

ICLIO National Conference

Future Educational Needs with Expanding Immunological Agents

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Describe the evolution of educational needs in oncology what educational needs are required for current and future immuno-oncology agents



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Evolution of Clinical Education

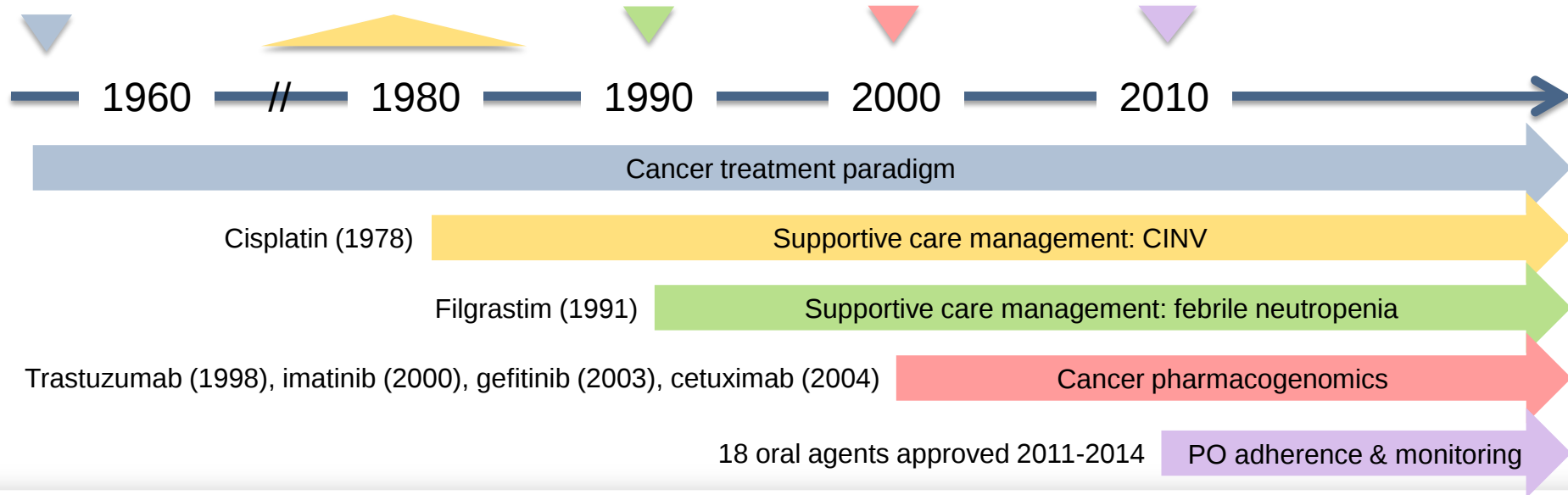
1942: Goodman & Gilman use nitrogen mustard for NHL

Combination chemo regimens invented

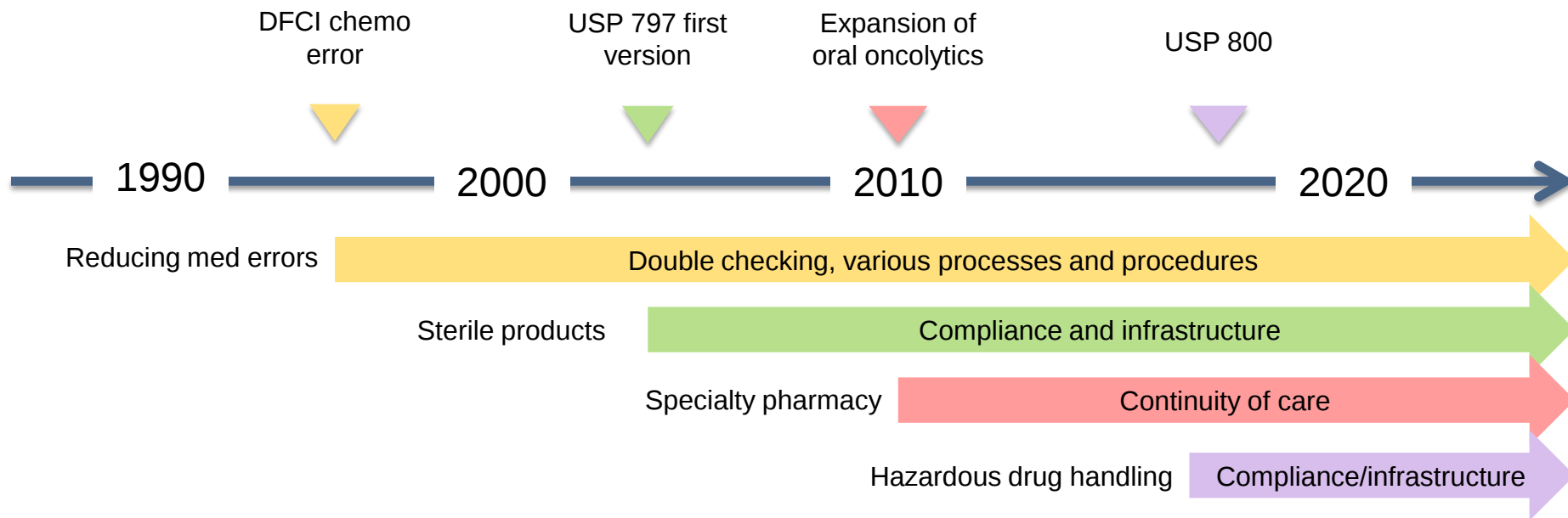
Commercialized chemo era begins

Targeted therapy era begins

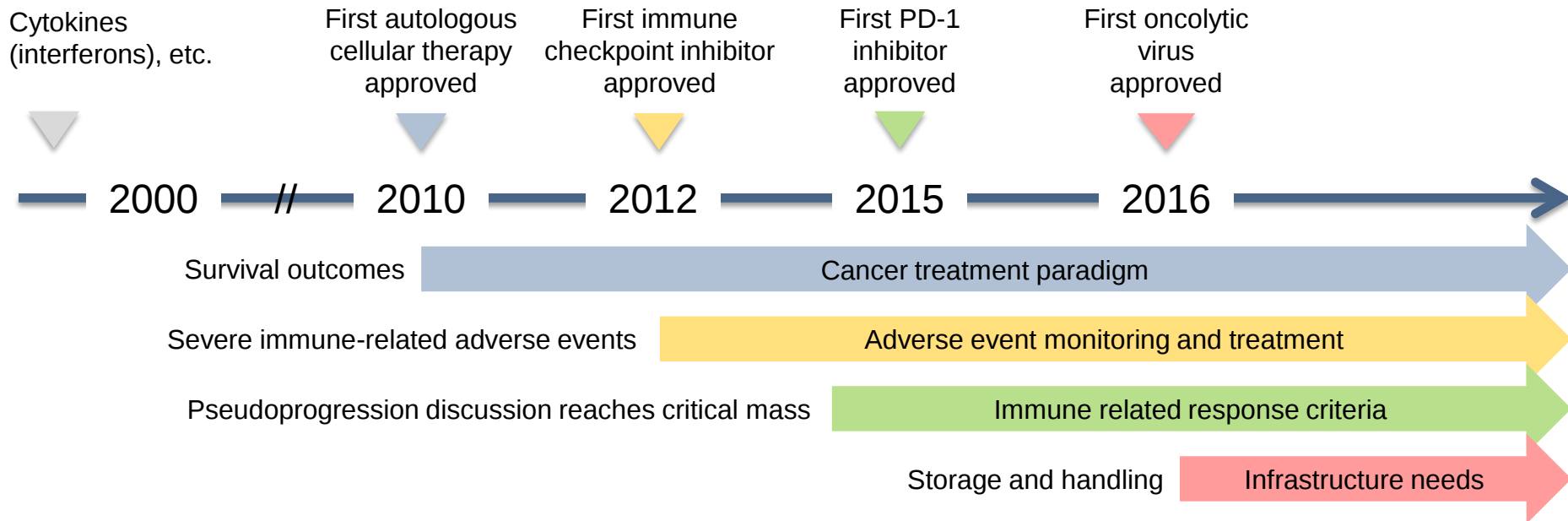
Expansion of oral oncolytics



Evolution of Administrative Issues

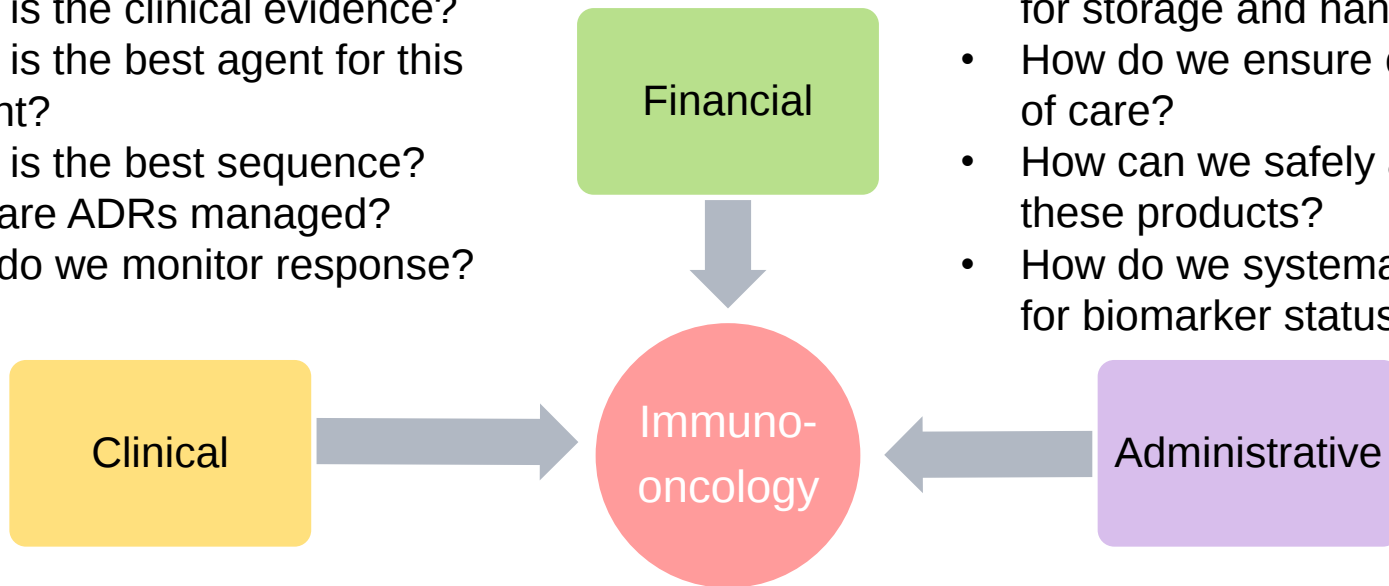


Immuno-Oncology Educational Needs



Integration of Educational Needs

- What is the clinical evidence?
- What is the best agent for this patient?
- What is the best sequence?
- How are ADRs managed?
- How do we monitor response?



- What infrastructure is needed for storage and handling?
- How do we ensure continuity of care?
- How can we safely administer these products?
- How do we systematically test for biomarker status?

Current Example

- Blinatumomab – Bispecific CD19-directed CD3 T-cell engager indicated for the treatment of Ph(-) relapsed or refractory B-cell precursor ALL
- Cytokine Release Syndrome – Black Box Warning
- “Hospitalization recommended” for days 1-9 ays of cycle 1 and days 1-2 of cycle 2
- Clinical education regarding cytokine release syndrome impact, recognition, monitoring, and treatment
- Administrative education regarding logistics: type of hospital bed, staffing, administration, continuity of care post-discharge, billing, etc.

Blinatumomab prescribing information, 2016

Future Example: CAR T cells

- Chimeric antigen receptor-transduced T-cells
- Toxicities
 - Cytokine release syndrome
 - Insertional oncogenesis
 - Neurological
 - On-target, off-tumor
 - Anaphylaxis/allergy
- “Furthermore, toxicity risks such as cross-reactivity with healthy tissues require mitigation or, preferably, preclinical screening or clinical management processes that avoid them altogether.”
- Logistical administration challenges

Next-Generation Immunotherapies

T-cell therapies



Innate immune mechanisms

Adaptive immunity		Innate immunity
T cell immunity	B cell immunity	
Cytokines		
T cell therapies	–	NK cell therapies
Cancer vaccines		
T cell checkpoint modulators	Checkpoint modulators	
'Connecting' bi-specific antibodies	–	
Dual-specific antibodies		
Small molecules		
Oncolytic viruses		
Adjuvants		

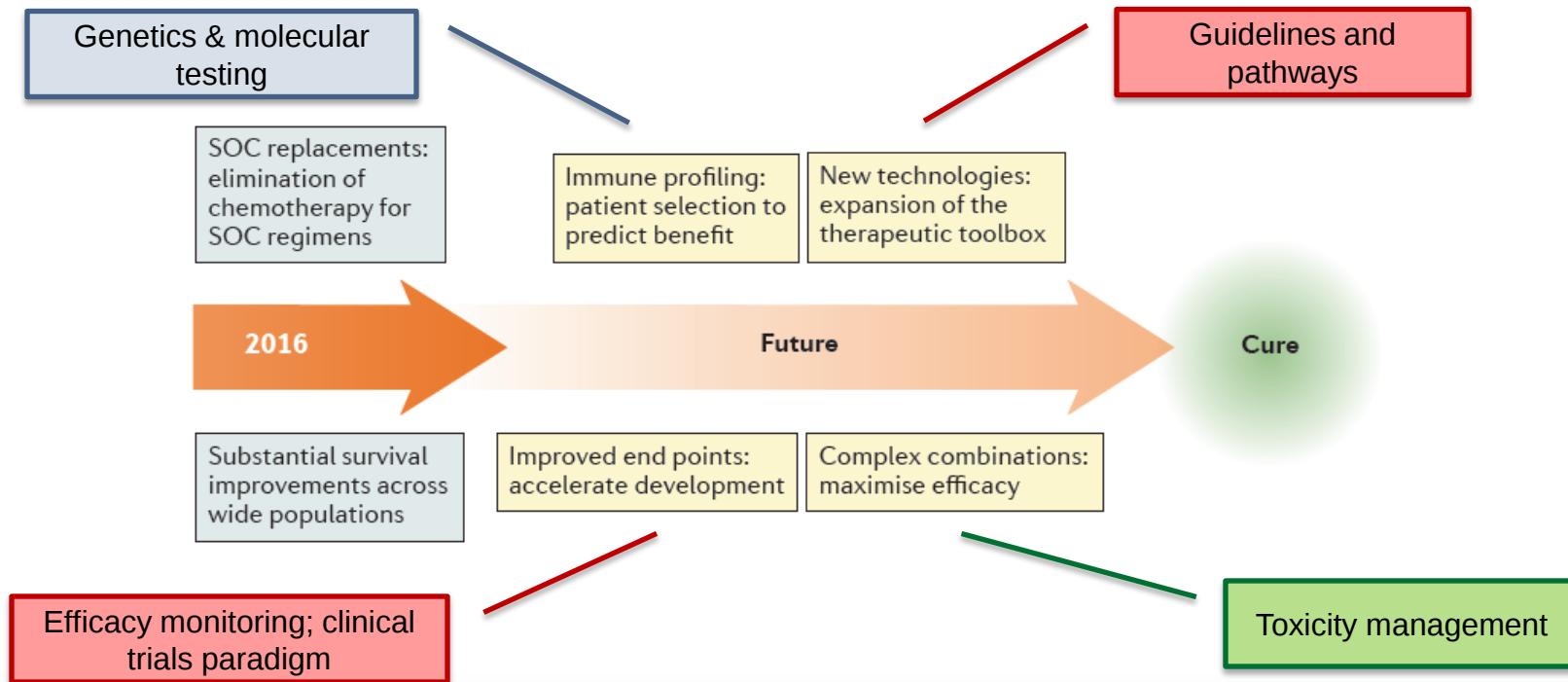
Clinically validated modalities through approved therapies

Modalities under investigation

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Hoos A. Development of immuno-oncology drugs - from CTLA4 to PD1 to the next generations. *Nat Rev Drug Discov.* 2016;15(4):235-47, copyright 2016.

Future Themes



Key References

- Hoos A, et al. *Clin Cancer Res*. 2015;21(22):4989-91.
- Bonifant CL, et al. *Mol Ther Oncolytics*. 2016;3:16011
- Hoos A. *Nat Rev Drug Discov*. 2016;15(4):235-47
- Harris SJ, et al. *Cancer Biol Med*. 2016;13(2):171-93.
- Maude SL, et al. *Cancer J*. 2014;20(2):119-22.

Questions?



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