

A Decade of Security

Carol A. McCormick, RN, BSc Hons, MSc, Clare Warburton, RN, Michelle L. Hawes, RN, DNP, CRNI, VA-BC, ACRP-CP & Gregory E. Gilbert, EdD, MSPH, PStat®



Purpose

Patients requiring central venous access devices to receive cancer treatment and monitor laboratory values may have a peripherally inserted central catheter (PICC) placed. Many healthcare professionals perform this invasive, low-risk procedure using ultrasound, tip terminating technology, and sterile barriers. However, once the PICC is successfully guided to the target area, tradition and convenience often determine the securement. This study aimed to quantify outcomes for migration or dislodgement and the end of need for patients with two different engineered securement devices.

PICC REMOVALS RELATED TO MIGRATION & DISLODGE				
Year	ASD ^a	ASD ^a Patient	SASS ^b (%)	SASS ^b patients
2009	20	59	NAC	0
2010	12	193	NAC	0
2011	11	313	NAC	0
2012	14	224	.4	231
2013	0	5	.5	576
2014	17	12	.5	800
2015	12	42	.3	936
2016	5	62	.6	1114
2017	7	15	.003	1269
2018	0	9	.003	1062
2019	0	9	0	1159
2020	0	1	.003	1166

Methods

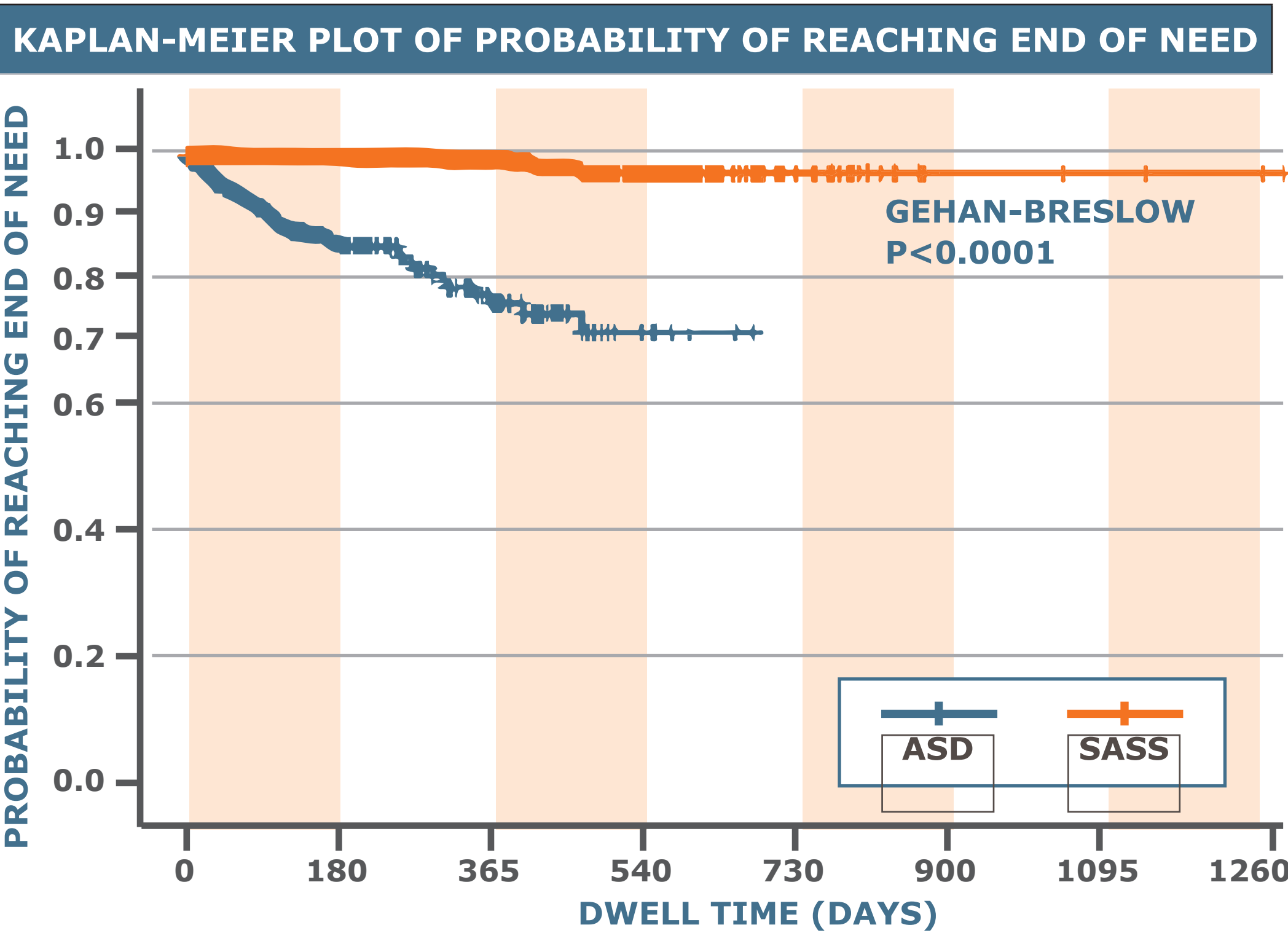
Data on patients for two securement devices and removal data were collected from 2009 to 2020. A retrospective observational cohort study was conducted to assess the outcomes of interest. Patients included $n=9,257$, and catheter days for 2009–2020 were 1,251,613. Data entry was conducted by various vascular access team members over the study period, with the most consistent entries being migration, dislodgement, the reason for removal, and reaching the end of need with a single catheter.

Findings

The probability of reaching the end of need for one peripherally inserted catheter for patients with an adhesive securement device (ASD) was 68% at two years ($n=944$), and for patients with a subcutaneous anchored securement device (SASS) was over 95% at two years ($n=8313$). Migration and dislodgement causing premature removal of the PICC occurred at 12% for ASD secured PICCs and 0.4% for SASS secured PICCs ($p<.0001$). In addition, there is statistical evidence of a difference in the probability of reaching the end of need between the two devices ($p<.0001$).

PATIENTS REACHING THE END OF NEED WITH ONE PICC				
Year	ASD ^a		SASS ^d	
	Percentage	Median (IQR ^b) Dwell Time ^c	Percentage	Median (IQR ^b) Dwell Time ^c
2009	58	74 (62)	NA ^e	NA ^e
2010	76	74 (105)	NA ^e	NA ^e
2011	82	81 (102)	NA ^e	NA ^e
2012	77	86 (86.5)	92	105 (100.5)
2013	ND ^f	ND ^f	93	95 (95)
2014	ND ^f	ND ^f	95	89.5 (87)
2015	83	110 (88)	96	112 (139)
2016	92	121.5 (88.75)	96	118.5 (104.8)
2017	ND ^f	ND ^f	96	116 (82)
2018	ND ^f	ND ^f	99	115 (77)
2019	ND ^f	ND ^f	100	127 (83)
2020	ND ^f	ND ^f	99	142 (91)

a Adhesive securement device
b Interquartile range
c Days
d Subcutaneous anchor securement system
e Not applicable
f No data available (n<30)



Generalizability

With over 9,200 patients and more than a million catheter days, the results demonstrate the SASS's superiority in reducing the incidence of migration and dislodgement. In addition, the outcomes discussed in this study are generalizable to patient's requiring securement of any percutaneous venous access device requiring even one dressing change that would place the vascular access device at risk for migration or dislodgement.

Conclusion

The data accumulated for over 10 years of focusing on patients reaching the end of need with one catheter produced outcomes that clearly demonstrate SASS as the optimal securement to accomplish this goal. Although PICC placement is relatively pain-free, there are no guarantees of success. Replacing a PICC because the convenient adhesive securement has failed is one more procedure the patient must endure. Keeping the catheter securely in its target area must be as important as achieving the optimal tip position during the insertion. Relying on the convenient or traditional securement is not a clinically sound decision but rather a frivolous default action with significant consequences for the patient.

References

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Carol A. McCormick
Carol.mccormick3@nhs.net



Clare Warburton
Clare.warburton4@nhs.net