SDC-1: Temporary parental benefits in Sweden (VAB)

Who can apply for VAB?

The term VAB describes temporary parental benefits when parents stay home from work or refrain from seeking work to take care of a sick child or accompany it to the doctor, dentist or hospital, and lose income from this. One parent (at a time) is eligible for VAB if the sick child is between 8 months and 12 years of age. It is administered through the Swedish Social Insurance Agency (Försäkringskassan). For certain medical reasons is it possible to achieve VAB benefits for children up to the age of 21 years. Of all days 2009 used for VAB 7% was related to children less than 2 years old and 10% was related to children 12-15 years old.

Public Insurance is mandatory for all Swedish citizens and also for those persons that work or study in Sweden, irrespective of nationality, the insurance is financed via taxes, employers and employees parents are all included in the benefit. The only requirement is to have a record in a population register or be registered directly at the Social Insurance Agency, this requires a Swedish ID (can be temporary) and a permanent address (that can be “in care of” c/o).

How much compensation can a VAB generate?

The economic compensation is 80% of the regular income from day one, but only up to a maximum salary of €3090 per month (SEK 27 800). The parents can jointly receive compensation for caring for a child for a maximum of 120 days per child and year. After seven consecutive days, they need a sick certificate from a doctor or nurse. For the first 60 days, they can receive compensation for caring for a child also when the child's regular caregiver is sick. This description is not exhaustive; exceptions exist. For further information, please refer to www.forsakringskassan.se the pages in English.

The average income per month 2013 in Sweden was for women €3160 (SEK 28 400), and for men €3660 (SEK 32 900) (www.scb.se). Two parents can switch the use of VAB days to each other within one episode of VAB. In certain professions, when possible, it might occur that parents decide to work from home if they need to take care of a sick child, thereby avoiding VAB-days and any loss of income. No statistics for this is available. To avoid loss-of-income, it also happens that parents use (fully) paid vacation days instead of VAB - there are no figures of how common this is either.

How many days of VAB is there compared to ordinary sick leave days?

Of all “Days of sickness cash benefit” and days for “Care of sick child” (VAB) together during the year of 2011, the proportion for VAB was 11%. This proportion was calculated on net days, where for example two days with a sick leave of 50% would count as one day (Source: Statistics Sweden. Chapter 18.5 Sickness insurance, days of sickness cash benefit and Chapter 18.6 Parental insurance, number of days. Statistical Yearbook 2013: Statistics Sweden; 2012).

SDC – 2: ILI-diagnose codes for computer algorithms

The definition of ILI used in this study has its tradition in computer surveillance of disease outbreaks, as used by for instance Centers for Disease Control and Prevention. By scanning a defined set of diagnoses per day or week it is possible to get early notification of community-based epidemics. Our basic reference to the use of diagnoses is the paper "Code-based syndromic surveillance for influenzalike illness by International Classification of Diseases, Ninth Revision" by Marsden-Haug N, Foster VB, Gould PL, Elbert E, Wang H, Pavlin JA. Published in *Emerging infectious diseases*, 2007; **13**(2): 207-16.

In our study 18 different diagnoses are used and by having such a wide definition of ILI we include healthcare visits that is related to influenza but where the proportion of "real influenza cases" is unknown. To definitely know whether a patient is sick because of any influenza virus (type A or B) there must be results from a specimen analyzed with laboratory equipment. In the region of Östergötland it is very uncommon to take specimen and analyze, we noticed this lack when we classified the peak of the influenza period based on national data of defined influenza cases.

This lack of tests can be seen in our Table 2, where one find only 36 identified and positive specimen for a period of 7 years with a yearly cohort of about 78 000 children. However Marsden-Haug et al. 2007, correlates (in retrospect) their visit statistics with positive specimens and present both correlation coefficients and signal-to-noise ratio. They themselves had not any diagnose where the Influenza is identified, simply because that takes too long time to achieve.

Of the 18 diagnoses 4 had less than 10 cases during our whole study period, which leaves us with 14 relevant diagnoses. Of the 14 diagnoses 9 could be found in the diagnosis set used in the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) and 12 could be found in the extended set of diagnoses presented by Marsden-Haug et al. 2007. Please note that both ESSENCE and Marsden-Haug et al. used more diagnoses than presented here. For example; Fever (780.6), Pain throat (784.1) and Cough (786.2). Of these three did Fever and Cough correlate significant with specimen, and they both had a positive signal-to-noise ratio, while "Pain throat" had no such positive ratio.

Marsden-Haug et al. 2007 gives the following advice for inclusion or exclusion of diagnose codes: "*we strongly emphasize that developers perform critical analysis of the individual codes collected in their data and carefully consider not only the clinical basis for code inclusion but also which diagnoses are more likely to cause background "noise" rather than contribute to the signal. Our own evaluation illustrates the importance of such a critical review, as we found that both throat pain and acute tonsillitis had more noise than signal.*" (pp 215).

TABLE 1 SDC-2. Diagnoses used in this study compared to ESSENCE and the extended set of diagnoses presented by Marsden-Haug et al.

This paper ICD-10 Main diagnosis	**ESSENCE ICD-9**	**Signal ratio**	**N Visits This study**
J00 Acute nasopharyngitis [common cold]	460	P	50
J01 Acute sinusitis	[461.9]	P	1 762
J02 Acute pharyngitis	462	P	3 362
J03 Acute tonsillitis	[463]	N	26 876
J04 Acute laryngitis and tracheitis	464.00, 464.10	N/N	358
J05 Acute obstructive laryngitis [croup] and epiglottitis	465.00	P	3 141
J06 Acute upper respiratory infections of multiple and unspecified sites	465.8 NEC, 465.9 NOS	P	44 009
J09 Influenza due to identified avian influenza virus	—	-	34
J10 Influenza due to identified influenza virus	—	-	~~2~~
J11 Influenza virus not identified	487.1, 487.8 NEC	P/P	943
J12 Viral pneumonia	487.0, 480.2, 480.8, 480.9	P/P/R1/P	34
J13 Pneumonia due to Streptococcus pneumonia	484.8	P	~~7~~
J14 Pneumonia due to Hemophilic influenza	480.2	P	~~1~~
J15 Bacterial pneumonia, not elsewhere classified	486 NOS	P	511
J20 Acute bronchitis	466.0	P	256
H65 Nonsuppurative otitis media	—	-	9 953
H66 Suppurative and unspecified otitis media	[382.00 NOS, 382.9 NOS]	P/P	28 520
H67 Otitis media in diseases classified elsewhere	—	-	~~5~~
Total N			119 824

ESSENCE: Electronic Surveillance System for the Early Notification of Community-based Epidemics as listed in Marsden-Haug et al, their Table 1.
In brackets [ICD-9] diagnosis used by Marsden-Haug et al in their extended algorithm (their Table 2)

NOS: Not otherwise specified, NEC: Not elsewhere classified

Signal ratio; P: positive signal to noise ratio R>1.1, N: negative signal to noise ratio R<0.9, R1: Neither positive or negative R 0.9-1.1