num er of a! ult ca"e" repre"ent" t' e ' ig' e"t num er of e0ent" in a 10 #ear perio!. T' e num er of pae! iatric e0ent" atten! e! # parame! ic" remain" lo2 B*4 ca"e" in 2013-201408 t' oug' ' i" num er i" 2it' in normal #earl# 6luctuation".

T' e cru! e inci! ence of OACA ' a" remaine! relati0el# con"i"tent o0er t' e la"t ! eca! e.)n 2013-20148t' e inci! ence of all OACA in Victoria 2a" 3*.\$ e0ent" per 1008000 population. T' e inci! ence of a! ult an! pae! iatric e0ent" al"o remaine! 2(a)-7.759(I(A 67.759(8)-3* [(2.299(V)-3.881(6)4.4)-6.56(6)4.4568(1)-3.95

VACAR Annual Report 2013-2014



)n 2013-20148 Am ulance Victoria atten! e! %%*1 a! ult OACA e0ent"8 repre"enting t' e ' ig' e"t num er of e0ent" in a 10 #ear perio!. T' e rate of attempte! re"u"citation # E&; remain" <u"t un! er %0F.

)nci! ence acro"" region" o6 Victoria^p

)n 6act8 t' e cru! e inci! ence of OACA 'a" o "erOe! a "tea! # increa"e oOer t' e la"t 10 #ear" in rural Victoria8 ri"ing 6rom 34.% eOent" in 2003-2004 to 124.\$ eOent" per 1008000 population in 2013-2014 BpO0.001C. Ao2eOer8 t' i" o "erOation ma# re6lect etter ca"e capture8 e"peciall# a6ter t' e 200*-2003 perio! 2' ic' coinci! e" 2it' t' e completion o6 t' e roll-out o6 VAC); in t' e rural area.)nci! ence in t' e metropolitan region 'a" remaine! relatiOel# unc' ange! ! uring t' e "ame perio! B"ee 5igure 2C.

Regional Oaria ilit# in OACA inci! ence 2a" o "erOe! acro"" (epartment of Aealt' region" in 2013-2014 B"ee 5igure 3C. T' e lo2e"t cru! e inci! ence 2a" o "erOe! in t' e Ea"tern & etropolitan Region B*%.\$ eOent" per 1008000 populationC an! t' e ' ig' e"t inci! ence in t' e > ipp"lan! region B14*.3 eOent" per 1008000

population(. All t' ree metropolitan region" recor! e!

t' e ' ig' e"t 6reHuenc# o6 e0ent" in t' eir region in t' e la"t 10 #ear perio!. T' e Nort' an! **1** e"t & etropolitan

(i"trict8' a! a total of 18422 OACA ca"e". 1 it' in t' e

rural region8t' e >ipp"lan!8 >rampian" an! Lo!! on

&allee region" recor! e! t' e ' ig' e"t 6reHuenc# o6

OACA e0ent" o0er t' e la"t 10 #ear".

region82' ic' inclu! e" t' e &el ourne +u"ine"

- ' 58 Cru! e inci! ence of E&; atten! e! e0ent" acro"" (epartment of Aealt' region"8 2013-2014.

A "igni6icantl# ' ig' er num er of OACA e0ent" 2ere o "er0e! in t' e metropolitan region repre"enting 38%3 ca"e" B4*F of t' e total num er of e0ent" atten! e! in 2013-2014C. T' e num er of e0ent" atten! e! in rural Victoria #iel! e! it" ' ig' e"t 10 #ear 6igure 2it' 18*14 e0ent"8 a 44F increa"e "ince 2003-2004.

(e"pite t' e increa"e! proportion of e0ent" occurring in t' e metropolitan region8t' e cru! e inci! ence of OACA 2a" "igni6icantl# ' ig' er in t' e rural region 8124.\$ 0". 30.0 e0ent" per 1008000 population8 p00.001C.

(All results in this section inclu%e) * + &itnesse%e, ents.

T' e proportion o6 e0ent" recei0ing an attempte! re"u"citation 0arie" con"i! era 1# acro"" region". T' e ' ig' e"t E&; treate! proportion 2a" 6oun! in t' e Nort' an! 1 e"t & etropolitan region B%3FC an! t' e lo2e"t in t' e > rampian" region B42FC.

VACAR Annual Report 2013-2014

(emograp' ic" o6 a! ult"

T'e ! emograp' ic prośile oś a! ult e0ent" Be, clu! ing E&; 2itne""e! arre"t"C'a" remaine! con"i"tent o0er t'e la"t ! eca! e.)n 2013-20148 E&; atten! e! a! ult e0ent" con"i"te! pre! ominatel# oś male" B44FC 2it' a me! ian age oś 4\$.0 #ear". T'e age ! i"tri ution Oarie! "igniśicantl# acro"" t'e "e, e" B"ee 5igure 408 2it' śemale" 'a0ing a 'ig' er me! ian age oś arre"t B\$3.0 0". 4%.0 #ear"8 p00.001C. T'e proportion oś ca"e" 2itne""e! to arre"t #a #"tan! er B32F08 occurring in a pu lic location B14FC8 an! recei0ing #"tan! er CPR B41FC 2ere not "igniśicantl# ! iśśerent to t'o"e o "er0e! in t'e pre0iou" #ear.

Parame! ic" attempte! re"u"citation in 44F of all E&; atten! e! a! ult OACA e0ent". T' e ! emograp' ic profile of patient" recei0ing an attempte! re"u"citation 0arie" "ignificantl# from t' e o0erall population8 2it' a lo2er me! ian age B44.0 #ear"C8 more e0ent" occurring in a pu lic place B21FC8 more e0ent" 2itne""e! # a #"tan! er B%4FC8 an! an increa"e! rate of #"tan! er CPR B\$0FC.

(emograp' ic" o6 pae! iatric"

T' e 6reHuenc# o6 E&; atten! e! pae! iatric e0ent" Be, clu! ing E&; 2itne""e! arre"t"C 'a" remaine! relati0el# lo2 o0er t' e la"t ! eca! e 2it' 6e2er t' an 100 e0ent" per #ear B*2 in 2013-2014C. T' e me! ian age o6 arre"t 2a" 24 mont' "8 an! i" ! ri0en pre! ominantl# # aetiolog# in t' i" population B"ee 5igure \$8 page 21C. T' e 0a"t ma<print of pae! iatric OACA occur in pae! iatric" age! le"" t' an t' ree #ear"8 accounting 6or %* F o6 all arre"t" in t' i" population.

T' e ! emograp' ic proéile oé pae! iatric OACA 0arie" "igniéicantl# acro"" reporting #ear"8 an! i" impacte! # "maller "ample" "i0e".)n 2013-20148 t' e proportion oé ca"e" in0ol0ing male" 2a" %4F8 2 it' 21F occurring in a pu lic location. & ore pae! iatric arre"t" 2ere 2itne""e! # a #"tan! er compare! to a! ult arre"t" 843F 0" 32F8 pN0.0% an! "igniéicantl# more pae! iatric patient" recei0e! #"tan! er CPR 8%3F 0". 41F8 pN0.0016. T' e 0a"t maorit# oé pae! iatric patient" pre"ent in an a"#"tolic r' #t' m 8*2F68 2it' onl# 2F pre"enting to E&; in a "' oc-a le r' #t' m. T' e proportion oé pae! iatric ca"e" recei0ing an attempte! re"u"citation # parame! ic" 2a" "igniéicantl# ' ig' er t' an éor a! ult" 8\$4F 0" 44F in 2013-20146.



VACAR Annual Report 2013-2014

- ' 28 A! ult precipitating e0ent" acro"" age group" 6or E&; atten! e! e0ent"8 2013-2014.

> Precipitating e0ent" 6or a! ult"

> > - ' *8 A! ult precipitating e0ent" 6or E&; atten! e! e0ent"82013-2014.

T' e precipitating cau"e" of OACA e0ent" are ! e6ine! # parame! ic"8 an! recor! e! ! irectl# 6rom t' e patient care recor!. Unle"" t' e cau"e o6 arre"t i" clearl#!e"cri e! Be.g. trauma8"u mer"ion8 o0er! o"e9poi"oning8' anging etc.08t' e aetiolog# o6 Roa! traccil ent" remain a "ignicicant cau"e of ! eat' an! ! i"a ilit# in Au"tralia8 2it' %3F of all OACA from a traumatic cau"e eing attri ute! to roa! trauma.

Precipitating e0ent" 6or pae! iatric"

&ec' ani"m o6 arre"t in t' e traumatic "u -group

- ', & Pae! iatric precipitating e0ent" 6or E&; atten! e! e0ent" & 2013-2014.

Precipitating e0ent" for pae! iatric" 2' o "u66er OACA 0ar# con"i! era 1# in compari"on to a! ult"8 2it' onl# 2\$F of E&; atten! e! pae! iatric e0ent" eing of a pre"ume! car! iac cau"e B"ee 5igure \$C. Anot' er o0er2' elming cau"e of OACA in pae! iatric" i" pre"ume! to e "econ! ar# to ;)(; B22F of e0ent"C8 2' ere t' ere are 0er# 6e2 "ur0i0or" B01FC. Trauma8 re"pirator# an! terminal illne""e" al"o pla# a "igni6icant role in t' e aetiolog# of arre"t in pae! iatric"8 an! contri ute" "trong progno"tic information in t' i" population B- easy et al. 2012C. T' e ! i"tri ution of precipitating e0ent" in t' e E&; treate! pae! iatric population mirror" t' at of t' e o0erall pae! iatric population. - ';8; ource" of trauma in E&; atten! e!



- ' .% Proportion of E&; treate! a! ult e0ent" t' at are #"tan! er 2itne""e! % recei0e #"tan! er CPR an! are ! i"c' arge! ali0e acro"" arre"t location"% 2013-2014.

+#"tan! er action in pu lic place"& inclu! ing #"tan! er car! iopulmonar# re"u"citation& i" a -e# 6actor in6luencing o0erall "ur0i0al 6ollo2ing OACA.

(+))



C' ain o6 ; ur0i0al

T' e c' ain o6 "ur0i0al i" an internationall#-recogni"e! initiati0e aime! at ma, imi"ing "ur0i0al 6ollo2ing car! iac arre"t. T' e 6our -e# lin-" in t' e c' ain in0ol0e earl# acce""8 earl# CPR8 earl# ! e6i rillation an! acce"" to a! 0ance! car! iac li6e "upport.

+#"tan! er call 6or ' elp

Emergenc# re"pon"e to t' e inci! ent

T' e ! irection o6 a #"tan! er6" 6ir"t p' one call can ' a0e a "igni6icant impact on t' e e66ecti0e an! timel# ! eli0er# o6 CPR an! ! e6i rillation. Pre0iou" 2or- # VACAR ' a" ! emon"trate! t' at inappropriate emergenc# call ! ela#" to neig' our"8 relati0e"8 an! t' e local ! octor 2ere a""ociate! 2it' "igni6icantl# poorer outcome" 6ollo2ing OACA B! ehme et al. 2014C.

+#"tan! er car! iopulmonar# re"u"citation

Pre0iou" re"earc' # VACAR 'a" "' o2n t' at earl# e66ecti0e #"tan! er CPR increa"e" t' e li-eli' oo! o6 an initial "' oc-a le r' #t' m8an! greatl# impro0e" t' e c' ance o6 "ur0i0al 6ollo2ing OACA B. ri%man et al. 200/C. O0er t' e ! eca! e8 Victoria 'a" o "er0e! "igni6icant increa"e" in #"tan! er" CPR rate"8 2' ic' can e partl# attri ute! to accurate i! enti6ication o6 OACA ! uring t' e emergenc# call an! ! eli0er# o6

Time to 6ir"t ! e6i rillation

T' e time 6rom emergenc# call to 6ir"t ! e6i rillation 6or patient" pre"enting in a "' oc-a le r' #t' m i" a -e# per6ormance in! icator 6or E&; . Timel# re"pon"e #

VACAR Annual Report 2013-2014

VACAR Annual Report 2013-2014





; ur0i0al Outcome"

VACAR Annual Report 2013-2014

- ' !,8; ur0i0al outcome" 6or all-cau"e a! ult E&; treate! e0ent".

A! ult "ur0i0al 6rom all-cau"e car! iac arre"t

A! ult "ur0i0al 6rom all-cau"e OACA 'a" increa"e! "tea! il# o0er t' e pa"t 10 #ear".)n 2004-200% e0ent "ur0i0al an! "ur0i0al to 'o"pital !i"c' arge 6or a! ult E&; treate! e0ent" 2a" 24F an! \$F re"pecti0el#.)n 2013-20148t' e rate" o6 e0ent "ur0i0al an! "ur0i0al to 'o"pital !i"c' arge 6or a! ult E&; treate! e0ent" 2ere 23F an! 10F re"pecti0el#. T' e"e rate" o6 "ur0i0al are con"i"tent 2it' recent o "er0ation" B"ee 5igure 1\$C.

A! ult "ur0i0al 6rom "'oc-a le r' #t' m"

T' e pre"ence o6 a "' oc-a le r' #t' m on arri0al o6 E&; or #"tan! er" i" a "trong pre! ictor o6 "ur0i0al 6rom OACA B. ri%man et al. 200 /t.; ur0i0al proportion" 6or patient" 2' o pre"ente! to E&; or #"tan! er" in "' oc-a le r' #t' m" are con"i"tentl# etter t' an t' o"e - ' !.8; ur0i0al outcome" 6or a! ult E&; treate! e0ent" 2it' a "' oc-a le r' #t' m on arri0al.

A! ult "ur0i0al 6rom E&; 2itne""e! arre"t"

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VACAR Annual Report 2013-2014

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