Adverse Drug Reactions

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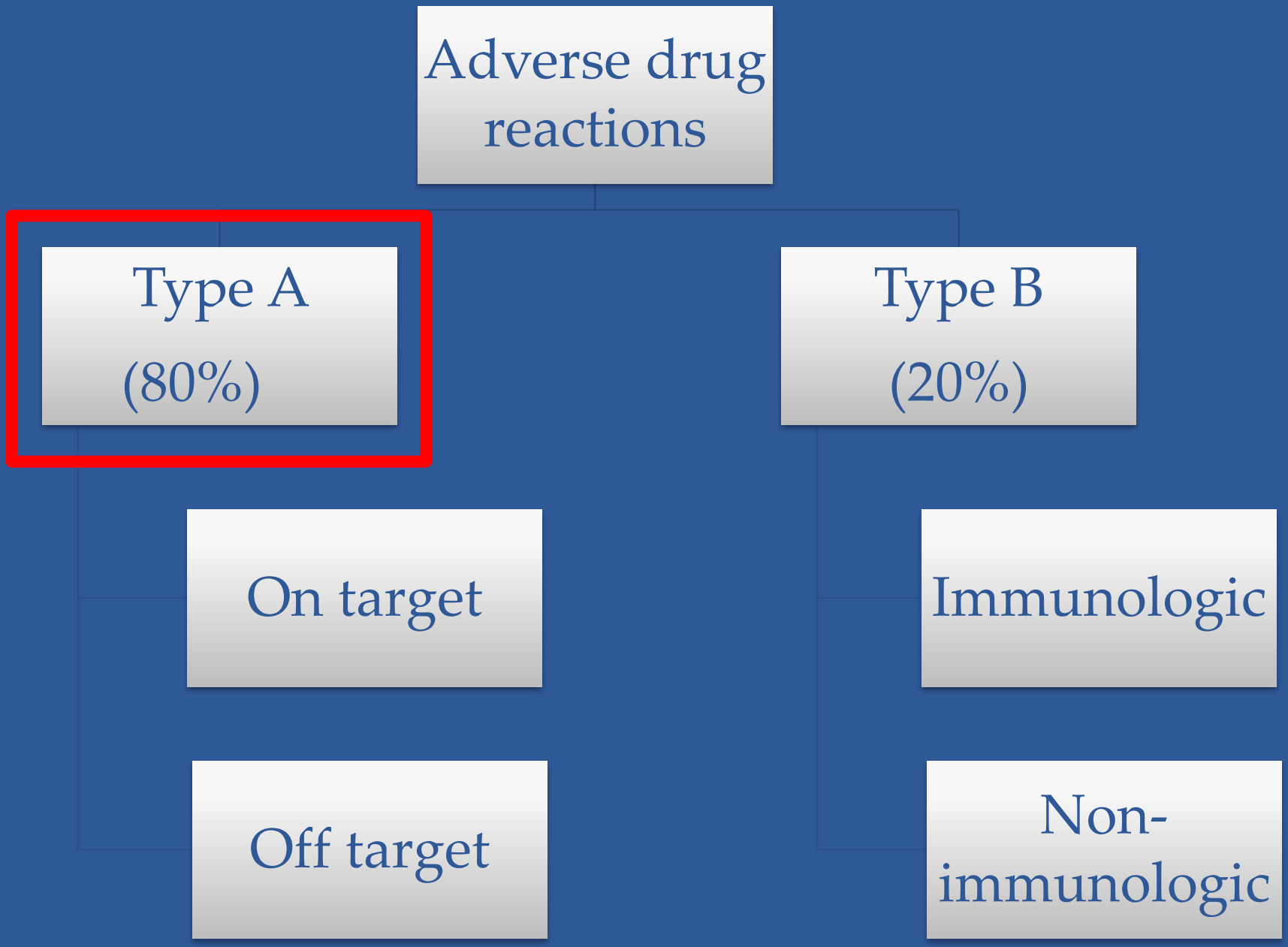
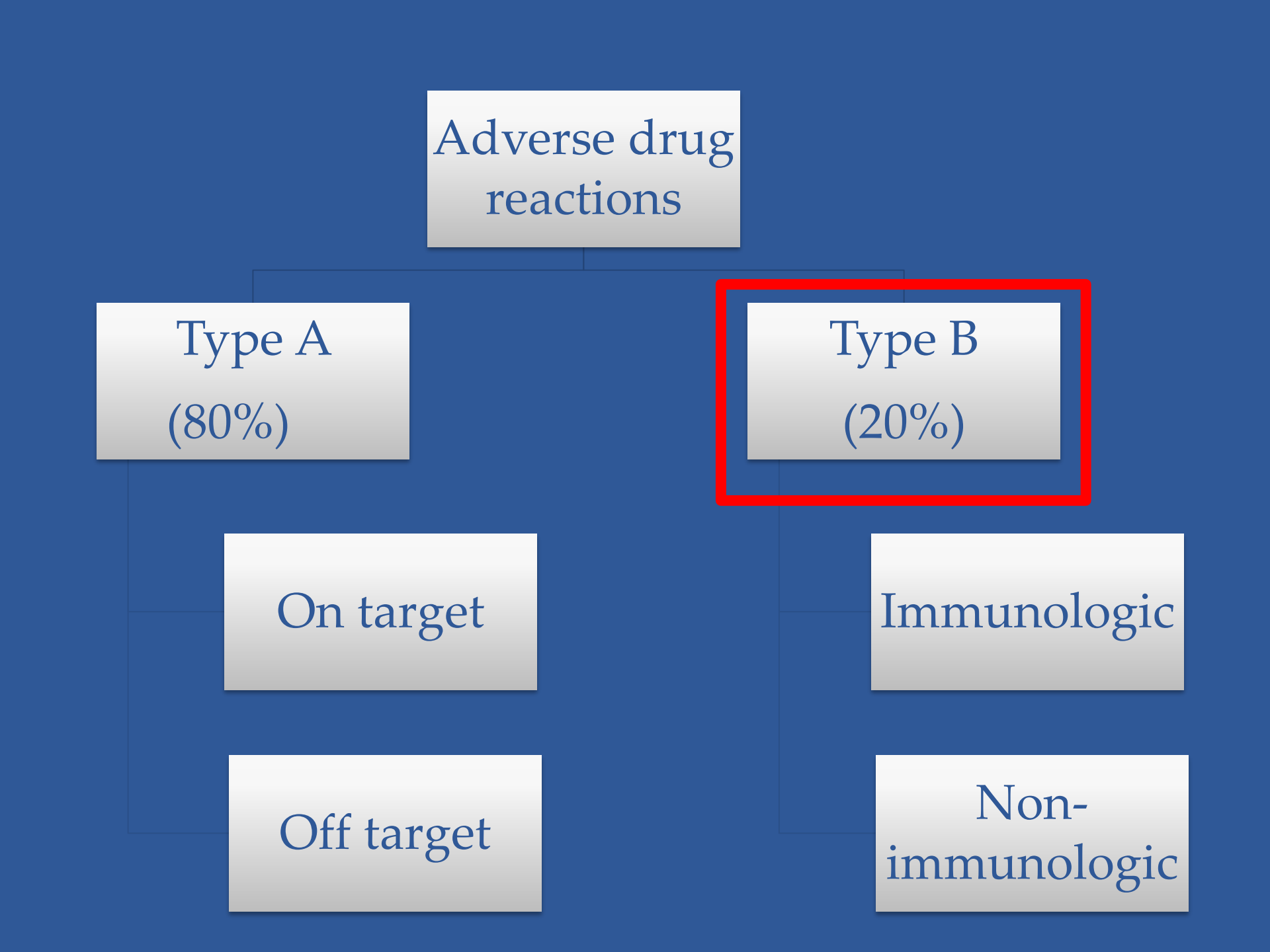
Adverse Drug Reaction

A response to a drug which is noxious and unintended and which occurs at doses normally used in man for the prophylaxis, diagnosis or therapy of disease, or for the modification of physiological function

WHO, 1972


Adverse drug reactions
Type A (80%)
Type B (20%)
On target
Off target
Immunologic
Non-immunologic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Case History 1

80 y/o

Hypertension
Hypercholesterolaemia
Stroke
Carotid endarterectomy
Total hip replacement
Osteopaenia

BP 160/80

- **Bisoprolol 5mg**
- **Lercanidipine 10mg**
- **Ramipril 10mg**
- Galfer
- Duphalac
- Atorvastatin 40mg
- Lansoprazole 15mg
- Aspirin 75mg
- Calcichew
- Paracetamol prn
- **Doxasocin XL 4mg added**

Case History 2

50 y/o

Lung Cancer

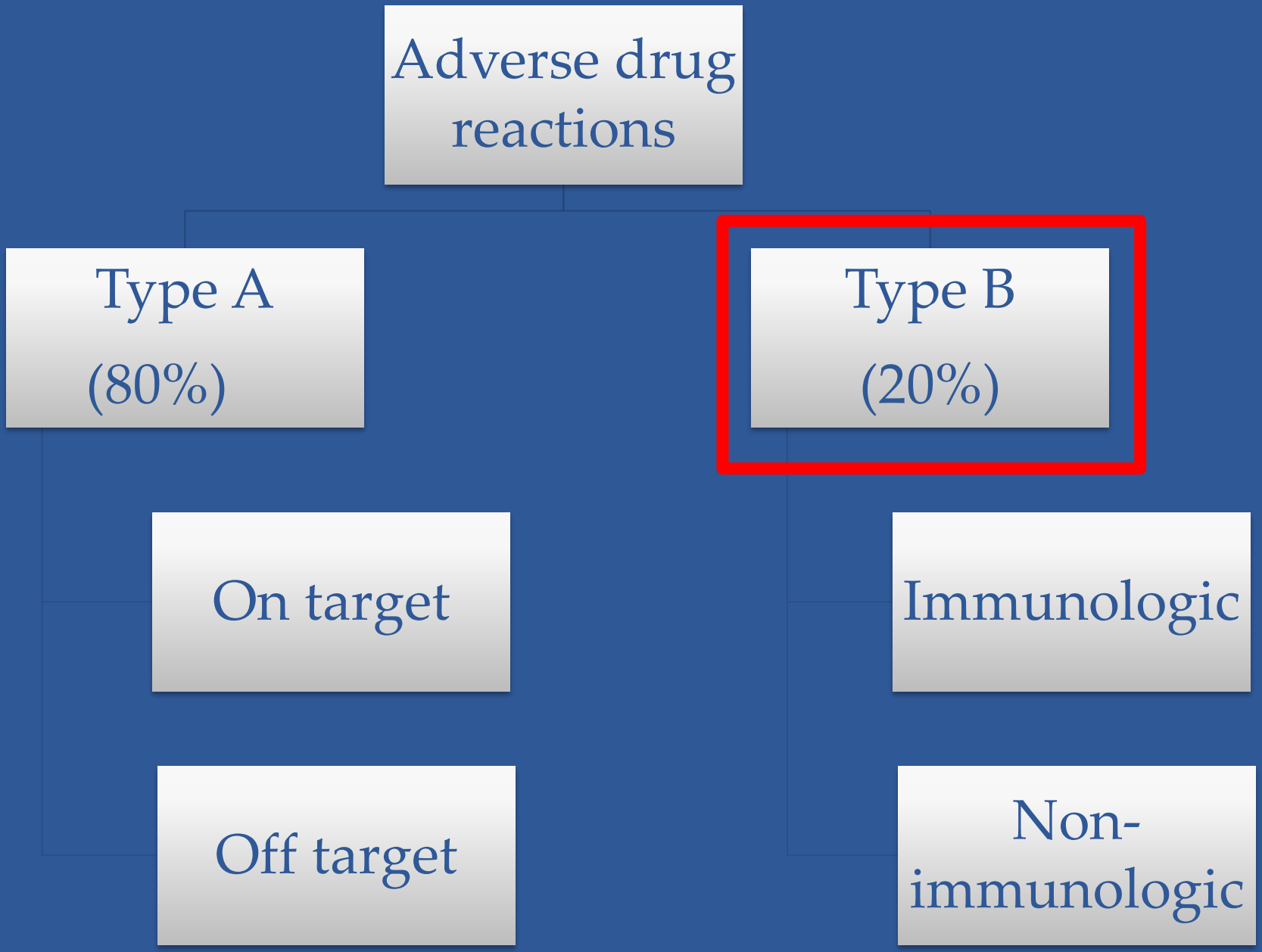
Crizotinib

Domperidone added

VFib cardiac arrest in the main concourse of the hospital

Factors increasing the likelihood of type-A ADRS

- Age
- Disease states eg liver function, renal function
- Polypharmacy/multi morbidity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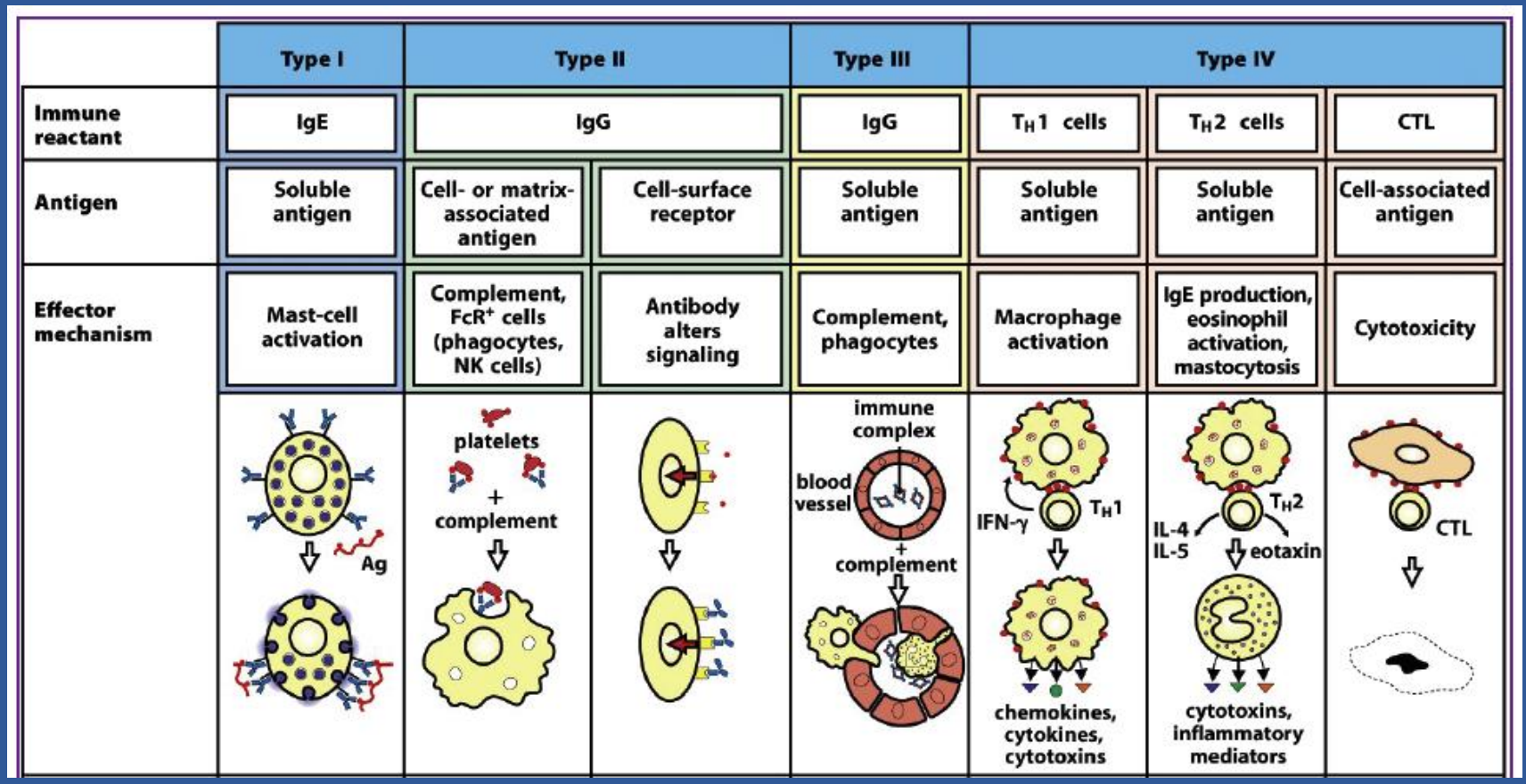
Immunologic

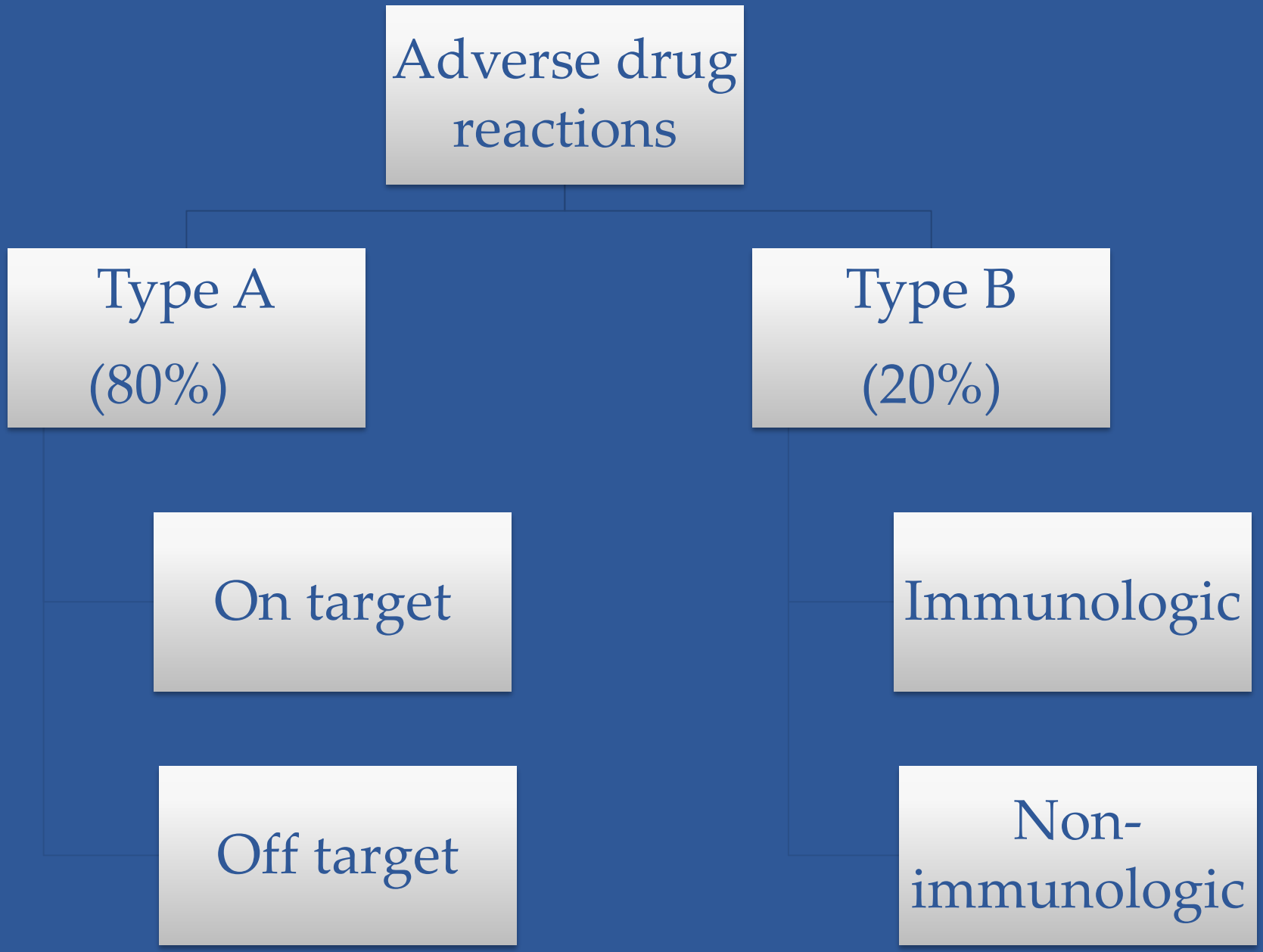
Type I reaction (IgE-mediated)	Anaphylaxis from β-lactam antibiotic
Type II reaction (cytotoxic)	Hemolytic anemia from penicillin
Type III reaction (immune complex)	Serum sickness from anti-thymocyte globulin
Type IV reaction (delayed, cell-mediated)	Contact dermatitis from topical antihistamine
Specific T-cell activation	Morbilliform rash from sulfonamides
Fas/Fas ligand-induced apoptosis	Stevens-Johnson syndrome
	Toxic epidermal necrolysis
Other	Drug-induced, lupus-like syndrome
	Anticonvulsant hypersensitivity syndrome

Immunologic



Non-Immunologic

Pseudoallergic	Anaphylactoid reaction after radiocontrast media
Idiosyncratic	Hemolytic anemia in a patient with G6PD deficiency after primaquine therapy
Intolerance	Tinnitus after a single, small dose of aspirin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- 85 y/o
- Hypertension
- ACEi
- Thiazide
- Gout
- NSAID
- Vomiting

Multiple hits on renal function:

- Age
- Depleted volume status 2° to diuretic
- Decreased glomerular pressure 2° to ACEi (efferent arteriole)
- Further decrease in glomerular pressure 2° to NSAID
- Volume loss compounded by vomiting

- Inpatient stay for ARF & delirium
- Fall during night
- Hip Fracture
- RIP

Summary

- All drugs can cause ADRs to a greater or lesser extent.
- Knowledge of the mode of action of drugs integrated with an understanding of physiology in health and disease is necessary to maximise safe prescribing
- Individual patient factors must always be taken in to account to minimise the risk of prescribing drugs

References

- Riedl MA, Casillas AM, *Adverse drug reactions: types and treatment options,* Am Fam Physician, 2003 Nov 1;68(9):1781-90.

- Joint Task Force on Practice Parameters; American Academy of Allergy, Asthma and Immunology; American College of Allergy, Asthma and Immunology;Joint Council of Allergy, Asthma and Immunology, *Drug allergy: an updated practice parameter*, Ann Allergy Asthma Immunol, 2010 Oct;105(4):259-273.

- Pirmohamed M, Park BK, *Adverse drug reactions: back to the future* Br J Clin Pharmacol, 2003 May;55(5):486-92.