

Future of Hepatitis B

乙型肝炎未來展望

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Outline 大綱

1. What happens with changes in vaccination policies?
疫苗政策改變的影響
2. Liberalizing indications for treatment in new guidelines
放寬了的治療新指引
3. Is cure therapy arriving soon?
治癒療法即將問世嗎？

Effectiveness of HBV vaccine versus vaccination

乙型肝炎疫苗的有效性

- Immunity after completing a course (3 doses) of HBV vaccine 乙型肝炎疫苗完整接種（3劑）後可獲得免疫力
 - Achieved in more than 95% infants, children and young adults 在嬰幼兒、兒童及青少年，有 95% 以上達到免疫效果
 - Lower success rates in older adults (over 40), those with suppressed immune response, diabetes, chronic kidney disease, cirrhosis, HIV infection 較年長的成人（40歲以上）、免疫力受抑制者、糖尿病患者、慢性腎病患者、肝硬化患者、HIV 感染者等等，達到免疫的成功率較低

Effectiveness of HBV vaccine versus vaccination 乙型肝炎疫苗的有效性

- HBV vaccine is highly effective in preventing
 - HBV infection AND HBV-related liver cancer.

乙型肝炎疫苗能有效防止 感染乙型肝炎，及由乙型肝炎導致的肝癌
- HBV vaccination is highly effective when the vaccine is used.

接種乙型肝炎疫苗、功效顯著

US CDC recommendations for HBV vaccination, 2022 美國疾病管制與預防中心對接種乙型肝炎疫苗的建議，2022 年

- All infants – regardless of HBsAg status of mother, preferably within 12 hours of birth. 為所有嬰兒 – 不論母親有沒有乙型肝炎 – 在出生後 12 小時內進行接種。
- Unvaccinated children and adults. 為所有未接種疫苗人士（兒童和成人）接種

2025 Canadian guidelines 加拿大的指引

- All infants (ideally at birth). 為所有嬰兒接種（出生時接種最為理想）
- All adults not vaccinated before or unsure of their vaccination history. 為所有未接種過疫苗或不確定自己接種史的成年人接種

Changes in 2026 US CDC recommendations on

HBV vaccination of infants

2026 年美國疾病管制與預防中心關於 嬰兒接種乙型肝炎疫苗建議的改變

	New in 2026 2026 年新增
Infants of mothers HBsAg negative Birth dose HBV vaccine within 12 hours of birth 沒有乙型肝炎的產婦，嬰兒出生後 12 小時內，接種乙型肝炎疫苗	Shared decision making Optional, if not administered at birth, start at 2 months or later 可自行選擇接種與否 或可選擇在嬰兒出生兩個月後，接種乙型肝炎疫苗
Infants of mothers HBsAg positive or unknown Birth dose HBV vaccine + hepatitis B immune globulin within 12 hours of birth 受乙型肝炎病毒感染、或病歷不詳的產婦，嬰兒出生後 12 小時內接種乙型肝炎疫苗，及注射乙型肝炎免疫球蛋白	No change 無變化

Changes in 2026 US CDC recommendations on

HBV vaccination of infants 2026 年美國疾病管制與預防中心關於 嬰兒接種乙型肝炎疫苗建議的改變

What might happen with the change in recommendations?

Increase in HBV infections, cirrhosis, and liver cancer in the US and globally due to decrease or delay in HBV vaccination of infants born to HBsAg- mothers.

疫苗接種建議的改變，可能會
減少或延遲嬰兒的疫苗接種，可能導至美國和全球乙型肝炎的感染、肝硬化和肝癌病例增加

Why is it important to vaccinate all babies at birth?

Because risk of progressing to chronic infection is 90% (9 out of 10) when babies get infected.

嬰兒出生時接種疫苗的重要性
因為嬰兒感染後發展為慢性感染的風險高達 90% (十分之九)

Approved HBV treatments

已核准的乙型肝炎治療方案

- Interferons 干擾素 (IFN)
 - Standard IFN alfa 標準 IFN α fa - 1992
 - Pegylated IFN alfa α fa(Peg-IFN) 聚乙二醇干擾素 - 2005
- Nucleos(t)ide analogues (NAs) 核苷 (酸) 類似物
 - Lamivudine 拉米夫定- 1998
 - Adefovir 阿德福韋- 2002
 - **Entecavir (ETV) 恩替卡韋- 2005**
 - Telbivudine 替比夫定- 2006
 - **Tenofovir disoproxil fumarate (TDF) 富馬酸替諾福韋二吡呋酯 - 2008**
 - **Tenofovir alafenamide (TAF) 替諾福韋艾拉酚胺 - 2016**

Efficacy and limitations of current HBV treatment

乙型肝炎治療的療效和限制

Efficacy 功效

- Potent virus suppression 有效抑制病毒
- Reverses hepatic inflammation and fibrosis 逆轉肝臟發炎和纖維化
- Prevents progression to cirrhosis and liver failure 防止病情發展為肝硬化和肝衰竭
- Decreases risk of liver cancer 降低肝癌風險
- Excellent safety 安全性極佳

Efficacy and limitations of current HBV treatment

乙型肝炎治療的療效和限制

Limitations 限制

- Does not eradicate HBV 不能根除乙型肝炎病毒
- Low rate of HBsAg loss 乙型肝炎表面抗原清除率低
- Long duration of treatment required 需要長時間治療
- Risk of liver cancer persists albeit at lower rate 患肝癌風險降低，但風險依然存在

Indications for hepatitis B treatment

乙型肝炎治療指示

- Which patients are recommended to receive treatment?
什麼人需要治療?
 - All patients with cirrhosis 所有肝硬化患者
 - For those with no cirrhosis 如果沒有肝硬化
 - High HBV DNA and ALT (liver enzyme) 高病毒數量和高 ALT (肝酵素) 患者
 - Advanced fibrosis (liver scarring) 後期肝纖維化 (肝臟疤痕) 患者
 - Family history of liver cancer 有肝癌家族史
- What are the recent changes in recommendations? 最近的建議有哪些改變?
 - Expand indications 擴大適用範圍
 - Patients who do not meet above criteria may consider treatment based on share decision-making 不符合以上條件者，亦可與醫生商討治療方案

Personalized decisions whether to start HBV treatment in patients who do not meet criteria



Shared decision making 共同決策

- Establish which phase patient is in.
確定患者的肝病情況
- Discuss benefits and harms of treatment and guide patient towards a personalized decision that is medically appropriate and embraced by patient.
分析用藥的利弊，引導患者作出合理的選擇
- Revisit the decision at each follow-up visit, initiate treatment if transitioned to active phase or has evidence of advanced fibrosis or cirrhosis.
進行覆診跟進，如發現病情活躍、或有纖維化或肝硬化跡象，就要進行藥物治療

Definitions of HBV cure

乙型肝炎治癒的定義

- Complete cure – total elimination of HBV and risk of liver cancer

徹底治癒 – 完全清除乙型肝炎病毒和肝癌風險

- Not feasible in the foreseeable future 在可預見的未來，這是不可能的

- Functional cure – current goal

功能性治癒 – 當前目標

- HBsAg loss – hepatitis B surface antigen from positive to negative, AND 清除乙型肝炎表面抗原 (HBsAg) – 由陽性轉為陰性, 及
- HBV DNA not detected or not measurable 測量不到乙型肝炎病毒
- At least 24 weeks after stopping ALL treatment 停止治療後至少 24 星期, 維持此狀況不變

What are the incremental benefits of HBsAg loss compared to HBV DNA suppression? 清除乙型肝炎表面抗原與抑制病毒比較的好處

Potential benefits 潛在益處

Further decrease in liver cancer risk – shown in some studies
一些研究顯示，清除乙型肝炎表面抗原，能進一步降低患肝癌風險

Eliminate need for long-term therapy – if response is durable
如果有效清除乙型肝炎表面抗原，可不用長期服藥

Eliminate need for long-term monitoring – maybe, if cure is achieved at a young age and early stage of liver disease
如能在年輕時或病情早期清除乙型肝炎表面抗原，或可免除長期監察的需要

Remove stigma, improve quality of life – important for some patients

避免歧視，改善生活質素。這對一些病人來說，至關重要

Why is hepatitis B cure so difficult?

為什麼乙型肝炎很難治癒？

- HBV DNA can hide in liver cells 乙型肝炎病毒可以隱藏在肝細胞中
 - Remain stable for a long time and not blocked by current oral antivirals 長期穩定生存，不受現有口服抗病毒藥物的阻截
 - Insert itself into human DNA 能融入人類的 DNA 中
- Immune system of patients with chronic hepatitis B do not recognize and fight HBV 慢性乙型肝炎患者的免疫系統，無法識別和對抗乙型肝炎病毒

Strategies aimed at functional cure

實現功能性治癒的策略

Stop HBV from making new virus and virus DNA 停止乙型肝炎新的病毒和病毒 DNA 的產生

Stop HBsAg production 停止乙型肝炎表面抗原的產生

Stimulate or restore immune response to HBV 激發或修復對乙型肝炎病毒的免疫反應

Report card on hepatitis B cure

乙型肝炎治癒情況報告

- More than 100 clinical trials in last 15 years
過去 15 年開展了 100 多項臨床試驗
- Only one phase 3 trial initiated with results expected to be released in 2026. 目前僅啟動了一項第三期臨床試驗，預計將於 2026 年公佈結果
- Highest success rates so far ~30% cure but only in highly selected patients, involving 3-4 drugs with 1-2 requiring injections/IV infusion.
目前的成功率約為 30% 治癒，但僅適用於經過嚴格篩選的患者，而且 需要使用三至四種藥物，包括一至兩種藥物需要注射

Report card on hepatitis B cure

乙型肝炎治癒情況報告

- Progress has been made and 1 or more cure therapies will likely be approved in the next few years, but clinical use might be limited because of complexity of treatment regimen, low cure rate even in highly selected patients, and high costs.

目前已取得良好進展，未來幾年內可能會批准一種或多種治癒療法。但由於治療方案複雜，即使在經過嚴格篩選的患者中、治癒率也不很高，而且費用高昂，所以臨床應用也可能受到限制