Questions for this month’s clinical challenge are based on articles in this issue. The clinical challenge is endorsed by the RACGP Quality Improvement and Continuing Professional Development (QI&CPD) program and has been allocated four Category 2 points (Activity ID: 92043). Answers to this clinical challenge are available immediately following successful completion online at http://gplearning.racgp.org.au. Clinical challenge quizzes may be completed at any time throughout the 2017–19 triennium; therefore, the previous months’ answers are not published. Each of the questions or incomplete statements below is followed by four or five suggested answers or completions. Select the most appropriate statement as your answer.

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A. The first clinician to use an immunotherapy approach was the Australian Nobel Laureate Macfarlane Burnet.

B. Evidence of cancer immune surveillance came from international registries of chronically immunosuppressed solid organ transplant patients.

C. Formal demonstration of immune surveillance in the absence of oncogenic viruses came in the 1950s.

D. In humans with colorectal cancer, Galon et al found that infiltration of cancerous tissue with CD4+ T cells predicts long-term survival better than extent of anatomical spread of the tumour.

**Question 8**

**Immune checkpoints are an important concept in cancer immunotherapy. Which of the following statements regarding immune checkpoints is the most correct?**

A. Checkpoints enable us to limit normal immune responses, both to pathogens and self-antigens.

B. Two signals are required to activate a cellular immune response.

C. Many cancers aberrantly express ligands for inhibitory CTLA-4 at high levels, thus imposing a strong negative signal.

D. Therapeutic ‘checkpoint inhibitor’ antibodies disinhibit and amplify a pre-existing immune response to cancer.

E. All of the above.

**Question 9**

**Immune checkpoints targeting the programmed cell death protein 1 (PD-1) pathway have generated high interest, with overall response rates across tumour types averaging 20–30%. This includes responses in all of the following cancers EXCEPT:**

A. Melanoma

B. Hepatocellular carcinoma

C. Squamous cell carcinoma

D. Hodgkin lymphoma

E. Bladder cancer

**Question 10**

**Which of the following statements regarding immune-based cancer preventives and therapies is the most correct?**

A. Specific immune stimulation by repeated BCG immunisation can be effective in advanced bladder cancer.

B. Vaccines against oncogenic viruses are potent cancer preventives and effective therapeutically.

C. Allogenic bone marrow transplantation provides donor T and natural killer (NK) cells that recognise residual cancer cells as “foreign”.

D. All of the above.

**Case 4**

Susan, 28 years of age, has a family history of hypertrophic cardiomyopathy and has been referred to the local familial cancer centre for further investigations. She has been doing some reading about genomic testing and presents with several questions regarding the subject.

**Question 11**

**Which of the following statements regarding next generation sequencing (NGS) is the most correct?**

A. NGS has superseded all genetic testing.

B. Gene panel testing is a type of NGS.

C. NGS is labour-intensive and cost-intensive.

D. NGS is performed only in private laboratories.

**Question 12**

**Which one of the following statements regarding whole-exome sequencing (WES) is the most correct?**

A. The exons are the protein-coding regions of the genome.

B. The exons make up 10% of the human genome.

C. It involves the simultaneous sequencing of a fraction of the exons.

D. Exons contain 25% of known disease causing mutations.