Supplementary Table 1: Terms that were included in VAERS dictionary and were tagged as time modifiers and time units; others represented the concepts of negation and second level diagnosis (subdivided into certainty, possibility and impression).

Time Modifiers	Time Units <sup> i</sup>	Negation	2 <sup>nd</sup> level diagnosis						
Thire Wibumers	Time Units	regation	Certainty <sup>i</sup>	Possibility <sup>i</sup>	Impression <sup>i</sup>				
ago	minute.*	non	unk.*	possib.*	experienc.*				
before	hour.*	no	undetermined	probab.*	suffer.*				
post	day.*	not	unexplained	question.*	develop.*				
within	week.*	denies	natural	unconfirm.*	impress.*				
wi	month.*	denied	nos	pending.*	assess.*				
р	year.*	without		suspect.*					
following	hrs	wo		unsure.*					
later	min	any		unspecif.*					
after	mins	none							
for	hr	negative							
	second.*	neg							
	wks	wouldnt							
	wk	couldnt							
	evening	shouldnt							
	morning	wont							
	noon	cannot							
	afternoon	gone							
	midnight								

wildcard characters ".\*" were used in only a few cases.

	Features			r .			ΗJ				X	
	Counts	SYMPTOM	DIAGNOSIS	TIME_TO_ ONSET	VACCINE	LOT_NUMBER	CAUSE_OF_ DEATH	2nd LEVEL_ DIAGNOSIS_	RULE_OUT_ DIAGNOSIS	DRUG	FAMILY_ HISTORY	MEDICAL_ HISTORY
_	Full-Matches	600	68	29	71	9	2	63	3	229	1	8
1 <sup>st</sup> Evaluation	<b>Conceptual-Matches</b>	507	41	1	22	0	2	35	3	16	0	15
<sup>t</sup> Eval	Non-matches (1) <sup>i</sup>	773	71	13	40	4	2	87	0	69	1	23
1	Non-matches (2) <sup>ii</sup>	204	3	1	15	0	0	2	1	26	0	6
				-								
a	Full-Matches	568	148	2	73	4	6	82	2	171	0	3
2 <sup>nd</sup> Evaluation	Conceptual-Matches	419	60	9	21	8	2	70	0	27	0	8
<sup>d</sup> Eva	Non-matches (1) <sup>i</sup>	339	45	10	20	5	6	108	0	55	2	24
2 <sup>n</sup>	Non-matches (2) <sup>ii</sup>	187	29	1	18	0	1	13	0	17	0	0
uo	Full-Matches	231	39	70	222	28	1	159	0	157	2	75
luatio	Conceptual-Matches	266	22	30	60	36	0	96	2	25	2	51
3 <sup>rd</sup> Evaluation	Non-matches (1) <sup>i</sup>	218	10	52	66	8	2	80	3	37	6	118
3,	Non-matches (2) <sup>ii</sup>	257	4	3	15	4	0	34	4	23	0	6

Supplementary Table 2: Counts for all types of matches between VaeTM and reference standard.

<sup>1</sup> either no agreement between VaeTM and reference standard or VaeTM did not extract any text

<sup>ii</sup> VaeTM extracted a non-existing feature

Supplementary Table 3: Counts for all types of agreements between the consensus and primary annotators. Per feature type, the sum of matched and expected annotations is equal to the sum of full-matches, conceptual-matches and non-matches(1) that appear in Supplementary Table 2; both sums are equal to the actual number of features that appear in the reports and included in the reference standard.

		Features						Н				Y	
		Counts	SYMPTOM	DIAGNOSIS	TIME_TO_ ONSET	VACCINE	LOT_NUMBER	CAUSE_OF_ DEATH	2nd LEVEL_ DIAGNOSIS_	RULE_OUT_ DIAGNOSIS	DRUG	FAMILY_ HISTORY	MEDICAL_ HISTORY
		Matched_annotations	643	72	17	75	0	3	58	1	179	1	27
5	CA vs PA <sub>1</sub>	Missed_annotations	160	6	2	7	7	0	58	0	2	1	3
1 <sup>st</sup> Evaluation	CA	Incorrect_annotations	65	37	5	6	0	2	77	0	3	4	11
<sup>t</sup> Eval	N2 <sup>i</sup>	Matched_annotations	972	98	23	46	6	2	61	5	128	0	15
<b>1</b> <sup>s</sup>	CA vs PA2 <sup>i</sup>	Missed_annotations	105	4	1	5	0	1	8	0	5	0	1
	CA	Incorrect_annotations	55	95	17	5	0	1	13	2	2	2	1
	·	Matched_annotations	617	150	9	70	7	5	142	2	139	1	14
-	CA vs PA <sub>1</sub> <sup>i</sup>	Missed_annotations	33	37	4	0	0	0	27	0	0	0	3
2 <sup>nd</sup> Evaluation	CA	Incorrect_annotations	57	2	1	0	0	1	0	0	1	0	0
<sup>d</sup> Eval	N2 <sup>i</sup>	Matched_annotations	642	96	10	44	10	8	80	0	106	1	21
$2^{\mathbf{n}}$	CA vs PA2 <sup>i</sup>	Missed_annotations	10	7	1	0	0	0	38	0	7	0	0
	CA	Incorrect_annotations	46	11	7	2	1	0	1	1	0	0	0

	·	Matched_annotations	10	26	69	164	44	0	150	3	103	5	133
	vs PA	Missed_annotations	42	7	2	3	0	0	7	0	9	0	2
Evaluation	CA	Incorrect_annotations	18	0	7	0	3	0	12	0	14	0	42
	i 2	Matched_annotations	347	31	81	181	28	3	162	2	104	5	99
3 <sup>rd</sup>	vs PA	Missed_annotations	3	7	0	0	0	0	16	0	3	0	10
	CA	Incorrect_annotations	30	2	0	1	2	0	10	0	0	3	2

<sup>1</sup>CA: Consensus Annotator; PA: Primary Annotator.

Supplementary Table 4: Examples of differences between V*ae*TM and reference standard (first evaluation). The extracted span of text is followed by the feature name in brackets; the type of difference is also included per example, while 'Not extracted' means that V*ae*TM did not extract anything.

Sentence <sup>i</sup>	Reference Standard <sup>i</sup>	VaeTM <sup>ii</sup>	Type of difference
Pt had no further problems	no further problems	Not extracted	Occurrence
after being treated for the	[SYMPTOM]		
second time			
after receiving the Herpes	Herpes Zoster vaccine	Not extracted	Occurrence
Zoster vaccine, pt began	[VACCINE], itching		
experiencing hand itching	[SYMPTOM]		
Dx: 1) smallpox vaccination	smallpox vaccination	Not extracted	
reaction	reaction [DIAGNOSIS]		
Tx't: IVIG, steroids, w/ no	IVIG [DRUG], steroids	steroids [DRUG]	Occurrence
noticeable improvement	[DRUG]		
Treated with IV Benadryl,	IV Benadryl [DRUG],	benadryl [DRUG],	Textual extent,
Decadron, and Famotidine	Decadron [DRUG],	decadron [DRUG],	Occurrence
and then epinepherine	Famotidine [DRUG],	famotidine [DRUG]	
	epinepherine [DRUG]		
The patient does not drink	no alcohol	alcohol [DRUG]	Typing
alcohol	[MEDICAL_HISTORY]		
She was followed for prenatal	pregnancy-induced	diagnosed mild	Granularity
care and diagnosed with mild	hypertension	pregnancy	
pregnancy-induced	[DIAGNOSIS]	hypertension	
hypertension, for which she		[DIAGNOSIS]	
was not treated			
DIAGNOSIS OF SARCOID	SARCOID	diagnosis sarcoid	Term decomposition;

AND POSTERIOR	[DIAGNOSIS],	posterior vitreous	occurrence
VITREOUS	POSTERIOR	detachment	
DETACHMENT WITH	VITREOUS	[DIAGNOSIS]	
DAMAGE TO THE	DETACHMENT		
RETINA	[DIAGNOSIS],		
	DAMAGE TO RETINA		
	[DIAGNOSIS]		
Presents to ER with c/o	allergic reaction	allergic reaction	Term ambiguity
allergic reaction to	[SYMPTOM], pneumonia	[SYMPTOM],	
pneumonia vaccine	vaccine [VACCINE]	pneumonia	
		[SYMPTOM]	
Ringing and ache in R ear	Ringing [SYMPTOM],	ache ear	Locus modification;
	ache in R ear	[SYMPTOM]	occurrence
	[SYMPTOM]		
The patient had no further	no further seizures	no seizures	Textual extent
seizures and was discharged	[SYMPTOM]	[SYMPTOM]	
home			

<sup>i</sup> span of text as in the original report without any normalization

<sup>ii</sup> span of text as normalized by VaeTM