

Practical Clinical Oncology

Practical Clinical Oncology has been designed as a hands-on review of all aspects of current practice in clinical oncology. The introductory section to the book provides background information on the four main treatment modalities – radiotherapy, chemotherapy, hormone therapy and biological therapy – plus research, oncological emergencies and palliative care. Subsequent chapters describe the diagnosis and treatment of malignancies, based on tumour site or type. Each chapter follows a standard template, making it easier for the readers to locate information quickly; multiple choice questions are also provided to enable readers to test their knowledge.

With an emphasis on practical information that will be useful in day-to-day decision making and treatment, *Practical Clinical Oncology* is an invaluable resource on clinical care of the cancer patient for all trainees in clinical oncology, medical oncology, surgical oncology and palliative care, as well as for specialist nurses and radiographers.

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Edited by Louise Hanna, Tom Crosby and Fergus Macbeth
Frontmatter
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PREFACE

This book is intended primarily for trainees in clinical oncology, but members of other professions such as medical oncology, surgery, palliative care, nursing and radiography will also find it useful. The book started life as a set of lecture notes from the Cardiff Annual FRCR Part II course but has since grown to include more topics than could possibly be covered during the three days of that course. Our approach in producing this volume has been to focus on practical suggestions appropriate to day-to-day decision making during the treatment of oncology patients. We are very grateful to our colleagues from Velindre and elsewhere, who are listed on page xi, for reviewing specific chapters and ensuring that the advice contained within is as widely applicable as possible.

The first seven chapters cover 'generic' topics that provide background information on cancer treatments. These are chemotherapy, biological and hormonal treatments, radiotherapy planning, research, emergencies and palliative care. The chapters that follow each focus on a tumour site or tumour type. In this latter group, the chapter layout is fairly consistent to help the reader navigate through the book. Thus, each chapter begins with background information on tumour types, anatomy, incidence, epidemiology, risk factors and

aetiology. Next, there are sections on pathology, routes of spread and, where appropriate, screening. These are followed by clinical sections on presentation, investigations, treatment, and prognosis. Most of the chapters also discuss areas of current interest and clinical trials, reflecting the rapidly changing nature of clinical oncology where many areas of practice are open to debate. Where references are given, we have tried as much as possible to include the key publications that have influenced clinical practice. Towards the end of the book, there is a series of 'single best answer' multiple choice questions, which give the readers the opportunity to test their knowledge.

In a book of this length, it is not possible to provide as much of the subject as would be found, for example, in the larger multivolume oncology textbooks. Nevertheless, an attempt has been made to give an overview of clinical oncology practice at the present time, which we hope will be of interest and benefit to trainees.

The idea for writing this book came about several years ago when two of the editors (TC and LH) were studying for their FRCR part II examination. They have since become consultants in Velindre Hospital with FM and all three now teach on the Cardiff Annual FRCR part II course.

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And, finally, we acknowledge our respective families for their enduring love and support during the preparation of this book.

ABBREVIATIONS

General

1D	one-dimensional	ALMANAC	Axillary Lymphatic Mapping Against Nodal Axillary Clearance
2D	two-dimensional	ALND	axillary lymph node dissection
3D	three-dimensional	AMES	age, metastases, extent, size
5AC	MUC subtypes A and C	AML	acute myelocytic leukaemia
5-FU	5-fluorouracil	ANC	axillary nodal clearance
5-HIAA	5-hydroxy-indoleacetic acid	APBI	accelerated partial breast irradiation
5-HT3	5-hydroxy-tryptamine 3	AP	abdominoperineal
5YDFS	5-year disease-free survival	A-P	anterior-posterior
5YOS	5-year overall survival	AP-1	activator protein-1
5YS	5-year survival	ApC	antigen-presenting cell
α FP	alpha feto-protein	APC	adenomatosis polyposis coli
β hCG	beta human chorionic gonadotrophin	APR	abdominoperineal resection
AAPM	American Association of Physicists in Medicine	APUD	amine precursor uptake and decarboxylation
ABCSCG	Austrian Breast and Colorectal Cancer Study Group	AR	androgen receptor
ABL	Abelson protein tyrosine kinase	ARE	androgen response elements
ACE	anticholinesterase	ARNO	arimidex-nolvadex
ACh	acetylcholine	ARSAC	Administration of Radioactive Substances Advisory Committee
ACOSOG	American College of Surgeons Oncology Group	ASCO	American Society of Clinical Oncology
ACTH	Adrenocorticotrophic hormone	ASCT	autologous stem cell transplant
ACTION	Adjuvant Chemotherapy in Ovarian Neoplasm	ASH	American Society of Hematology
ADH	antidiuretic hormone	ASTEC	A Study in Endometrial Cancer
ADT	androgen deprivation therapy	ASTRO	American Society for Therapeutic Radiology and Oncology
AF	activating function	ATAC	Arimidex, Tamoxifen, Alone or in Combination
AGES	age, grade, extent, size	ATD	amino-terminal domain
AHT	adjuvant hormone therapy	ATLAS	Adjuvant Tamoxifen Longer Against Shorter
AI	aromatase inhibitor	ATP	adenosine triphosphate
AIDS	acquired immune deficiency syndrome	aTTom	adjuvant Tamoxifen – Treatment offer more
AIM HIGH	Adjuvant Interferon in Melanoma HIGH risk	AUC	area under curve
AJCC	American Joint Committee on Cancer	b.d.	twice a day
AKT	thymoma viral proto-oncogene	BC	British Columbia
ALL	acute lymphoblastic leukaemia	BCG	Bacille Calmette-Guérin
ALM	acral lentiginous melanoma	BCL2	B-cell CLL/lymphoma 2
		BCR	breakpoint cluster region

Abbreviations

BCT	breast conservation therapy	COG	Children's Oncology Group of North America
BGND	bilateral groin node dissection	COMS	Collaborative Ocular Melanoma Study
BIG	Breast International Group	CONSORT	Consolidated Standards of Reporting Trials
BILCAP	adjuvant capecitabine in biliary tract cancer trial	COPD	chronic obstructive pulmonary disease
BIR	British Institute of Radiology	CR	complete response
BMD	bone mineral density	CRC	colorectal cancer
BMI	body mass index	CrCl	creatinine clearance
BMT	bone marrow transplant	Creat	serum creatinine
BNLI	British National Lymphoma Investigation	CRM	circumferential resection margin
BOND	Bowel Oncology with Cetuximab Antibody	CRP	c-reactive protein
BP	blood pressure	CRT	chemoradiotherapy
BRAF	v-raf murine sarcoma viral oncogene homolog B1	CRUK	Cancer Research UK
BRCA	breast cancer gene	CSF	cerebrospinal fluid
BSA	body surface area	CSI	craniospinal irradiation
BSC	best supportive care	CT	computed tomography
BSO	bilateral salpingo-oophorectomy	CTA	clinical trials authorisation
BTOG	British Thoracic Oncology Group	CTV	clinical target volume
BTS	British Thoracic Society	CTZ	chemoreceptor trigger zone
CA	cancer antigen	CUP	cancer of unknown primary
CagA	cytotoxicity-associated immunodominant antigen	CVP	central venous pressure
CAIX	carbonic anhydrase IX	CX	characteristic X-ray photon
CALGB	Cancer and Leukaemia Group B	CXR	chest X-ray
Cb	carboplatin	CYP1B1	cytochrome P450, family 1, subfamily B, polypeptide 1
CCLG	Children's Cancer and Leukaemia Group	D	docetaxel
CD	cluster of differentiation	D2	dopamine D2
CDH-1	cadherin 1	DAHANCA	Danish Head and Neck Cancer
CE	conversion electron	DCC	deleted in colon cancer
CEA	carcino-embryonic antigen	DCIS	ductal carcinoma <i>in situ</i>
CgA	chromogranin A	DDFS	distant-disease-free survival
CHART	continuous hyperfractionated accelerated radiotherapy	DDT	dichloro-diphenyl-trichloroethane
CHF	congestive heart failure	DES	diethylstilboestrol
CI	confidence interval	DFS	disease-free survival
CIN	cervical intraepithelial neoplasia	DHA	dihydroxyandrostenedione
CIS	carcinoma <i>in situ</i>	DHT	5 α dihydrotestosterone
CK	cytokeratin	DLBCL	diffuse large B-cell lymphoma
CLA	common leukocyte antigen	d _{max}	depth of maximum dose
CLCG	Children's Leukaemia Cooperative Group	DMC	Data Monitoring Committee
CLL	chronic lymphocytic leukaemia	DMSA	dimercapto succinic acid
CML	chronic myelocytic leukaemia	DMSO	dimethyl sulfoxide
cN	clinical lymph node stage	DNA	deoxyribonucleic acid
CNS	central nervous system	DOPA	dihydroxyphenylalanine
		DRE	digital rectal examination
		DRR	digitally reconstructed radiograph
		DTC	differentiated thyroid cancer
		DTIC	dacarbazine
		DVH	dose volume histogram

Abbreviations

EAU	European Association of Urology	EUS	endoscopic ultrasound
EBC	early breast cancer	EWS	EWSR1; official name = Ewing sarcoma breakpoint region 1
EBCTCG	Early Breast Cancer Trialists' Collaborative Group	FA	folinic acid
EBRT	external beam radiotherapy	FAP	familial adenomatous polyposis
EBV	Epstein Barr virus	FBC	full blood count
ECG	electrocardiogram	FDA	Food and Drug Administration
Echo	echocardiogram	FDG	fluorodeoxyglucose
ECOG	Eastern Cooperative Oncology Group	FIGO	Federation Internationale de Gynecologie et d'Obstetrique
EDTA	ethylenediaminetetraacetic acid	FinHer	Finland Herceptin Trial
EGF	epidermal growth factor	FISH	fluorescent <i>in situ</i> hybridisation
EGFR	epidermal growth factor receptor	FL	follicular lymphoma
EIC	extensive intraductal component	FLI1	Friend leukemia virus integration 1
ELISA	enzyme-linked immunosorbent assay	FLIPI	Follicular Lymphoma International Prognostic Index
ELND	elective lymph node dissection	FLT3	fms-related tyrosine kinase 3
EM	electron microscopy	fms	peptide deformylase
EMA	epithelial membrane antigen	FNA	fine needle aspiration
ENET	European Neuroendocrine Tumor Network	FNAC	fine needle aspiration cytology
ENT	ear nose throat	FOB	faecal occult blood
EORTC	European Organisation for Research and Treatment of Cancer	FRCR	Fellow of the Royal College of Radiologists
EPO	erythropoietin	FSD	focus skin distance
EPP	extrapleural pneumonectomy	FSH	follicle-stimulating hormone
ER	oestrogen receptor	FT4	free T4
ERB B1	official symbol = EGFR; official name = epidermal growth factor receptor (erythroblastic leukemia viral (v-erb-b) oncogene homolog, avian)	FTC	follicular thyroid carcinoma
ERBB2	(alias = HER-2); official symbol = ERBB2; official name = v-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)	GANT	gastrointestinal autonomic tumour
ERCP	endoscopic retrograde cholangiopancreatogram	GBq	giga-Becquerel
ERE	oestrogen response element	GC	germinal centre
ERG	v-ets erythroblastosis virus E26 oncogene homolog (avian)	G-CSF	granulocyte-colony stimulating factor
ESPAc	European Study Group for Pancreatic Cancer	GCP	good clinical practice
ESR	erythrocyte sedimentation rate	GCT	germ cell tumour
ESTRO	European Society for Therapeutic Radiology and Oncology	GELA	Groupe d' Etude des Lymphomes de l' Adulte
EU	European Union	GFR	glomerular filtration rate
EUA	examination under anaesthetic	GHRH	growth hormone-releasing hormone
EURAMOS	European and American Osteosarcoma Study Group	GHSG	German Hodgkin Study Group
		GI	gastrointestinal
		GIST	gastrointestinal stromal tumour
		GLI	glioma-associated oncogene homolog
		GnRH	gonadotropin-releasing hormone
		GO	gastro-oesophageal
		GOG	Gynecologic Oncology Group
		GORD	gastro-oesophageal reflux disease
		GP	General Practitioner
		GTT	gestational trophoblast tumour
		GTV	gross tumour volume
		Gy	Gray
		H2	histamine H2

Abbreviations

HAART	highly active antiretroviral therapy	IGCCCG	International Germ Cell Cancer Collaborative Group
HAI	hepatic arterial infusion	IGCN	intratubular germ cell neoplasia
HART	hyperfractionated accelerated radiotherapy	IGF-1	insulin-like growth factor-1
HBF	heterotopic bone formation	IGRT	image-guided radiation therapy
HBL	hepatoblastoma	IHC	immunohistochemistry
HBV	hepatitis B virus	IHD	ischaemic heart disease
HCC	hepatocellular carcinoma	IJV	internal jugular vein
HCG	human chorionic gonadotropin	IL-2	interleukin-2
HCV	hepatitis C virus	ILC	invasive lobular carcinoma
HDC/ASCT	high-dose chemotherapy with autologous stem cell transplant	ILT	intraluminal brachytherapy
HDCT	high-dose chemotherapy	i.m.	intramuscular
HDR	high dose rate	IM	internal margin
HDU	high-dependency unit	IMIG	International Mesothelioma Interest Group
HER-2	human epidermal growth factor receptor 2	IMN	internal mammary node
HERA	Herceptin® Adjuvant	IMP	investigational medicinal product
HGG	high-grade glioma	IMRT	intensity-modulated radiation therapy
HH	hedgehog	INTACT	Iressa NSCLC Trial Assessing Combination Treatment
HHV	human herpesvirus	IPFS	international prognostic factor score
HIFU	high-intensity focussed ultrasound	IPI	international prognostic index
HIV	human immunodeficiency virus	IRS	Intergroup Rhabdomyosarcoma Studies
HL	Hodgkin lymphoma	ISO	International Organisation for Standardisation
HMB	human melanoma black	ISS	international staging system
HNPCC	hereditary non-polyposis colorectal cancer	ITA	Italian Tamoxifen Arimidex trial
HPOA	hypertrophic pulmonary osteo-arthropathy	ITT	intention to treat
HPV	human papilloma virus	ITU	intensive therapy unit
HR	hazard ratio	IU	international units
HRT	hormone replacement therapy	i.v.	intravenous
HTLV-1	human T-cell lymphotropic virus -1	IVC	inferior vena cava
IBCSG	International Breast Cancer Study Group	IVU	intravenous urogram
ICAM1	intercellular adhesion molecule 1	JDG	jugulo-digastric
ICC	interstitial cells of Cajal	JVP	jugulo-venous pressure
ICG	iodocyanine green	KIT	kitten (v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog)
ICON	International Collaborative Ovarian Neoplasm study	KPS	Karnofsky performance status
ICRU	International Commission on Radiation Units and Measurements	KRAS	v-Ki-ras2 Kirsten rat sarcoma viral oncogene homolog
IDC	invasive ductal carcinoma	LACE	Lung Adjuvant Cisplatin Evaluation
IDL	indirect laryngoscopy	LAK	lymphokine-activated killer
IES	International Exemestane Study	LCIS	lobular carcinoma <i>in situ</i>
IFN α	interferon alpha	LD	latissimus dorsi; lymphocyte depleted
IFNAR	interferon (alpha and beta) receptor	LDH	lactate dehydrogenase
IFNGR	interferon gamma receptor	LDL	low-density lipoprotein
IFRT	involved-field radiotherapy	LDR	low dose rate
IGCCC	International Germ Cell Consensus Classification	LE	local excision

Abbreviations

LEEP	loop electro-excision procedure	MRCP	magnetic resonance cholangiopancreatogram
LFT	liver function test	MRI	magnetic resonance imaging
LGG	low-grade glioma	mRNA	messenger ribonucleic acid
LH	luteinising hormone	MS	median survival
LHRH	luteinising hormone releasing hormone	MSCC	malignant spinal cord compression
LHRHa	luteinising hormone releasing hormone agonist	MSH	DNA mismatch repair gene
LLETZ	large loop excision of the transformation zone	MSI	microsatellite instability
LM	lentigo maligna	MSU	midstream urine
LMM	lentigo maligna melanoma	MTC	medullary thyroid carcinoma
LN	lymph node	MTD	maximally tolerated dose
LOH	loss of heterozygosity	MTI	malignant teratoma intermediate target of rapamycin
LR	local recurrence	MTT	malignant teratoma trophoblastic
LVI	lymphovascular invasion	MTU	malignant teratoma undifferentiated
MAB	maximal androgen blockade	MUC-1	mucin 1
MACIS	metastases, age, completeness of surgery, invasion of extrathyroidal tissues, size	MUGA	multigated acquisition scan
MAG 3	mercaptoacetyl triglycerine	MV	megavoltage
MAGE	melanoma antigen expression family	MW	molecular weight
MAGIC	Medical Research Council Adjuvant Gastric Infusional Chemotherapy	MYC	v-myc myelocytomatosis viral oncogene homolog
MALT	mucosa-associated lymphoid tissue	NAC	nipple areola complex
MAP	mitogen activated protein	NAHT	neoadjuvant hormone therapy
MAPK	mitogen-activated protein kinase	NCCN	National Comprehensive Cancer Network
MART	melanoma antigen recognised by T-cells	NCCTG	National Central Cancer Treatment Group
MBC	metastatic breast cancer	NCI	National Cancer Institute
MBq	mega-Becquerel	NCI- Canada	National Cancer Institute of Canada
MC	mixed cellularity	NCRI	National Cancer Research Institute
MDM	multidisciplinary meeting	NCRN	National Cancer Research Network
MDR	medium dose rate	Nd-YAG	neodymium-doped yttrium-aluminium-garnet
MDT	multidisciplinary team	NEAT	National Epirubicin Adjuvant Trial
MEN	multiple endocrine neoplasia	NET	neuroendocrine tumour
MF	mycosis fungoides	NF	neurofibromatosis
MFH	malignant fibrous histiocytoma	NHL	non-Hodgkin lymphoma
MGMT	O ⁶ methylguanine-DNA methyltransferase	NHS	National Health Service
MGUS	monoclonal gammopathy of undetermined significance	NICE	National Institute for Health and Clinical Excellence
MHRA	Medicines and Healthcare Products Regulatory Authority	NIH	National Institutes of Health
MIBG	meta-iodobenzylguanidine	n-myc	official symbol = NMI; official name = N-myc (and STAT) interactor (NMI)
MInT	MabThera [®] International Trial	NNT	number needed to treat
MLC	multileaf collimator	NOS	not otherwise specified
MM	malignant melanoma	NPVMD	non-pulmonary visceral metastatic disease
MR	magnetic resonance		
MRC	Medical Research Council		

Abbreviations

NS	not significant	p.o.	per oral
NSAA	non-steroidal antiandrogen	PORT	postoperative radiotherapy
NSABP	National Surgical Adjuvant Breast and Bowel Project	PPE	palmar-plantar erythrodysesthesia
NSAID	non-steroidal anti-inflammatory drug	PR	partial response
N/saline	normal saline	PR-A	progesterone receptor A
NSCLC	non-small-cell lung cancer	PR-B	progesterone receptor B
NSGCT	non-seminomatous germ cell tumour	PRV	planning risk volume
NST	no specific type	PS	WHO performance status
NTRAC	National Translational Cancer Research Network	PSA	prostate-specific antigen
OAR	organs at risk	PSTT	placental site trophoblast tumour
OC	oesophageal cancer	pT	pathological tumour stage
OFS	ovarian function suppression	PTC	papillary thyroid carcinoma (in thyroid cancer); percutaneous transhepatic cholangiograph (in hepatobiliary cancer)
OR	odds ratio	PTCH	patched gene
OS	overall survival	PTEN	phosphatase and tensin homolog (mutated in multiple advanced cancers 1)
p450	cytochrome p450	PTH	parathyroid hormone
PAI-1	plasminogen activator inhibitor type 1	PTH-RP	parathyroid hormone-related peptide
Pap	Papanicolaou	PTV	planning target volume
PCI	prophylactic cranial irradiation	PUVA	psoralen plus ultraviolet A
PCNSL	primary central nervous system lymphoma	PV	per vagina
pCR	pathological complete response	PVC	poly(vinyl chloride)
PDA	poorly differentiated adenocarcinoma	QA	quality assurance
PDC	poorly differentiated carcinoma	QART	Quality Assurance in Radiation Therapy
PDD	percentage depth dose	QLQ	quality of life questionnaire
PDGF	platelet-derived growth factor	QOL	quality of life
PDGFR	platelet-derived growth factor receptor	R0	complete resection
PDN	poorly differentiated neoplasm	RAGE	renal antigen expression family
PDR	pulsed dose rate	RAF	v-raf-1 murine leukaemia viral oncogene homolog
PDT	photodynamic therapy	RAS	rat sarcoma viral oncogene homolog
PEI	percutaneous ethanol injection	Rb	retinoblastoma
PERCHE	Premenopausal Endocrine Responsive Chemotherapy Trial	RB1	retinoblastoma 1 (including osteosarcoma)
PET	positron emission tomography	RBE	radiobiologically equivalent dose
PFS	progression-free survival	RCC	renal cell carcinoma
PgR	progesterone receptor	RCR	Royal College of Radiologists
PI3K	phosphatidylinositol 3 kinase	RCT	randomised controlled trial
PICC	peripherally inserted central catheter	REAL	revised European-American lymphoma
PLD	post-transplantation lymphoproliferative disease	RECIST	response evaluation criteria in solid tumours
PLDH	pegylated liposomal doxorubicin hydrochloride	RFA	radiofrequency ablation
pM	pathological metastasis stage	rhTSH	recombinant human thyroid-stimulating hormone
PMS	PMS1 postmeiotic segregation increased 1		
pN	pathological lymph node stage		
PNET	primitive neuroectodermal tumour		

Abbreviations

RMI	relative malignancy index	SVC	superior vena cava
RMH	Royal Marsden Hospital	SVCO	superior vena cava obstruction
RMS	rhabdomyosarcoma	SWOG	Southwest Oncology Group
RPLND	retroperitoneal lymph node dissection	SXR	superficial X-ray
RR	response rate	T4	thyroxine
RT	radiotherapy	TACE	transarterial chemoembolisation
RTOG	Radiation Therapy Oncology Group	TAH	total abdominal hysterectomy
S-100	S-100 calcium-binding protein	TB	tuberculosis
SAB	same as before	TBI	total-body irradiation
SABCS	San Antonio Breast Cancer Symposium	TCC	transitional cell carcinoma
SAE	serious adverse event	TD	teratoma differentiated
SCC	squamous cell carcinoma	t.d.s.	three times a day
SCF	supraclavicular fossa	TEM	transanal endoscopic microsurgery
SCLC	small-cell lung cancer	TEXT	Tamoxifen and EXemestane Trial
SCTBG	Scottish Cancer Trials Breast Group	TFT	thyroid function test
SEER	Surveillance Epidemiology and End Results	Tg	thyroglobulin
SERM	selective oestrogen receptor modulator	TGF- β	transforming growth factor beta
SHH	sonic hedgehog	Tis	carcinoma <i>in situ</i>
SI	sacro-iliac	TKI	tyrosine kinase inhibitor
S-I	superior-inferior	TLD	thermoluminescence dosimetry
SIADH	syndrome of inappropriate antidiuretic hormone	TLS	tumour lysis syndrome
SIGN	Scottish Intercollegiate Guidelines Network	TME	total mesorectal excision
SIOP	Société Internationale d'Oncologie Pédiatrique	TMR	tissue maximum ratio
SLN	sentinel lymph node	TNF α	tumour necrosis factor alfa
SLND	sentinel lymph node dissection	TNM	tumour nodes metastases
SM	setup margin	TP53	tumour protein p53
SMA	smooth muscle actin	TPR	tissue phantom ratio
SLNB	sentinel lymph node biopsy	TRAM	transverse rectus abdominus myocutaneous
SOFT	Suppression of Ovarian Function Trial	TRH	thyrotropin-releasing hormone
SPECT	single photon emission computed tomography	TRUS	transrectal ultrasound
src	v-src sarcoma (Schmidt-Ruppin A-2) viral oncogene homolog	TSC	trial steering committee
SRH	stigmata of recent haemorrhage	TSE	total skin electrons
SSD	source-skin distance	TSH	thyroid-stimulating hormone
SSG	Scandinavian Sarcoma Group	TTF-1	thyroid transcription factor 1
SSM	superficial spreading melanoma	TUR	transurethral resection
SSP	statutory sick pay	TURBT	transurethral resection of bladder tumour
SSRS	somatostatin receptor scintigraphy	TURP	transurethral resection of the prostate
STNI	subtotal nodal irradiation	TVS	transvaginal ultrasound
SUSAR	suspected unexpected serious adverse reaction	UC	ulcerative colitis
SUV	standardised uptake value	U+E	urea and electrolytes
SV 40	simian virus 40	UICC	International Union Against Cancer
		UK	United Kingdom
		UKCCSG	United Kingdom Children's Cancer Study Group
		UKCTOCS	UK Collaborative Trial of Ovarian Cancer Screening
		UKNET	United Kingdom Neuroendocrine Society

Abbreviations

ULN	upper limit of normal	BEAM	carmustine, etoposide, cytarabine, melphalan
uPA	urokinase-type plasminogen activator	BEC	bleomycin, etoposide, carboplatin
US	ultrasound scan	BEP	bleomycin, etoposide, cisplatin
USA	United States of America	BOP	bleomycin, vincristine, cisplatin
US Inter-group	United States Intergroup	Bu/Cy	busulphan, cyclophosphamide
USPIO	ultra-small-particle iron oxide	CAF	cyclophosphamide, doxorubicin, 5-FU
UV	ultraviolet	CarboPEC	carboplatin, etoposide, cyclophosphamide
UVA	ultraviolet A	CAP	cyclophosphamide, doxorubicin, cisplatin
UVB	ultraviolet B	CAV	cyclophosphamide, doxorubicin, vincristine
VAIN	vaginal intraepithelial neoplasia	C-BOP	carboplatin, bleomycin, vincristine, cisplatin
VATS	video-assisted thoroscopic surgery	CG	cisplatin gemcitabine
VC	vomiting centre	CHOEP	cyclophosphamide, doxorubicin, vincristine, etoposide, prednisolone
VEGF	vascular endothelial growth factor	CHOP	cyclophosphamide, doxorubicin, vincristine, prednisolone
VEGFR	vascular endothelial growth factor receptor	CMF	cyclophosphamide, methotrexate, 5-FU
VHL	Von Hippel-Lindau	CMV	cisplatin, methotrexate, vinblastine
VIN	vulval intraepithelial neoplasia	COJEC	cisplatin, vincristine, carboplatin, etoposide, cyclophosphamide
VIP	vasoactive intestinal peptide	COPP	cyclophosphamide, vincristine, procarbazine, prednisolone
VSIM	virtual simulation software	CTD	cyclophosphamide, thalidomide, dexamethasone
VQ	ventilation perfusion	CVAD	cyclophosphamide, vincristine, doxorubicin, dexamethasone
WAGR	Wilms' tumour, aniridia, ambiguous genitalia and mental retardation	CVP	cyclophosphamide, vincristine, prednisolone
WBC	white blood cell	CYVADIC	cyclophosphamide, vincristine, doxorubicin, dacarbazine
WBS	whole-body scan	DAT	daunorubicin, ara-C, thioguanine
WHO	World Health Organisation	DHAP	dexamethasone, cytarabine, cisplatin
WLE	wide local excision	EBVD	epirubicin, bleomycin, vinblastine, prednisolone
XRT	X-ray treatment	EC	epirubicin, cyclophosphamide
		ECF	epirubicin, cisplatin, 5-FU
		E→CMF	epirubicin, cyclophosphamide, methotrexate, 5-FU
		ECX	epirubicin, cisplatin, capecitabine
		EMA-CO	etoposide, methotrexate, actinomycin-D – cyclophosphamide, vincristine

Chemotherapy regimens

ABVD	doxorubicin, bleomycin, vinblastine, dacarbazine
ABVPP	doxorubicin, bleomycin, vinblastine, procarbazine, prednisolone
AC	doxorubicin, cyclophosphamide
A→CMF	doxorubicin, cyclophosphamide, methotrexate, 5-FU
AC→paclitaxel	doxorubicin, cyclophosphamide then paclitaxel
ACVBP	doxorubicin, cyclophosphamide, vindesine, bleomycin, prednisolone
A-T-C	doxorubicin, paclitaxel, cyclophosphamide
AVG	doxorubicin, vinblastine, gemcitabine
BEACOPP	bleomycin, etoposide, doxorubicin, cyclophosphamide, vincristine, procarbazine, prednisolone

Abbreviations

EOF	epirubicin, oxaliplatin, 5-FU	OEPA	vincristine, etoposide, prednisolone, doxorubicin
EOX	epirubicin, oxaliplatin, capecitabine	PIAF	cisplatin, interferon, doxorubicin, 5-FU
EP	etoposide, cisplatin	PLADO	cisplatin, doxorubicin
EP-EMA	etoposide, cisplatin – etoposide, methotrexate, actinomycin-D	ProMACE-cytaBOM	prednisone, methotrexate, doxorubicin, cyclophosphamide, etoposide, cytarabine, bleomycin, vincristine, and methotrexate
ESHAP	etoposide, methylprednisolone, cytarabine, cisplatin	R-CHOP	rituximab, cyclophosphamide, doxorubicin, vincristine, prednisolone
FAC	5-FU, doxorubicin, cyclophosphamide	R-DHAP	rituximab, dexamethasone, cytarabine, cisplatin
FAMTX	5-FU, doxorubicin, methotrexate	R-ICE	rituximab, ifosfamide, carboplatin, etoposide
FC	fludarabine, cyclophosphamide	R-CODOX-M/IVAC	rituximab, cyclophosphamide, vincristine, doxorubicin, cytarabine, methotrexate, etoposide, ifosfamide
FEC	5-FU, epirubicin, cyclophosphamide	Stanford V	doxorubicin, vinblastine, vincristine, bleomycin, mechlorethamine, etoposide, prednisone
FEC→docetaxel	5-FU, epirubicin, cyclophosphamide then docetaxel	SuperPLADO	PLADO + carboplatin
FMD	fludarabine, mitoxantrone, dexamethasone	TAC	docetaxel, doxorubicin, cyclophosphamide
FOLFIRI	5-FU, FA, irinotecan	TIP	paclitaxel, ifosfamide, cisplatin
FOLFOX	5-FU, FA, oxaliplatin	VAD	vincristine, doxorubicin, dexamethasone
GemCarbo	gemcitabine, carboplatin	VIP	etoposide, ifosfamide, cisplatin
Gem-cis	gemcitabine, cisplatin	XELOX	capecitabine, oxaliplatin
GT	gemcitabine, paclitaxel	Z-DEX	idarubicin, dexamethasone
HD-MTX	high-dose methotrexate		
Hyper-CVAD	fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone		
ICE	ifosfamide, carboplatin, etoposide		
JEB	carboplatin, etoposide, bleomycin		
MACOP-B	methotrexate, doxorubicin, cyclophosphamide, vincristine, prednisone, bleomycin		
m-BACOD	methotrexate, bleomycin, doxorubicin, cyclophosphamide, vincristine, dexamethasone		
MAP	methotrexate, doxorubicin, cisplatin		
MIC	mitomycin, ifosfamide, cisplatin		
MOPP	mechlorethamine, vincristine, procarbazine, prednisolone		
MOPP-ABV	mechlorethamine, vincristine, procarbazine, prednisolone, doxorubicin, bleomycin, vinblastine		
MVAC	methotrexate, vinblastine, doxorubicin, cisplatin		
MVP	mitomycin, vinblastine, cisplatin		
NP	vinorelbine, cisplatin		

Radioisotopes

⁶⁰ Co	cobalt-60
¹³⁷ Cs	caesium-137
¹⁸ F	fluorine-18
¹²³ I	iodine-123
¹²⁵ I	iodine-125
¹³¹ I	iodine-131
¹¹¹ In	indium-111
¹⁹² Ir	iridium-192
¹⁰³ Pd	palladium-103
¹⁰⁶ Ru	ruthenium-106
^{99m} Tc	technetium-99m
⁹⁰ Y	yttrium-90