

ISO 27799:2016-07 (E)

Health informatics - Information security management in health using ISO/IEC 27002

Contents		Page
Foreword		vii
Introduction		viii
1	Scope	1
2	Normative references	2
3	Terms and definitions	2
4	Structure of this International Standard	3
5	Information security policies	4
5.1	Management direction for information security	4
5.1.1	Policies for information security	4
5.1.2	Review of the policies for information security	5
6	Organization of information security	6
6.1	Internal organization	6
6.1.1	Information security roles and responsibilities	6
6.1.2	Segregation of duties	7
6.1.3	Contact with authorities	7
6.1.4	Contact with special interest groups	7
6.1.5	Information security in project management	8
6.2	Mobile devices and teleworking	8
6.2.1	Mobile device policy	8
6.2.2	Teleworking	9
7	Human resource security	9
7.1	Prior to employment	9
7.1.1	Screening	9
7.1.2	Terms and conditions of employment	10
7.2	During employment	11
7.2.1	Management responsibilities	11
7.2.2	Information security awareness, education and training	11
7.2.3	Disciplinary process	11
7.3	Termination and change of employment	12
7.3.1	Termination or change of employment responsibilities	12
8	Asset management	12
8.1	Responsibility for assets	12
8.1.1	Inventory of assets	12
8.1.2	Ownership of assets	13
8.1.3	Acceptable use of assets	13
8.1.4	Return of assets	13
8.2	Information classification	14
8.2.1	Classification of information	14
8.2.2	Labelling of information	15
8.2.3	Handling of assets	15
8.3	Media handling	16
8.3.1	Management of removable media	16
8.3.2	Disposal of media	16

8.3.3	Physical media transfer	17
9	Access control	17
9.1	Business requirements of access control	17
9.1.1	Access control policy	17
9.1.2	Access to networks and network services	18
9.2	User access management	18
9.2.1	User registration and de-registration	18
9.2.2	User access provisioning	19
9.2.3	Management of privileged access rights	19
9.2.4	Management of secret authentication information of users	20
9.2.5	Review of user access rights	20
9.2.6	Removal or adjustment of access rights	21
9.3	User responsibilities	21
9.3.1	Use of secret authentication information	21
9.4	System and application access control	22
9.4.1	Information access restriction	22
9.4.2	Secure log-on procedures	22
9.4.3	Password management system	22
9.4.4	Use of privileged utility programs	23
9.4.5	Access control to program source code	23
10	Cryptography	23
10.1	Cryptographic controls	23
10.1.1	Policy on the use of cryptographic controls	23
10.1.2	Key management	24
11	Physical and environmental security	24
11.1	Secure areas	24
11.1.1	Physical security perimeter	24
11.1.2	Physical entry controls	25
11.1.3	Securing offices, rooms and facilities	25
11.1.4	Protecting against external and environmental threats	25
11.1.5	Working in secure areas	25
11.1.6	Delivery and loading areas	25
11.2	Equipment	26
11.2.1	Equipment siting and protection	26
11.2.2	Supporting utilities	26
11.2.3	Cabling security	27
11.2.4	Equipment maintenance	27
11.2.5	Removal of assets	27
11.2.6	Security of equipment and assets off-premises	27
11.2.7	Secure disposal or reuse of equipment	28
11.2.8	Unattended user equipment	28
11.2.9	Clear desk and clear screen policy	28
12	Operations security	29
12.1	Operational procedures and responsibilities	29
12.1.1	Documented operating procedures	29
12.1.2	Change management	29
12.1.3	Capacity management	30
12.1.4	Separation of development, testing and operational environments	30
12.2	Protection from malware	30
12.2.1	Controls against malware	30
12.3	Backup	31
12.3.1	Information backup	31
12.4	Logging and monitoring	31
12.4.1	Event logging	31
12.4.2	Protection of log information	32
12.4.3	Administrator and operator logs	33
12.4.4	Clock synchronisation	34

12.5	Control of operational software	34
12.5.1	Installation of software on operational systems	34
12.6	Technical vulnerability management	34
12.6.1	Management of technical vulnerabilities	34
12.6.2	Restrictions on software installation	35
12.7	Information systems audit considerations	35
12.7.1	Information systems audit controls	35
13	Communications security	35
13.1	Network security management	35
13.1.1	Network controls	35
13.1.2	Security of network services	36
13.1.3	Segregation in networks	36
13.2	Information transfer	36
13.2.1	Information transfer policies and procedures	36
13.2.2	Agreements on information transfer	37
13.2.3	Electronic messaging	37
13.2.4	Confidentiality or non-disclosure agreements	38
14	System acquisition, development and maintenance	38
14.1	Security requirements of information systems	38
14.1.1	Information security requirements analysis and specification	38
14.1.2	Securing application services on public networks	40
14.1.3	Protecting application services transactions	40
14.2	Security in development and support processes	40
14.2.1	Secure development policy	40
14.2.2	System change control procedures	41
14.2.3	Technical review of applications after operating platform changes	41
14.2.4	Restrictions on changes to software packages	41
14.2.5	Secure system engineering principles	42
14.2.6	Secure development environment	42
14.2.7	Outsourced development	42
14.2.8	System security testing	42
14.2.9	System acceptance testing	43
14.3	Test data	43
14.3.1	Protection of test data	43
15	Supplier relationships	43
15.1	Information security in supplier relationships	43
15.1.1	Information security policy for supplier relationships	43
15.1.2	Addressing security within supplier agreements	44
15.1.3	Information and communication technology supply chain	44
15.2	Supplier service delivery management	44
15.2.1	Monitoring and review of supplier services	45
15.2.2	Managing changes to supplier services	45
16	Information security incident management	45
16.1	Management of information security incidents and improvements	45
16.1.1	Responsibilities and procedures	45
16.1.2	Reporting information security events	45
16.1.3	Reporting information security weaknesses	46
16.1.4	Assessment of and decision on information security events	47
16.1.5	Response to information security incidents	47
16.1.6	Learning from information security incidents	47
16.1.7	Collection of evidence	47
17	Information security aspects of business continuity management	48
17.1	Information security continuity	48
17.1.1	Planning information security continuity	48
17.1.2	Implementing information security continuity	49
17.1.3	Verify, review and evaluate information security continuity	49
17.2	Redundancies	49

17.2.1	Availability of information processing facilities	49
18	Compliance	50
18.1	Compliance with legal and contractual requirements	50
18.1.1	Identification of applicable legislation and contractual requirements	50
18.1.2	Intellectual property rights	50
18.1.3	Protection of records	50
18.1.4	Privacy and protection of personally identifiable information	51
18.1.5	Regulation of cryptographic controls	52
18.2	Information security reviews	52
18.2.1	Independent review of information security	52
18.2.2	Compliance with security policies and standards	52
18.2.3	Technical compliance review	53
Annex A (informative) Threats to health information security		54
Annex B (informative) Practical action plan for implementing ISO/IEC 27002 in healthcare		59
Bibliography		98