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Validation of the Finnegan Neonatal Abstinence Syndrome Tool–Short Form

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ABSTRACT

PURPOSE: The purpose of this study was to reduce the number of items in the Modified Finnegan Neonatal Abstinence Syndrome Tool (M-FNAST) to the minimum possible while retaining or improving its validity in a short version.

SUBJECTS: All infants with a diagnosis of neonatal abstinence syndrome (171) who were admitted to a large neonatal intensive care unit in southwest Florida between September 2010 and October 2012 comprised the sample.

DESIGN: This was a psychometric evaluation of 33 856 M-FNAST assessments that were downloaded from the electronic medical record.

METHODS: Principal axis factoring extraction with varimax rotation was performed on the M-FNAST data. Principal components extraction was used before principal factors extraction to estimate the number of factors with the scree test and factorability of the correlation matrices with Bartlett's chi-square test, and Kaiser-Meyer-Olkin Measure of Sampling Adequacy.

RESULTS: The M-FNAST scores ranged from 0 to 29, with a mean of 3.5 (SD = 2.5). Less than 1% (21) of infants had scores of 17 or more. Nearly all (97.7%) scores fell between 0 and 9. Most subjects were full-term gestation, but 11 were preterm between 28 and 37 weeks' gestational age. The 2-factor solution explained 23.74% of the total variance and consists of 2 factors, mild/early and moderate/advanced signs. The 2-factor solution was significantly correlated with the total score on the MFNAST ($r = 0.917$; $P < .001$). Among infants who scored 8 or greater, the total score on the 2-factor solution short form FNAST was significantly correlated with the total score on the M-FNAST ($r = 0.629$; $P < .001$).

KEY WORDS: abstinence syndrome, assessment, Finnegan, neonate, symptoms

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Neonatal abstinence syndrome (NAS) is a condition characterized by a constellation of drug withdrawal symptoms in the neonate, following intrauterine exposure to drugs of abuse.[1] Infants with NAS have traditionally been managed in the neonatal intensive care unit (NICU) because of the nursing surveillance and monitoring required when treating withdrawal with oral morphine, methadone, and other drugs that cause respiratory depression. Several investigators have reported that infants with NAS and their families are a challenging population.[2-4] Their nursing care has different requirements than the typical NICU patient, and their length of stay can be a month or more. Other challenges include titrating the medication regimen up and down to control the symptoms, and employing techniques like vertical rocking, demand feedings,

and frequent consoling. There is currently no standard of care for pharmacologic management of infants with NAS,[5,6] although randomized controlled trials are under way to provide evidence for the healthcare team. Furthermore, the preferred drug of abuse varies by geographic area. Some NICUs admit a preponderance of infants exposed to heroin, while others deal with prescription narcotics or methamphetamines. In addition, many women report using more than 1 drug, such as marijuana, stimulants, antidepressants, sedatives, benzodiazepines, or others.[7,8]

In 1974, Finnegan and MacNew[9] described nursing care for an emerging epidemic of "passively addicted newborns" due to intrauterine heroin exposure. The rate rose in their hospital from 1 infant in 184 affected in 1969 to 1 in 16 within 3 years. The authors correctly predicted that the use of methadone treatment during pregnancy would result in increased rates of drug exposed infants. In 2011, the rate of illicit drug use was 20.9% in pregnant women aged 15 to 17 years, and 8.2% in women aged 18 to 25 years, up slightly from the previous reporting period.[7] Using a national database compiled by the Agency for Healthcare Research and Quality, Patrick and colleagues[10] reported that between 2000 and 2009, the incidence of NAS increased significantly from 1.2 in to 3.39 per 1000 births ($P < .001$).

In response to the growing epidemic, Finnegan and colleagues[11] developed and tested a withdrawal assessment instrument to evaluate outcomes of pharmacologic management in infants with NAS. The instrument was developed on the basis of a review of the literature and the author's experiences. The instrument was adopted for use in NICUs and soon became known as the "Finnegan" Neonatal Abstinence Score (FNAS). It is thought to be the most widely used assessment of NAS, although it is long and somewhat cumbersome.[12] The FNAS is a comprehensive list of withdrawal symptoms, many of which are rarely observed and appear in only the most severe cases. The benefits of a shortened version of the FNAS include increasing the ease of use in the NICU, improving interrater reliability among nurses, simplifying parent's assessment of their infant after discharge to home, and enabling a quick screening tool for pediatricians who manage infant withdrawal symptoms after discharge. The purpose of this study, therefore, was to investigate the possibility of shortening the FNAS without sacrificing the validity and reliability of the instrument.

BACKGROUND

When Finnegan and colleagues[11] first developed their Neonatal Abstinence Score, they chose 20 of the most common central nervous system and "readily observable behavioral characteristics" of infant withdrawal symptoms and ranked them in groups.[11] The items on this original assessment included high-pitched cry, length of sleep, hyperactive moro reflex, tremors, increased muscle tone, convulsions, frantic sucking, poor feeding, regurgitation, projectile vomiting, stool characteristics, hydration status, yawning, sneezing, nasal stuffiness, sweating, mottling, fever, respiratory rate, and excoriation.[9] Items with the least pathologic significance such as stuffiness, sweating, and mottling were arbitrarily given a score of 1. Convulsions were given a score of 5 to capture the potential for clinically adverse effects; others were given intermediate point values based on pathologic significance, such as cry, length of sleep, and tremors. The nursing staff was trained to achieve interrater reliability and used the assessment hourly for the first 24 hours of life, every 2 hours for the next day, and switched to every 4 hours at 48 hours with the feeding. Infants were scored every 4 hours until 2 days after pharmacologic treatment was discontinued. The authors remarked that in their experience, infants with a score of 7 or less recovered quickly with swaddling and demand feeding and were therefore not treated pharmacologically.[13] There has been no evidence to support this practice until recently.

Zimmermann-Baer and colleagues[14] conducted a validity and reliability study of a modified Finnegan neonatal abstinence scale with 28 items and a score range of 0 to 37 in healthy, full-term infants. This was the first psychometric study to define normal variability of these nonspecific symptoms, day-night cycles, and how scores change with increasing age. The results of their discriminate validity study confirmed that a score of 8 is reasonable to raise suspicion for drug withdrawal and to initiate pharmacologic treatment.

Zahorodny and colleagues[12] conducted the first formal evaluation of the FNAS that was not focused on the outcomes of pharmacologic management by investigating the reliability, validity, and efficiency of the Neonatal Withdrawal Inventory (NWI) compared to the FNAS. The NWI is an 8-point assessment checklist that was tested in 80 newborns, 67 of whom had a diagnosis of NAS with FNAS scores ranging from 2 to 12. On the basis of 120 observations, the authors determined that there was good agreement between the 2 instruments. The NWI sensitivity was 100%, so that all the infants with a score of 8 or more with the FNAS had a score of 8 or more with the NWI. Thus, the FNAS has some evidence for convergent validity in addition to the face and content validity previously established by Finnegan and colleagues.[11,12]

The FNAS has been modified[13] since it first appeared in the literature to eliminate variables that were no longer pertinent. For example, excoriation

of nose, knees, and toes (one point each) was reduced to "skin excoriation" for 1 point only, after the "Back to Sleep" campaign[15] virtually eliminated excoriation of nose and knee skin. The modified FNAS (M-FNAS) was also reframed into 3 subcategories: central nervous system disturbances; metabolic, vasomotor, and respiratory disturbances; and gastrointestinal disturbances[13] (Table 1). Providers choose the appropriate adjunctive therapy based on the subscale scores. The issues identified by Zahorodny and others[12] still exist with the M-FNAS: it is long and cumbersome and therefore more challenging to achieve interrater reliability, which is a critically important feature of any assessment that serves as the basis for pharmacologic treatment.

METHODS

Design

Factor analysis (FA) is a statistical test applied to the items in an instrument to summarize the patterns of correlations among the items.[16] It is specifically used to decrease the number of items in a long instrument. Patterns that emerge are grouped into "factors," which are thought to reflect the underlying processes that have created the correlations.[16] There are often several "factor" solutions that emerge from the data, and the investigator must evaluate which one is the best fit, given the clinical use of the instrument. In this retrospective chart review, data were subjected to an FA. It was expected that an FA of the M-FNAS data for infants with NAS may provide support for further modification and revision that retains accuracy of the assessment, yet eases administration. An FA on NAS scores from infants treated for NAS has not been published to date, but the increasing use of the electronic medical record (EMR) simplifies this opportunity to improve a commonly used instrument.

Sample and Setting

All infants admitted with a diagnosis of NAS to a 97-bed NICU located in the southeastern United States, between September 2010 and October 2012, composed the sample. A total of 33 856 M-FNAS assessments were downloaded from the EMR for analysis from the 171 infants who met the criteria. Criteria included a diagnosis of NAS and first hospital admission in the NICU. During the study time frame, the average length of stay was 24.7 days, and nurses documented a NAS score on each infant every 3 hours, the standard practice reported elsewhere in the literature.[9,13,17]

Instruments

The instrument used was the M-FNAS.[13] During M-FNAS training in 2010 with an established program by an expert in the field,[19] the core team of NICU nurses caring for this population achieved an

TABLE 1. Modified Finnegan Neonatal Abstinence Syndrome Tool

Item	Score
CNS disturbances	
Crying	
• Excessive high pitched	2
• Continuous high pitched	3
Sleeps	
• Less than 1 h after feeding	3
• Less than 2 h after feeding	2
• Less than 3 h after feeding	1
Moro reflex	
• Hyperactive	2
• Markedly hyperactive	3
Tremors	
• Mild tremors: disturbed	1
• Moderate-severe tremors: disturbed	2
• Mild tremors: undisturbed	3
• Moderate-severe tremors: undisturbed	4
Increased muscle tone	2
Myoclonic jerk	3
Generalized convulsions	5
MVR disturbances	
Excoriation	1
Sweating	1
Fever	
• <101°F	1
• >101°F	2
Frequent yawning (>3)	1
Mottling	1
Nasal stuffiness	1
Sneezing (>3)	1
Nasal flaring	2
Respiratory rate	
• >60/min	1
• >60/min with retractions	2
Excessive sucking	1
GI disturbances	
Poor feeding	2
Regurgitation	2
Projectile vomiting	3
Stools	
• Loose	2
• Watery	3
Total score	

Abbreviations: CNS, central nervous system; GI, gastrointestinal; MVR, metabolic, vasomotor, and respiratory disturbances.

interrater reliability of 0.90. Content validity and convergent validity have been previously established in the M-FNAS.[11,12,13]

Procedures

The M-FNAS data have been entered into the EMR since September 2010 by nurses who documented the M-FNAS score every 3 to 4 hours for each of the 21 variables. The EMR calculates subscale totals and a sum total score for each assessment. Since May 2010, infants with NAS have been managed pharmacologically with oral morphine as the standard of care in the study NICU. After institutional review board and administrative approvals were obtained, the investigators met with the data support specialist to clarify the request and preview a sample of the extracted data. The final data were provided in an excel table, anonymized, and loaded into SPSS for analysis. The data were anonymized by replacing the name with a subject number and deleting the columns associated with medical record and financial record numbers. Data retained included the infant gender, admission and discharge dates, the time of each assessment, the 21 variables, the totals of 3 subscales (CNS, metabolic, vasomotor, and respiratory disturbances, gastrointestinal) and the total score. In addition, chart reviews were conducted to determine the maternal psychosocial histories and illicit substances that were identified in the maternal history, from either verbal report or urine screen.

Data Analysis

Data analysis was performed using the statistical package for the social sciences (SPSS) version 20.0 (IBM, Armonk, NY), using principal axis factoring extraction with varimax rotation. Principal components extraction was used prior to principal factors extraction to estimate the number of factors with the scree test[19] and factorability of the correlation matrices with Bartlett's chi-square test,[20,21] and Kaiser-Meyer-Olkin Measure of Sampling Adequacy.[22] Principal component analysis confirmed that the data were appropriate to conduct FA and 2 factors were extracted. The 2-factor solution explained 23.74% of the total variance. Residuals were computed between observed and reproduced correlations. The solution has 54.0% nonredundant residuals with absolute values greater than 0.05. When oblique rotation was applied, the absolute correlation coefficient between the 2 factors was smaller than 0.32. Hence, orthogonal (varimax) rotation was chosen. Sample characteristics were described using descriptive statistics such as means, standard deviation, and frequencies (percentage).

RESULTS

All M-FNAS scores (33 856) were analyzed in the sample of 171 infants with a diagnosis of NAS. Infants in this study had an average length of stay of 27.10 days (SD = 15.99 days), with a range of 0 to 77 days. The sample comprised 92 male and 79 female newborns, all of whom were transferred in from a referring hospital. A total of 33 856 individual M-FNAS assessments were downloaded for analysis. The M-FNAS scores ranged from 0 to 29, with a mean of 3.5 (SD = 2.5). Less than 1% (21) of infants had scores of 17 or more. Nearly all (97.7%) scores fell between 0 and 9. Most subjects were full-term gestation, but 11 were preterm between 28 and 37 weeks' gestational age. Their mothers had histories complicated by mental health problems (anxiety, depression,

TABLE 2. Substances That Subjects Were Exposed to Prenatally, as Reported in the Maternal History, Either by Verbal Report or as Found on Urine Drug Screen

Drug	Class	N	%
Methadone	Opioid	121	70.7
Oxycodone	Opioid	81	47.4
Xanex	Benzodiazepine	45	26.3
Marijuana	Psychoactive	34	19.9
Cocaine	Stimulant	32	18.7
Roxycodone	Opioid	31	18.1
Alcohol	Sedative	14	8.2
Hydrocodone	Opioid	7	4.0
Morphine	Opioid	6	3.5
Buprenorphine	Opioid	5	2.9
Tylenol #3	Opioid	4	2.3
Valium	Benzodiazepine	4	2.3
Soma	Muscle relaxant	3	1.8
Klonopin	Anticonvulsant	3	1.8
Zoloft	SSRI	3	1.8
Darvocet	Opioid	2	1.2
Oxycontin	Opioid	2	1.2
Flexeril	Muscle relaxant	2	1.2
Lamictal	Anticonvulsant	2	1.2
Vistaril	Antihistamine	2	1.2
Fentanyl patch	Opioid	1	0.6
Tramadol	Opioid	1	0.6
Fioracet	Barbiturate	1	0.6
MDNA (ecstasy)	Amphetamine	1	0.6
Lithium	Antipsychotic	1	0.6

Abbreviations: MDNA, 3-4 methylenedioxymethamphetamine; SSRI, selective seratonin reuptake inhibitor.

and bipolar disorder), chronic pain, motor vehicle accidents, domestic violence, and incarceration. Their drug histories included using methadone, prescription narcotics, benzodiazepines, cocaine, tobacco, and marijuana. Heroin was not a common drug of choice in this geographic area, although it was occasionally uncovered in a history (Table 2). Most women (70.7%) were in a methadone treatment program and reported maternal methadone doses ranging from 30 to 260 mg daily, with an average of 116 mg.

Factor Analysis

As in any FA, several "solutions" emerged from the data. Each solution must be evaluated by the investigators for fit.[16] As the authors evaluated each solution, the 2-factor solution was immediately identified as a very good fit. The first factor had 3 items that could be described as mild or early signs of withdrawal: crying, sleep, and increased muscle tone. The second factor consisted of 4 items that could be described as moderate or progressing signs of withdrawal: undisturbed tremors, sweating, respiratory rate, and excessive sucking. The other proposed solutions (5 and 8 factors) were determined to force inclusion of additional items that were not easily categorized. The results of the 2-factor solution with varimax rotation showed final communality values ranging from 0.014 to 0.584. With a cutoff of 0.45 for inclusion of an item in the short version of the M-FNAS, 13 of 21 items did not load on any factor. Failure of numerous items to load on a factor reflects heterogeneity of items on the M-FNAS. Loadings of 21 items on factors, communalities, and percentage of variance are shown in Table 3.

TABLE 3. Factor Loadings, Communalities (h^2), and Percentages of Variance for Principal Factors Extraction With Varimax Rotation on M-FNAS Items[a]

Items	Factor 1 Mild/Early	Factor 2 Mod/Progressing	h^2
Central nervous system disturbances			
Crying	**0.729**	0.231	0.584
Sleeps	**0.686**	0.282	0.551
Hyperactive moro reflex	0.178	–0.033	0.033
Tremors: disturbed	0.545	–0.461	0.510
Tremors: undisturbed	0.205	**–0.622**	0.429
Increased muscle tone	**0.566**	0.230	0.373
Excoriation	0.223	–0.073	0.055
Myoclonic jerk	0.024	–0.365	0.134
Generalized convulsions	0.044	0.282	0.081
Metabolic, vasomotor, and respiratory disturbance			
Sweating	0.386	**0.456**	0.357
Fever	0.010	0.341	0.117
Frequent yawning	0.301	0.357	0.218
Mottling	0.018	0.117	0.014
Nasal stuffiness	0.311	0.108	0.109
Sneezing	0.135	0.317	0.119
Nasal flaring	0.189	–0.245	0.095
Respiratory rate	0.380	**–0.517**	0.412
Gastrointestinal disturbances			
Excessive sucking	0.426	**0.579**	0.517
Poor feeding	–0.002	0.193	0.037
Projectile vomiting	0.022	0.294	0.087
Bowel movement	–0.358	0.163	0.155
Percentage of variance	13.89%	9.85%	

[a] *Factor loadings > 0.45 are in boldface and retained for that factor. h^2 = communality coefficient.*

Interpretive labels are suggested for each factor. The final 7-item shortened form of M-FNAS has 2 factors, mild/early and moderate/progressing signs (Table 4).

Finally, a total score was computed for all the subjects using the short, 7-item version, and compared to original M-FNAS score using the Pearson *r*. The result demonstrated that the total score on the 2-factor solution with 7 items (short form) was significantly correlated with the total score on the original 21-item M-FNAS ($r = 0.917$; $P < .001$). Moreover, among infants who score 8 or more, the total score on the 2-factor solution short form FNAST was significantly correlated with the total score on the original 21-item M-FNAS ($r = 0.629$; $P < .001$). See Table 5 for the correlation matrix of the original 21-item M-FNAS.

DISCUSSION

The sample in this study is representative of infants with NAS and reflects the current state of the substance abuse problem among pregnant women in west central Florida. Infants in this study were exposed prenatally to drugs that include methadone, prescription narcotics, marijuana, selective serotonin reuptake inhibitors such as Zoloft, benzodiazepines (most commonly Xanex), cocaine, and alcohol (Table 2). The standard of care in the NICU throughout the study period was to treat infant withdrawal symptoms with oral morphine. Phenobarbital was used as an adjunctive as needed by individual providers, depending on infant symptoms. Tobacco smoking was documented in 61% of the maternal histories. A limitation of this study is that data about maternal history were collected retrospectively, and the quality of the histories was variable among providers. Most did not record substances that were not abused, many did not assess tobacco or alcohol consumption, and 47% did not document the methadone dose. Although most infants were full term, 6% were preterm.

TABLE 4. Finnegan Neonatal Abstinence Scale–Short Form

Items	Score
Mild/early signs	
1. Crying:	
high pitched	2
continuous and high pitched	3
2. Sleeps:	
<1 h after feeding	3
<2 h after feeding	2
<3 h after feeding	1
3. Increased muscle tone	2
Moderate/progressing signs	
4. Tremors	
Undisturbed, mild	3
Undisturbed, moderate-severe	4
5. Respiratory rate	
>60/min	1
>60/min w/retractions	2
6. Sweating	1
7. Excessive sucking	1
Total	0–16

The large volume of M-FNAS assessments enabled validation of 2 factors composed of 7 items that highly correlate with the 21-item M-FNAS, satisfying the main purpose of this study. The first factor, labeled "mild/early signs," is expected to resonate with nurses who are experienced in assessing infants with the M-FNAS. Although by themselves these signs are not unusual in newborns, suspicion is raised when they consistently appear together when combined with a maternal history positive for substance abuse. The "moderate/progressing signs" described in the second factor are generally not attributed to normal newborn behavior and may reflect symptoms that are not well controlled. When these moderate/progressing signs occur with mild/early signs, withdrawal syndrome will be among the top choices in a differential diagnosis. Not only were there enough assessments to validate the use of the short form M-FNAS, the scores of 8 or greater on the long form significantly correlated with a score of 8 or greater on the short form. Thus, assessing the infant with the short form will identify infants with NAS, and those infants are likely to be treated in the same manner as those assessed with the long form.

Because there are only 7 items in the short form, it is expected that interrater reliability among nurses will be easy to achieve. The items have previously been defined[17,23] and formal training can be developed, as with the M-FNAS.[18] We expect that parents will be able to use it to assess their infant after discharge. They may be concerned for any residual withdrawal symptoms once they are home, and the short form may provide a reference with which to share their concerns with their pediatrician or emergency department provider. Similarly, pediatricians may find this short form useful in their offices to assess late withdrawal symptoms, or infants who present to the emergency department with similar symptoms.

We propose this 7-item scale to be called the Finnegan Neonatal Abstinence Scale–Short Form

TABLE 5. The Correlation Matrix of the Original 21-Item FNAST (n = 171)

	Cry	Sleep	Moro	Disturbance Tremor	Undisturbed Tremor	Muscle Tone	Excoriation	Myoclonus	Convulsions
Crying	1								
Sleeping	0.802[a]	1							
Moro	0.014	–0.010	1						
Disturbance tremor	0.141	0.028	0.162[b]	1					
Undisturbed tremor	–0.179[b]	–0.213[a]	0.166[b]	0.552[a]	1				
Muscle tone	0.372[a]	0.342[a]	0.219[a]	0.259[a]	–0.113	1			
Excoriation	0.009	–0.017	0.099	0.114	0.091	0.126	1		
Myoclonus	–0.099	–0.096	0.088	0.143	0.253[a]	–0.080	–0.030	1	
Convulsions	0.074	–0.046	–0.075	-0.042	–0.046	–0.025	0.018	–0.037	1
Sweating	0.258	0.310[a]	–0.053	0.001	–0.089	0.166[b]	–0.011	–0.109	0.052
Fever	0.052	0.089	0.086	–0.048	–0.040	0.016	–0.042	–0.027	0.052
Yawning	0.175	0.102	0.107	0.077	0.100	0.016	0.100	–0.073	0.235[a]
Mottling	–0.069	-0.076	0.085	0.044	–0.009	0.107	0.085	–0.046	–0.017
Stuffy	0.026	0.098	–0.046	0.180[a]	0.030	0.061	0.091	–0.024	0.000
Sneezing	0.041	0.096	0.026	0.067	–0.046	0.110	0.020	–0.021	0.091
Flaring	0.049	0.074	–0.074	–0.018	0.053	–0.083	0.015	–0.047	–0.013
Respirations	0.283[a]	0.213	–0.133	0.243[b]	0.207[a]	–0.078	0.003	0.108	0.023
Sucking	0.305[a]	0.343	0.080	–0.027	–0.189	0.407[a]	0.119	–0.086	0.198[a]
Feeding	0.006	0.013	0.201[a]	–0.046	–0.017	0.156[b]	–0.054	0.046	–0.066
Vomiting	–0.003	–0.097	–0.004	0.081	0.006	–0.063	–0.044	–0.018	0.384[a]
Bowel movement	–0.098	–0.101	–0.074	–0.200[a]	–0.134	–0.212[b]	–0.135	–0.039	–0.047

[a]$P < .000$. [b]$P < .05$.

(FNAS:SF). The scores range from 0 to 16, which have been shown to be adequate for 98% of infants who are treated for NAS in this study site. The FNAS:SF will be inadequate, however, to assess and document escalating withdrawal symptoms of increasing severity. We recommend that infants who demonstrate rapidly increasing withdrawal scores should be assessed with the 21-item M-FNAS (or other long version) to document any additional symptoms that will enable assessment of a severe and uncontrolled withdrawal. As with any instrument used by multiple caregivers, it should be implemented after training is completed, competency achieved, and interrater reliability established. Development of an educational program to train providers and establish interrater reliability is required before broad use of the FNAS–Short Form can be recommended. The use of a well-constructed EMR enabled the data to be easily identified, downloaded, and analyzed to provide evidence that may improve patient care outcomes.

Further analysis is expected to include a large-scale evaluation of the FNAS–Short Form on diverse populations in multiple settings. Knowledge gaps still exist about the symptoms of infants exposed to different combinations of illicit substances, as well as symptoms of preterm infants and those beyond the neonatal period. We also propose to investigate if the short form can be reliably used by parents or pediatricians after discharge home, or by providers who evaluate infants in the emergency department presenting with symptoms of colic, or other symptoms that could be associated with withdrawal.

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Sweating	Fever	Yawning	Mottling	Stuffy	Sneezing	Flaring	Respirations	Sucking	Feeding	Vomiting	Bowel Movement
1											
0.067	1										
0.280	0.084	1									
0.056	0.075	0.047	1								
0.333[a]	0.077	0.193[b]	0.099	1							
0.110	0.090	0.201[a]	0.112	0.105	1						
–0.009	–0.073	0.016	–0.171[b]	0.229[a]	–0.139	1					
–0.102	–0.126	–0.060	–0.092	0.007	–0.094	0.328[a]	1				
0.406[a]	0.176	0.263[a]	0.018	0.120	0.128	0.001	–0.203[a]	1			
–0.035	0.198[a]	0.088	0.028	–0.002	0.132	–0.100	–0.118	–0.005	1		
0.050	0.084	0.425[a]	–0.022	0.097	0.183[b]	–0.063	–0.063	0.090	0.096	1	
0.004	0.081	–0.025	–0.115	–0.002	-0.035	0.011	–0.071	–0.049	–0.033	–0.014	1

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