

Appendix

Table 1: Diagnosis Options and Alternate Names

| Diagnosis Name | Alt Name |
|--------------------------------|-----------------|
| Acute flaccid paralysis | acute_paralysis |
| AIDS | aids |
| Anaemia | anaemia |
| Animal/snake bite | bite |
| Asthma | asthma |
| Birth asphyxia | asphyxia |
| Burns | burn |
| Cardiac arrest | cardiac |
| Cerebro-vascular events | stroke |
| Childhood mental disorders | child_mental |
| Cholera | cholera |
| Congenital malformation | cong_malform |
| Death on arrival | doa |
| Diabetes mellitus | diab_mel |
| Diarrhoea - acute | diarrh_acute |
| Diarrhoea - persistent | diarrh_chronic |
| Dysentery | dysentery |
| Epilepsy | epilepsy |
| Gastrointestinal bleeding | gi_bleed |
| Genital infections | genit_infect |
| Guinea worm | guinea |
| Hemorrhagic disease | hemorrhagic |
| Hepatitis | hepatitis |
| Injuries- Trauma other causes | inj_trauma |
| Injuries-Road traffic accident | inj_road |
| Leprosy | leprosy |
| Liver disease | liver |
| Malaria - severe | malaria_sev |
| Malaria - uncomplicated | malaria_uncomp |
| Malignancy | malignancy |
| Malnutrition - Marasmus | maln_maras |
| Malnutrition - Kwashiorkor | maln_kwash |
| Malnutrition - Marasm-kwash | maln_marak |
| Malnutrition - Underweight | maln_uweight |
| Measles | measles |
| Meningitis (meningococcal) | mening |
| Meningitis (other) | mening_other |
| Onchocerciasis | onchocerciasis |
| Peritonitis | peritonitis |
| Plague | plauge |
| Pneumonia | pneumonia |
| Prematurity | prematurity |
| Pyrexia of unknown origin | pyrexia |
| Rabies | rabies |
| Renal failure - acute | renal |
| Respiratory distress | resp |
| Respiratory infections (other) | resp_infect |
| Schistosomiasis | schisto |

| Diagnosis Name | Alt Name |
|------------------------------|---------------|
| Sepsis - acute | sepsis |
| Septicaemia | septicaemia |
| Sleeping sickness | sleeping |
| Tetanus (neonatal 0-28 days) | tetanus_nn |
| Tetanus (over 28 days) | tetanus_o28 |
| Tuberculosis - known case | tb_known |
| Tuberculosis - new case | tb_new |
| Typhoid fever | typhoid |
| Urinary tract infection | uti |
| Viral haemorrhagic fever | viral_haem |
| Yellow fever | yellow_fever |
| Missing | missing |
| Other | other |
| Diagnosis not clear | not_clear |
| Mild acute malnutrition | mild_maln |
| Mod. acute malnutrition | mod_maln |
| Sev. acute malnu. + edema | sev_maln_edem |
| Sev. acute malnu. - edema | sev_maln_oth |
| Sickle Cell Disease | sickle |

Table 2: Treatment Options and Groups

| Treatment | Treatment Group |
|-------------------------------------|-----------------|
| Albendazole: oral | albendazole |
| Amodiaquine: oral | amodiaquine |
| Amoxil: oral | amoxil |
| Ampicillin: oral | ampicillin |
| Artemether: IM | artemether |
| Artesunate: IV | artesunate |
| Artesunate: oral | artesunate |
| Artesunate: rectal | artesunate |
| Chloramphenicol: IV | chloramphenicol |
| Chloramphenicol: oral | chloramphenicol |
| Chloroquine: oral | chloroquine |
| Coartem: oral | coartem |
| Cotrimoxazole: oral | cotrimoxazole |
| Diazepam: oral | diazepam |
| Diazepam: rectal | diazepam |
| Ferrous sulphate | ferrous |
| Fluconazole: oral | fluconazole |
| Folic acid | folic |
| Gentamicin: IV | gentamicin |
| Hydrocortisone IV/IM | hydrocortisone |
| Ketaconazole: oral | ketaconazole |
| Mebendazole: oral | mebendazole |
| Multivitamins | mutivit |
| ORS | ors |
| Paracetamol | paracetamol |
| Penicillin: IV | penicillin |
| Prednisolone | prednisolone |
| Quinine: IV | quinine |
| Quinine: oral | quinine |
| Quinine: rectal | quinine |
| SP:oral | sp |
| TB drugs: RHZ | rhz |
| TB drugs: RHZS | rhzs |
| Vitamin A | vit_a |
| Zinc Sulphate | zinc |
| Other | other |
| Nalidixic acid | nalidixic |
| Artemisinin-naphthoquine | artemisinin |
| DP (Dihydroartemisinin-piperaquine) | dp |
| Ceftriaxone | ceftriaxone |
| Ampiclox | ampiclox |
| Diclofenac | diclofenac |
| Ampicillin IV | ampicillin |
| Metronidazole | metronidazole |
| No medication at admission | no_med |
| Missing | miss |

Table 3: Treatments for Selected Diagnoses

| Diagnosis Name | Treatment Group | Treatment Type |
|----------------|-----------------|----------------|
| sev_malaria | artesunate | primary |
| sev_malaria | quinine | primary |
| sev_malaria | artemether | primary |
| sev_malaria | coartem | primary |
| sev_malaria | dp | primary |
| sev_malaria | quinine | primary |
| sev_malaria | diazepam | supportive |
| sev_malaria | paracetamol | supportive |
| sev_malaria | coartem | general |
| resp_infect | chloramphenicol | primary |
| resp_infect | ampicillin | primary |
| resp_infect | gentamicin | primary |
| resp_infect | penicillin | primary |
| resp_infect | cotrimoxazole | primary |
| resp_infect | ampiclox | primary |
| resp_infect | zinc | supportive |
| resp_infect | vit_a | supportive |
| resp_infect | paracetamol | supportive |
| resp_infect | cotrimoxazole | supportive |
| anaemia | ferrous | primary |
| pneumonia | ceftriaxone | primary |
| pneumonia | chloramphenicol | primary |
| pneumonia | ampicillin | primary |
| pneumonia | gentamicin | primary |
| pneumonia | penicillin | primary |
| pneumonia | cotrimoxazole | primary |
| pneumonia | ampiclox | primary |
| pneumonia | zinc | supportive |
| pneumonia | vit_a | supportive |
| pneumonia | paracetamol | supportive |
| pneumonia | cotrimoxazole | supportive |
| diarrh_acute | ors | primary |
| diarrh_acute | zinc | primary |
| diarrh_acute | vit_a | primary |
| malaria_uncomp | artemether | primary |
| malaria_uncomp | coartem | primary |
| malaria_uncomp | artesunate | primary |
| malaria_uncomp | paracetamol | supportive |
| malaria_uncomp | quinine | general |
| septicaemia | ceftriaxone | primary |
| septicaemia | chloramphenicol | primary |
| septicaemia | ampicillin | primary |
| septicaemia | gentamicin | primary |
| septicaemia | penicillin | primary |
| septicaemia | ampiclox | primary |
| pyrexia | chloramphenicol | primary |
| pyrexia | ampicillin | primary |
| pyrexia | gentamicin | primary |
| pyrexia | penicillin | primary |
| pyrexia | ampiclox | primary |

| Diagnosis Name | Treatment Group | Treatment Type |
|----------------|-----------------|----------------|
| sickle | paracetamol | primary |
| sickle | diclofenac | primary |
| sev_maln_edem | ceftriaxone | primary |
| sev_maln_edem | chloramphenicol | primary |
| sev_maln_edem | ampicillin | primary |
| sev_maln_edem | gentamicin | primary |
| sev_maln_edem | penicillin | primary |
| sev_maln_edem | ampiclox | primary |
| sev_maln_edem | vit_a | supportive |
| sev_maln_oth | ceftriaxone | primary |
| sev_maln_oth | chloramphenicol | primary |
| sev_maln_oth | ampicillin | primary |
| sev_maln_oth | gentamicin | primary |
| sev_maln_oth | penicillin | primary |
| sev_maln_oth | ampiclox | primary |
| sev_maln_oth | vit_a | supportive |
| measles | ceftriaxone | primary |
| measles | chloramphenicol | primary |
| measles | ampicillin | primary |
| measles | gentamicin | primary |
| measles | penicillin | primary |
| measles | ampiclox | primary |
| measles | vit_a | supportive |
| mening_other | ceftriaxone | primary |
| mening_other | chloramphenicol | primary |
| mening_other | ampicillin | primary |
| mening_other | gentamicin | primary |
| mening_other | penicillin | primary |
| mening_other | chloramphenicol | primary |
| mening_other | ampiclox | primary |
| uti | ampicillin | primary |
| uti | gentamicin | primary |
| uti | amoxil | primary |
| diarrh_chronic | ampicillin | primary |
| diarrh_chronic | gentamicin | primary |
| diarrh_chronic | ors | primary |
| diarrh_chronic | zinc | primary |
| diarrh_chronic | vit_a | primary |
| maln_marak | ceftriaxone | primary |
| maln_marak | chloramphenicol | primary |
| maln_marak | ampicillin | primary |
| maln_marak | gentamicin | primary |
| maln_marak | penicillin | primary |
| maln_marak | ampiclox | primary |
| maln_marak | vit_a | supportive |
| maln_kwash | ceftriaxone | primary |
| maln_kwash | chloramphenicol | primary |
| maln_kwash | ampicillin | primary |
| maln_kwash | gentamicin | primary |
| maln_kwash | penicillin | primary |
| maln_kwash | ampiclox | primary |
| maln_kwash | vit_a | supportive |

| Diagnosis Name | Treatment Group | Treatment Type |
|----------------|-----------------|----------------|
| mod_maln | ceftriaxone | primary |
| mod_maln | chloramphenicol | primary |
| mod_maln | ampicillin | primary |
| mod_maln | gentamicin | primary |
| mod_maln | penicillin | primary |
| mod_maln | ampiclox | primary |
| mod_maln | vit_a | supportive |
| dysentery | nalidixic | primary |

Table 4: Mean Hosmer-Lemeshow Statistic (mean p-value) by admission and model type

| Method | Admit Only Mean Stat (mean p-val) | All Variables Mean Stat (mean p-val) |
|--------------|-----------------------------------|--------------------------------------|
| CI Tree | 4213.86 (0) | 4231.72 (0) |
| Dec. Tree | 6744.89 (0) | 6746.68 (0) |
| Grad. Boost | 128.78 (0) | 112.9 (0) |
| Logistic | 4076.2 (0) | 73202.53 (0) |
| Rand. Forest | 139.28 (0) | 158.09 (0) |

Table 5: Accuracy by admission and model type

| Method | Cutoff | Accuracy Admit Only | Accuracy All Variables |
|--------------|--------|---------------------|------------------------|
| CI Tree | 0.1 | 0.03 (0.03 - 0.03) | 0.16 (0.15 - 0.17) |
| CI Tree | 0.2 | 0.48 (0.03 - 0.53) | 0.16 (0.15 - 0.17) |
| CI Tree | 0.3 | 0.53 (0.51 - 0.54) | 0.19 (0.15 - 0.51) |
| CI Tree | 0.4 | 0.83 (0.82 - 0.84) | 0.82 (0.82 - 0.87) |
| CI Tree | 0.5 | 0.83 (0.82 - 0.84) | 0.82 (0.82 - 0.87) |
| CI Tree | 0.75 | 0.95 (0.94 - 0.96) | 0.96 (0.95 - 0.97) |
| CI Tree | 0.9 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |
| Dec. Tree | 0.1 | 0.03 (0.03 - 0.03) | 0.16 (0.15 - 0.17) |
| Dec. Tree | 0.2 | 0.03 (0.03 - 0.03) | 0.17 (0.15 - 0.21) |
| Dec. Tree | 0.3 | 0.5 (0.47 - 0.53) | 0.22 (0.15 - 0.55) |
| Dec. Tree | 0.4 | 0.58 (0.48 - 0.74) | 0.62 (0.54 - 0.7) |
| Dec. Tree | 0.5 | 0.73 (0.64 - 0.78) | 0.65 (0.56 - 0.74) |
| Dec. Tree | 0.75 | 0.88 (0.87 - 0.93) | 0.92 (0.87 - 0.97) |
| Dec. Tree | 0.9 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |
| Grad. Boost | 0.1 | 0.93 (0.92 - 0.93) | 0.93 (0.93 - 0.94) |
| Grad. Boost | 0.2 | 0.96 (0.95 - 0.96) | 0.96 (0.95 - 0.96) |
| Grad. Boost | 0.3 | 0.96 (0.96 - 0.97) | 0.96 (0.96 - 0.97) |
| Grad. Boost | 0.4 | 0.97 (0.96 - 0.97) | 0.97 (0.97 - 0.97) |
| Grad. Boost | 0.5 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |
| Grad. Boost | 0.75 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |
| Grad. Boost | 0.9 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |
| Logistic | 0.1 | 0.28 (0.27 - 0.3) | 0.58 (0.57 - 0.59) |
| Logistic | 0.2 | 0.53 (0.52 - 0.54) | 0.75 (0.74 - 0.75) |
| Logistic | 0.3 | 0.69 (0.68 - 0.7) | 0.83 (0.82 - 0.84) |
| Logistic | 0.4 | 0.78 (0.77 - 0.79) | 0.88 (0.88 - 0.89) |
| Logistic | 0.5 | 0.84 (0.84 - 0.85) | 0.92 (0.91 - 0.92) |
| Logistic | 0.75 | 0.94 (0.93 - 0.94) | 0.96 (0.95 - 0.96) |
| Logistic | 0.9 | 0.96 (0.96 - 0.97) | 0.97 (0.97 - 0.97) |
| Rand. Forest | 0.1 | 0.83 (0.82 - 0.84) | 0.82 (0.81 - 0.83) |
| Rand. Forest | 0.2 | 0.93 (0.92 - 0.94) | 0.93 (0.92 - 0.93) |
| Rand. Forest | 0.3 | 0.96 (0.96 - 0.96) | 0.95 (0.95 - 0.96) |
| Rand. Forest | 0.4 | 0.97 (0.96 - 0.97) | 0.96 (0.96 - 0.97) |
| Rand. Forest | 0.5 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |
| Rand. Forest | 0.75 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |
| Rand. Forest | 0.9 | 0.97 (0.97 - 0.97) | 0.97 (0.97 - 0.97) |