

## Appendix A. Parameter estimation

**Table A1.** Hyperparameters used in the default model for variable selection. If a hyperparameter is not given, the default is used.

<b>Model</b>	<b>Parameter</b>	<b>Value</b>
<b>Logistic regression</b>	max_iter	5000
	penalty	None
<b>Random Forest</b>	max_depth	10
	n_estimators	200
	min_samples_leaf	20
<b>XGBoost</b>	eta	0.1
	gamma	0.1
	min_child_weight	7
	n_estimators	200
	colsample_bytree	0.8
	max_depth	5
	reg_alpha	1
	subsample	0.9

**Table A2.** Grid search parameters per algorithm. If a hyperparameter is not given, the default is used. The selected values are shown per algorithm and per dataset (in order from dataset 1 to 6). All searched values are additionally given.

<b>Model</b>	<b>Parameters</b>		<b>Selected values for six datasets</b>	<b>Searched values</b>
<b>Logistic regression</b>	<b>penalty = elasticnet</b>	<b>C</b>	0.01, 0.01, 0.1, 0.1, 0.1, 0.01	0.01, 0.1, 1, 10, 100
		<b>l1_ratio</b>	0.2, 0, 0, 0, 0, 0	0, 0.2, 0.4, 0.6, 0.8, 1
		<b>max_iter</b>	5000	5000
		<b>solver</b>	saga	saga
	<b>penalty = None</b>	<b>solver</b>	-, -, -, -, -	lbfgs, saga
		<b>max_iter</b>	-	5000
<b>Random Forest</b>	<b>max_depth</b>		3, 20, 20, 20, none, 20	3, 5, 7, 10, 20, None
	<b>max_features</b>		auto, auto, auto, auto, auto, auto	auto, sqrt
	<b>min_samples_leaf</b>		8, 4, 4, 8, 8, 8	1, 2, 4, 8
	<b>min_samples_split</b>		2, 5, 10, 5, 5, 2	2, 5, 10
	<b>n_estimators</b>		1000, 2000, 2000, 1000, 1000, 600	200, 600, 1000, 2000
<b>XGBoost</b>	<b>eta</b>		0.2, 0.1, 0.1, 0.1, 0.1, 0.1	0.01, 0.1, 0.2
	<b>max_depth</b>		5, 3, 3, 3, 3, 3	3, 5, 8
	<b>min_child_weight</b>		7, 9, 5, 9, 9, 9	5, 7, 9
	<b>gamma</b>		0, 0.2, 0.1, 0.1, 0.2, 0.2	0, 0.1, 0.2
	<b>reg_alpha</b>		1e-05, 0.1, 1e-05, 0.1, 0.1, 0.1	1e-05, 0.1
	<b>subsample</b>		0.9	0.9
	<b>colsample_bytree</b>		0.8	0.8
	<b>n_estimators</b>		300	300

**Table A3.** Selected variables per model in order for the extended non-sequential dataset and the complete dataset using logistic regression. For the complete dataset, trends are included, which consist of multiple codes which co-occur ('together with') or occur after each other ('followed by'). Furthermore, lab values in trends can be 'low', 'high' or 'normal', indicating an in- or decrease with respect to the last measurement (not the absolute value).

<b>Included at step</b>	<b>Extended non-sequential dataset</b>	<b>Complete dataset</b>
<b>#1</b>	Age	Age
<b>#2</b>	Antithrombotic agents	Antithrombotic agents
<b>#3</b>	Drugs for obstructive airway diseases	Drugs for obstructive airway diseases
<b>#4</b>	Diuretics	Diuretics
<b>#5</b>	Chronic atrialfibrillation	Chronic atrialfibrillation
<b>#6</b>	Chronic diabetes mellitus	Chronic diabetes mellitus
<b>#7</b>	Chronic non-rheumatic valve disease	Chronic non-rheumatic valve disease
<b>#8</b>	Beta blocking agents	Low albumine urine
<b>#9</b>	Chronic COPD	Beta blocking agents
<b>#10</b>	Tested triglycerides	Chronic COPD
<b>#11</b>	Chronic dyspnea	Chronic dyspnea
<b>#12</b>	RAAS drugs	RAAS drugs
<b>#13</b>	Cardiac therapy drugs	Cardiac therapy drugs
<b>#14</b>	Chronic gout	Sufficient physical exercise
<b>#15</b>	Tested BNP	Chronic other diseases urinary tract
<b>#16</b>	Chronic other disease peripheral arteries	GP visit 2-3 month
<b>#17</b>	GP visit 2-3 month	Gender
<b>#18</b>	Chronic myocardial infarct	Tested BNP
<b>#19</b>	Chronic other diseases urinary tract	Chronic other disease peripheral arteries
<b>#20</b>	Gender	Chronic senile dementia
<b>#21</b>	Chronic senile dementia	Chronic (diabetes) ulcer
<b>#22</b>	Chronic (diabetes) ulcer	RAAS drugs followed by normal diastolic BP followed by normal systolic BP
<b>#23</b>	Tested ferritine	High LDL cholesterol
<b>#24</b>	Made follow up appointment for smoking	High weight
<b>#25</b>	Multivitamins	Chronic myocardial infarct
<b>#26</b>	Ankle oedema	Tested ferritine
<b>#27</b>	Lipid modifying agents	Lipid modifying agents
<b>#28</b>	Advice given to stop smoking	Normal cholesterol followed by normal diastolic BP
<b>#29</b>	Mineral supplements	Antibacterials for systemic use followed by eGFR

<b>#30</b>	Chronic hypertension	Calcium channel blockers followed by diabetic mellitus
<b>#31</b>	Tested diastolic BP	Made follow up appointment for smoking
<b>#32</b>	Chronic gonartrosis	Multivitamins
<b>#33</b>	Pneumonia	Mineral supplements
<b>#34</b>	Chronic anemia	Advice given to stop smoking
<b>#35</b>	Tested vitamine B12	Chronic gout
<b>#36</b>	Tested albumine blood	High systolic BP followed by normal diastolic BP
<b>#37</b>	Tested amount of dyspnea	High systolic BP followed by low diastolic BP together with low systolic BP
<b>#38</b>	Fatigue	Drugs for obstructive airway diseases together with COPD
<b>#39</b>	Chronic arthrosis	Low sodium
<b>#40</b>	Chronic peripheral neuropatie	RAAS drugs followed by low albumin / creatinine ratio
<b>#41</b>	Chronic overall decline	Diuretics together with beta blocking agents
<b>#42</b>	Complaints foot or leg	Diuretics together with chronic hypertension
<b>#43</b>	Tested diabetic retinopathy left eye	Antithrombotic agents together with beta blocking agents together with lipid modifying agents
<b>#44</b>	Asked claudicatio complaints	Low potassium
<b>#45</b>	Tested glucose with timestamp	RAAS drugs followed by normal systolic BP followed by low diastolic BP
<b>#46</b>	Drugs for functional gastrointestinal disorders	Ankle oedema
<b>#47</b>	Asked seksual disorder	Tested vitamine B12
<b>#48</b>	Chronic ischemic heart disease	Low diastolic BP together with essential hypertension
<b>#49</b>	Back complaints	Calcium channel blockers followed by high systolic BP
<b>#50</b>	Analgesics	Chronic anemia
<b>#51</b>	Tested glycohemoglobin	Tested amount of dyspnea
<b>#52</b>	GP visit 1-2 month	Chronic gonartrosis
<b>#53</b>	Tested aspartateaminotransferasis	RAAS drugs followed by lipid modifying agents
<b>#54</b>	Nasal preparations	Beta blocking agents followed by normal diastolic BP together with normal systolic BP
<b>#55</b>	Upper airway infection	Antithrombotic agents followed by normal LDL cholesterol
<b>#56</b>	Fat metabolism disorder	Tested aspartateaminotransferasis
<b>#57</b>	Chronic constitutional eczema	Normal systolic BP together with regular pulse rhythm
<b>#58</b>	Tested weight at QI = 25	Antithrombotic agents followed by normal creatinine followed by normal systolic BP
<b>#59</b>	Chronic other skin diseases	Tested albumine blood
<b>#60</b>	Written down particularities diet	Normal height patient followed by normal weight patient
<b>#61</b>	Tested risk footulcer	Tested diabetic retinopathy left eye
<b>#62</b>	Chronic presbyacusic	Drugs for functional gastrointestinal disorders

<b>#63</b>	Asked for side-effects medication diabetes	RAAS drugs followed by normal HDL cholesterol
<b>#64</b>	Chronic genetic diseases extremities	RAAS drugs followed by low systolic BP followed by normal systolic BP
<b>#65</b>	Chronic reumatoid atrisis	Diuretics followed by normal systolic BP
<b>#66</b>	Contact emphysema	Diuretics followed by normal creatinine
<b>#67</b>	Asked about alcohol usage	High height patient followed by normal weight patient
<b>#68</b>	Amputation right foot	Antithrombotic agents followed by normal systolic BP followed by normal BMI
<b>#69</b>	Ulcers left foot	Normal glycohemoglobin followed by normal BMI
<b>#70</b>	Amputation left foot	Fatigue
<b>#71</b>	Tested monofilaments right foot	Asked the amount of physical exercise
<b>#72</b>	Tested HDL cholesterol	Lipid modifying agents followed by low glucose
<b>#73</b>	Chronic iron deficiency anemia	Antithrombotic agents followed by drugs for constipation
<b>#74</b>	Lower back pain	Chronic ischemic heart disease
<b>#75</b>	Tested blood sediment	Asked for sexual disorders
<b>#76</b>	Malignancy skin	Drugs for acid related disorders together with calcium channel blockers
<b>#77</b>	Given advice weightreduction	Lipid modifying agents followed by normal systolic BP followed by normal diastolic BP
<b>#78</b>	Tested monofilaments left foot	Lipid modifying agents followed by normal weight patient followed by normal BMI
<b>#79</b>	Control visit DM type 2	Analgesics
<b>#80</b>	Chronic cataract	Normal diastolic BP together with normal systolic BP followed by normal diastolic BP
<b>#81</b>	Chronic seborroic eczema	High potassium together with normal creatinine
<b>#82</b>	Angina pectoris (comorbidity)	Complaints foot or leg
<b>#83</b>	Asked for chest pain	Normal cholesterol together with normal creatinine
<b>#84</b>	Thyroid therapy	Normal cholesterol followed by normal weight patient
<b>#85</b>	Tested ureaDrugs do	Beta blocking agents followed by high diastolic BP
<b>#86</b>	Tested red blood cell distribution width	Antithrombotic agents followed by low BMI
<b>#87</b>	Angina pectoris	GP visit 1-2 month
<b>#88</b>		Low BMI followed by diabetes mellitus
<b>#89</b>		Normal systolic BP together with diabetes mellitus
<b>#90</b>		Normal systolic BP followed by normal systolic BP together with diabetes mellitus
<b>#91</b>		Asked for claudicatio complaints
<b>#92</b>		Low albumin urine together with low albumin / creatinine ratio urine
<b>#93</b>		Drugs for acid related disorders followed by diabetes mellitus followed by diabetes mellitus
<b>#94</b>		Chronic arthrosis
<b>#95</b>		Antithrombotic agents followed by drugs for acid related disorders

<b>#96</b>	Normal weight patient followed by normal height patient
<b>#97</b>	Drugs for acid related disorders together with chronic diabetes mellitus followed by diabetes mellitus
<b>#98</b>	Antithrombotic agents followed by normal systolic BP followed by diabetes mellitus
<b>#99</b>	Low systolic BP followed by low diastolic BP
<b>#100</b>	Low systolic BP followed by low systolic BP