Appendix 1. Derivation and usage of mild (MHI) and severe heat illness (SHI) events.

**Heat illness variable derivation**

MHI and SHI events were defined as described below. The numbered data sources are listed in the section just following, and also see Table 1 for additional brief descriptions of these data sources.

*MHI*

 A "1" value for MHI was assigned in a person-month, if applicable, in which the following was observed:

An International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) code beginning with "992", other than "992.0" (heat stroke), was entered during an out- or inpatient clinical care event (per data sources 1-4); OR

A duty restriction was entered including free text for any heat illness type other than heat stroke (per data source 5);

AND

The subject did not experience any of the following exclusion sequelae within the same month:

Duty restrictions exceeding 60 days or permanent duty restrictions due to the heat illness (data source 5)

A hospital admission (data sources 3 or 4)

Selected clinical complications (data sources 1-4):

 Renal disorders: ICD-9-CM diagnosis codes beginning with "584" through "586"

 Leukocytosis, anemia or abnormal blood chemistry: ICD-9-CM codes "285.9,"

 "288.6," "288.8," or "790.6"

Rhabdomyolysis or myoglobinuria: ICD-9-CM codes "728.88" or "791.3"

*SHI*

A "1" value for SHI was assigned in a person-month, if applicable, in which the following was observed:

An ICD-9-CM code of "992.0" (heat stroke) was entered during an out- or inpatient clinical care event (per data sources 1-4); OR

A duty restriction was entered using free text for heat stroke (per data source 5); OR

The subject experienced an MHI as defined above, but also experienced any of the sequelae listed above as exclusion criteria for MHI.

*Data sources*

1. CAPER: Combined Ambulatory Professional Encounter Record (19)

2. TED-NI: Tricare Encounter Data, Non-Institutional (19)

3. SIDR: Standard Inpatient Data Record (19)

4. TED-I: Tricare Encounter Data, Institutional (19)

5. eProfile: electronic archive of formal duty restrictions (21)

**Heat illness variable usage**

 MHI and SHI events were identified in order to construct and employ two distinct variable types. These variable types were:

*Outcome (dependent) variables*

For pairwise comparisons with basic control factors (see Table 2 for results) and in regression analyses (see Table 3 for results), the incident (first) MHI or SHI event in each applicable subject's observed military service time was assigned a "1" value for a dedicated, dichotomous variable. The "1" value was designated in the first service month in which such an event occurred, and a "0" value was assigned in all other observed months. Months after the incident event were censored from further observation, consistent with standard time-to-event or "failure" analysis methods and the discrete-time regression approach.

*Predictor (independent) variables*

 For each regression analyses against a given, incident heat illness type as defined above, the prior appearance of the other heat illness type as so defined was provided a running "1" value after its initial appearance. This "1" value persisted until the last observation for the subject, and a "0" value was assigned in all other months. The last observation was the final observable person-month in the total dataset for those without an outcome, and the month of an outcome for those with outcomes. For example, in the analysis against incident SHI, a prior MHI would result in a "1" value in the month of the MHI. This "1" value would persist each month until the last observation for those with no SHI events or the month of an incident SHI, after the latter of which observation would cease due to the aforementioned censoring methods.