HHS Public Access

Author manuscript

Transfus Med. Author manuscript; available in PMC 2015 October 08.

Published in final edited form as:

Transfus Med. 2013 October ; 23(5): 367–369. doi:10.1111/tme.12058.

Knowledge and barriers related to reporting of acute transfusion reactions among healthcare workers in Namibia†

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Dear Sir,

In sub-Saharan Africa, only South Africa has had a long-standing national haemovigilance system to monitor acute transfusion reactions (ATR) (Nel and Heyns, 2000). To improve monitoring, recognition and reporting of ATR more countries in the region have implemented or are considering national haemovigilance systems (Dahourou *et al*., 2012). In Namibia, The Blood Transfusion Service of Namibia (NAMBTS) is the only organisation authorised to collect, process and distribute blood and blood components for transfusion. Since 2006, NAMBTS has invested heavily in the development of guidelines and training for doctors and nurses in the appropriate clinical use of blood. Coupled with this focus on appropriate use, in 2008 NAMBTS launched a national haemovigilance system with a

†This work was presented as an abstract at the 2012 AABB Conference and Expo in Boston, MA, USA.

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CONFLICT OF INTEREST

None of the authors report a conflict of interest.

DISCLAIMER

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standardised reporting tool backed by clinical and laboratory investigations of all reported ATR. Under this system, healthcare workers (HCW) in Namibia who order or perform transfusions (primarily physicians and nurses) are responsible for voluntary reporting of ATR to NAMBTS by phone or via a paper-based system. Reportable ATR include allergic, acute haemolytic, febrile non-haemolytic reactions, sepsis due to bacterial contamination of the donor unit, transfusion-associated acute lung injury, transfusion-associated circulatory overload and transfusion-associated dyspnoea.

Despite extensive training and outreach by NAMBTS, under-reporting of ATR in Namibia has been observed. A recent evaluation conducted by NAMBTS found that approximately 3% of all transfusions (approximately 10 000 blood units) conducted in Windhoek in 2011 resulted in an ATR. However, NAMBTS received only eight ATR reports from Windhoek transfusion facilities in 2011 (unpublished data).

As observed with other public health surveillance systems, under-reporting can result in inaccurate prevalence and incidence estimates and compromise a system's effectiveness (Alter *et al*., 1987). Identifying the reasons for under-reporting is a priority for blood services developing surveillance systems for ATR. We conducted a survey of HCW in Namibia to ascertain their knowledge about the haemovigilance system; their ability to recognise signs and symptoms of ATR, and to identify barriers to reporting ATR via the haemovigilance system.

A 30-question survey based on WHO guidelines was designed to collect information from HCW about their training, knowledge, beliefs and clinical practices related to the identification of and responses to ATR (WHO, 2002). The survey was distributed (paper and electronically) to all HCW of various grades, who order or perform blood transfusions in all 46 transfusion facilities nationally. Owing to frequent turnover of staff both within and between healthcare facilities (especially in the public sector), the exact number of HCW in Namibia who meet the inclusion criteria is unknown, but generally believed to be at least 1000 persons (B. Lohrke, personal communication, 25 July 2012). Frequency counts and percentages were calculated for all variables. Responses were stratified by cadre. All analyses were performed using sas version 9.2 (SAS Institute, Cary, NC, USA).

Additional questions asked whether respondents could correctly identify 15 signs and symptoms, based on WHO clinical guidelines, related to the following ATR (WHO, 2002): allergic, acute haemolytic, febrile non-haemolytic, sepsis due to bacterial contamination of the donor unit, transfusion-associated acute lung injury, transfusion-associated circulatory overload and transfusion-associated dyspnoea.

Of all responses, 34% (105/311) were from physicians, 63% (197/311) from nurses and 3% (9/311) from other cadres. Among respondents, 42% (130/307) reported previously receiving training on clinical management of ATR. Seventy-four percent (74%, 227/307) were aware that a haemovigilance system was available in Namibia, but only 12% (36/309) had previously reported an ATR to NAMBTS. The most common reason for not reporting was 'having never seen a reaction.' But one third of respondents reported that a patient under their care in Namibia had ever previously experienced an ATR. Nearly three-quarters

of all respondents believed there would be no negative personal or professional consequences for reporting an ATR (Table 1).

Among all respondents, 96% (298/310) indicated they were capable of identifying an ATR. However, only 5% (16/311) respondents correctly identified all 15 clinical signs and symptoms of an ATR. The most common correctly identified signs and symptoms were flushing, itching and shortness of breath. The symptoms of ATR that were most commonly not identified by respondents were back pain, unexplained bleeding and red urine.

While these findings provide some clues, they do not provide a clear explanation for the low reporting rate in Namibia, which is likely to be multi-factorial. For example, a large proportion of HCW knew that a haemovigilance system existed, and approximately 40% reported receiving some previous training in the clinical management of ATR. However, while the vast majority of respondents, including doctors and nurses, were confident they could recognise an ATR, only a small minority correctly identified all 15 common signs and symptoms in a test question included in the survey. Given previous observations that transfusion-related education and knowledge is deficient in sub-Saharan Africa, these findings underscore the importance of continued integration of courses in transfusion practice, as well as, haemovigilance monitoring and reporting into pre- and in-service medical training programmes (Nebie *et al*., 2011; Tagny *et al*., 2011; Dahourou *et al*., 2012).

Some reasons cited by HCW for not reporting included excessive effort required to report and a perception that reactions with minor clinical severity did not merit a report. To mitigate these factors, the reporting process could be simplified or the requirements modified such that only moderate and severe reactions are reportable. Expanding reporting responsibilities to laboratory staff and others outside the clinical wards, may contribute to increased use of the system. Previous reports have documented low reporting of other adverse events among HCW in Africa due to fear of stigma or negative consequences (Bukirwa *et al*., 2008). None of the respondents in our study cited fear of repercussions as a reason for not reporting an ATR, and nearly three-fourths felt that no one would suffer negative consequences by reporting to the system. This suggests an important cultural change around a major perceived barrier (stigma) to the use of the haemovigilance system in Namibia – and potentially elsewhere in sub-Saharan Africa. It further indicates the role of adequate training, ongoing outreach activities, and refresher courses to influence HCW behaviour. It is unlikely that such gains in HCW awareness or perceptions towards the haemovigilance system could have been realised in Namibia without the accompanying comprehensive training programme. To facilitate improvement in the recognition of ATR, blood services, medical and nursing schools and in-service training providers in resource-limited settings should consider adopting elements from existing haemovigilance and transfusion training programmes (Dhingra, 2002; Courbil *et al*., 2007). These include providing access to distance learning materials, implementation of self-directed learning tools as part of training, post-training assessments and auditing of blood transfusion practices in hospitals.

As blood services across the region continue to develop and gain recognition as an integral part of primary healthcare systems, implementing haemovigilance programmes with an

emphasis on patient monitoring and adverse event reporting, should be a priority. The success of these programmes will rely on governmental and external organisations prioritising the integration of haemovigilance systems into comprehensive transfusion training programmes, implementing policies to identify more efficient ways to focus reporting requirements, and including both clinical and non-clinical staff in the reporting process.

ACKNOWLEDGMENTS

B. P. L. M. participated in The CDC Experience, a 1-year fellowship in applied epidemiology at CDC made possible by a public/private partnership supported by a grant to the CDC Foundation from External Medical Affairs, Pfizer Inc. Pfizer had no role in any part of this study. S. V. B, B. L., J. P. P., D. W. L. participated in study design, study supervision, data collection and data interpretation; B. P. L. M. participated in study design, data collection, and data interpretation; R. W., N. B., participated in study design, study supervision, and data interpretation; S. P. participated in data analysis; R. W. S. participated in study design and data analysis; M. M. participated in study design and data interpretation. All authors participated in writing the manuscript and approved the final content. S. P. had full access to all of the data and takes responsibility for the accuracy of the data analysis.

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Table 1

Experience, training, awareness of haemovigilance system, knowledge of ATR and reporting practices among healthcare workers ordering and performing transfusions – Namibia, 2011

	Physicians*n*=105 (34%)	Nurses*n*=197 (63%)	Other[1] *n*=9 (3%)	Total *N*=311
Years of experience (n responses)	104	194	9	307
0–5 years	27 (26%)	59 (30%)	1 (11%)	87 (28%)
6 –10 years	27 (26%)	16 (8%)	2 (22%)	45 (15%)
10 –15 years	19 (18%)	26 (13%)	3 (33%)	48 (16%)
>15 years	31 (30%)	93 (48%)	3 (33%)	127 (41%)
Received training on clinical management of ATR	104	195	8	307
Yes	57 (55%)	70 (36%)	3 (38%)	130 (42%)
No	47 (45%)	125 (64%)	5 (63%)	177 (58%)
Knew NAMBTS had a reporting system for ATR	103	195	9	307
Yes	82 (80%)	139 (71%)	6 (67%)	227 (74%)
No	21 (20%)	56 (29%)	3 (33%)	80 (26%)
Who would suffer negative consequences of reporting	96	178	8	282
Person reporting	0 (0%)	3 (2%)	0 (0%)	3 (1%)
Supervisor of reporter	0 (0%)	2 (1%)	0 (0%)	2 (1%)
No consequences	79 (82%)	123 (69%)	5 (63%)	207 (73%)
Other	17 (18%)	50 (28%)	3 (38%)	70 (25%)
Believe are able to recognise ATR	105	197	8	310
Yes	103 (98%)	188 (95%)	7 (88%)	298 (96%)
No	2 (2%)	9 (5%)	1 (13%)	12 (4%)
Correctly recognised all signs and symptoms of an ATR	105	197	9	311
Yes	9 (9%)	7 (4%)	0 (0%)	16 (5%)
No	96 (91%)	190 (96%)	9 (100%)	295 (95%)
Have had patient who suffered ATR	104	194	8	306
Yes	51 (49%)	49 (25%)	2 (25%)	102 (33%)
No	53 (51%)	145 (75%)	6 (75%)	204 (67%)
Have reported ATR to NAMBTS	105	195	9	309
Yes	9 (9%)	25 (13%)	2 (22%)	36 (12%)
No	96 (91%)	170 (87%)	7 (78%)	273 (88%)
Reasons for not reporting an ATR[2]				
Have never seen a reaction	71	136	6	213
Was not a severe reaction	16	15	0	31
Did not know signs/symptoms	0	2	0	2
Too much effort to report	1	1	0	2
Fear of repercussions for reporting	0	0	0	0
Other	12	12	0	24

[1] Includes missing respondents for cadre.

[2] Respondents could select more than one answer.