

The Importance of Coding “Aerotoxic Syndrome”

When health care professionals see patients, they attach diagnostic labels with codes to the patient’s medical record. These codes are from ICD -10 the WHO International Classification of Diseases. In the case of Aerotoxic Syndrome, a multiple-organ/CNS/brain injury caused by exposure to toxic aircraft cabin air, work still needs to be done. If a code is attached and can be looked up, physicians can help their patients. Aerotoxic Syndrome is not yet recognized as a valid diagnosis in aviation or general medicine and the industry is doing everything they can to avoid it’s recognition!

“Alice in Wonderland” has a classification code - “Aerotoxic Syndrome” not

What usually happens: *“Anne B. rushes to her doctor’s surgery following a flight on which she was exposed to toxic fumes. First, there had been a strong smell of wet dog, then it smelled like burned rubber and then a thin layer of smoke, like mist, filled the cabin. It didn’t take long and she had a throbbing headache, felt nauseous and slightly dizzy – her eyes were burning, her pulse was racing and she couldn’t think straight. She felt confused and couldn’t remember what she was supposed to do next. She knew about “fume events” and she knew about “aerotoxic syndrome”. She also knew that not everyone can be affected. All of this, she tried to explain to her doctor. “Aerotoxic Syndrome?” he asks, “never heard of it”. If you are lucky he’ll take a few minutes to look it up in the WHO disease classification code’s list, but won’t find anything. Also nothing in the list of hundreds and hundreds of “syndromes”.*

Confusion sets in when doctors can’t follow the patients’ descriptive information due to i.e. possible lack of knowledge in toxicology, but in particularly of course concerning pollution with toxic fumes in aircraft cabins. ([Info for doctors here](#)). Also, they can’t imagine toxic fumes INSIDE the cabin. They won’t find “Aerotoxic Syndrome”, so, that’s that for most doctors and the patient is sent home with perhaps a prescription for some pharmaceuticals, pain killers and most likely antibiotics. If the patient is lucky, he will take blood and “run some tests” – not necessarily the ones that would offer a clue. Here is a [list of recommended tests](#).

ICD Classification: Purpose and Uses

Users include physicians, nurses, health workers, researchers, health information managers, policy-makers, insurers and national health program managers, among others.

The ICD is the global health information standard for mortality and morbidity statistics.

ICD classification is the international standard for defining and reporting diseases and health conditions. It allows the world to compare and share health information using a

common language. The ICD defines the universe of diseases, disorders, injuries and other related health conditions.

I am using “Alice in Wonderland Syndrome” as an example, because it works well as an example for the future “Aerotoxic Syndrome”.

Certain conditions have both an underlying cause and multiple body system manifestations, and sorting out the primary diagnosis can be tricky. For such conditions, the ICD has a specific way the doctor should report the codes. Wherever such a combination exists, he should find a *“use additional code”* note with the cause or origin code and a *“code first”* note at the manifestation code. These instructional notes tell the doctor the proper order of the codes and directs them to first code the associated physical or neurological conditions, before the manifestation diagnosis.

In 2020, our example code set in ICD-10 does not contain a specific code for “Alice in Wonderland Syndrome” (AIWS). However, the index to diseases in the ICD-9 manual did list “Alice in Wonderland Syndrome”, but directed the reader to the code 293.89 which now, in the ICD-10 has changed with the note: *“ICD-9-CM 293.89 converts approximately to”*. By clicking on this „note“ one is taken to ICD-10/year 2020:

- [ICD-10-CM F06.1](#) Catatonic disorder due to known physiological condition and
- [ICD-10-CM F53](#) Mental and behavioral disorders associated with the puerperium, not elsewhere classified

AIWS includes a number of symptoms, such as “severe migraines with aura”, an “altered visual perception”, an “altered body perception”, and more.

So the doctor would also enter i.e.:

- “Migraine with aura” which gives him the code: 346.0 (*note: ICD 9, there is no new code released to date*)
- “Localization-related [focal][partial] epilepsy” and/or:
- “Temporal lobe epilepsy” leading to the code: 345.4 (*note: ICD 9, there is no new code released to date*)
- Infectious mononucleosis code 075 (*new in ICD 10*)

In our case doctors cannot enter “Aerotoxic Syndrome”, instead have to find from the start a connection to i.e. “fumes, gas, VOC, organophosphates”, and “aircraft”. Such codes have been available since at least 2015 – however, with a few exceptions, no one knew what to look for.

Up until now some doctors in Germany have been using specific symptom/manifestations and toxic substance/names known to be in aircraft connected fumes, which then offer certain codes which can make a connection to “injury by toxic fumes” in aircraft. Examples to date used are [listed here](#).

Search suggestions/description and codes:

Enter in the ICD classification search bar “injury by toxic fumes”, then on the offered page: “aircraft”. Attention: lists are often very long and seem repetitive. The following could be used:

Occupant of heavy transport vehicle injured in transport accident

<https://www.icd10data.com/search?s=Occupant%20of%20heavy%20transport%20vehicle%20injured%20in%20transport%20accid>

Event of undetermined intent

<https://www.icd10data.com/search?s=Event%20of%20undetermined%20intent>

Toxic effect of *unspecified* gases, fumes and vapors, accidental (unintentional), initial encounter

<https://www.icd10data.com/ICD10CM/Codes/S00-T88/T51-T65/T59-/T59.91XA>
2020 ICD-10-CM Diagnosis Code T59.91XA

Toxic effect of (...“substance“...) gas, accidental (unintentional) etc. (>>>long list!).

[https://www.icd10data.com/ICD10CM/Codes/S00-T88/T51-T65/T59-/T592020 ICD-10-CM Diagnosis Code T59.4X1D](https://www.icd10data.com/ICD10CM/Codes/S00-T88/T51-T65/T59-/T592020%20ICD-10-CM%20Diagnosis%20Code%20T59.4X1D) - Here is a list of **127 known substances** listed by EASA)

Other and unspecified effects of external causes T66-T78

<https://www.icd10data.com/ICD10CM/Codes/S00-T88/T66-T78/T71-/T71->

Toxic effect of *other* gases, fumes and vapors T59-... (includes aerosol propellants which are used in i.e. insecticide sprays used in onboard disinsection procedures)

<https://www.icd10data.com/ICD10CM/Codes/S00-T88/T51-T65/T59->

Toxic effects from exposure to (VOC) i.e. “benzene” = T52.1X1 (this page includes i.e. benzene, carbon monoxide, formaldehyde, pestizide/insectizides, unspecified gases, fumes & vapors undetermined, organophosphated, – etc.)

<https://www.icd10data.com/search?s=aircraft%20toxic%20effects%20fron%20exposure%20to%20VOC> =

To find the infamous organophosphate „tricresyl phosphate“

... always mentioned in connection with bleed-air fumes, you have to go to the ICD „Table of Drugs“ , scroll to the letter „T“:

https://www.icd10data.com/ICD10CM/Table_Of_Drugs/T

T = find „tricresyl phosphate“ and use from the offered codes, i.e. **T65.891: „Toxic effect of other *specified* substances, accidental“ (unintentional)**
<https://www.icd10data.com/ICD10CM/Codes/S00-T88/T51-T65/T65-#T65.891>

Since there are other toxic chemicals involved in bleed-air /oil fumes this code is also handy:

Contact with and (suspected) exposure to other hazardous, chiefly nonmedicinal, chemicals code Z77.098 <https://www.icd10data.com/ICD10CM/Codes/Z00-Z99/Z77-Z99/Z77-/Z77.098>

One of the acute /chronic symptoms aircrew experience are of respiratory nature, use :

Diagnosis Code J68.4 for „Chronic respiratory conditions due to chemicals, gases, fumes and vapors“ <https://www.icd10data.com/ICD10CM/Codes/J00-J99/J60-J70/J68-/J68.4>

Sequelae of external causes of morbidity and mortality - Injury, poisoning and certain other consequences of external causes complicating.....“.....“
<https://www.icd10data.com/search?s=Sequelae%20of%20external%20causes%20of%20morbidity%20and%20mortality>

The term [Aerotoxic Syndrome](#) was proposed 20 years ago to describe a constellation of symptoms reported by pilots and cabin crew following exposure to hydraulic fluids, engine oil, and pyrolysis products during flight. Hydraulic fluids and engine oil contain a large number of potentially toxic chemicals, including various organophosphate compounds. However, Aerotoxic Syndrome is not yet recognized as a valid diagnosis in aviation or general medicine, and the industry is doing everything they can to avoid its recognition – especially the recognition of “chronic” ill-health. Several courts have ruled “acute and accident” in the meantime. (<https://www.aerotoxicteam.com/court-cases.html>).

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**Note: Alice in Wonderland syndrome (AIWS) is a rare condition, that causes temporary episodes of distorted perception and disorientation. You may feel larger or smaller than you actually are. You may also find that the room you're in — or the surrounding furniture — seems to shift and feel further away or closer than it really is.*