

Medical Malpractice in the South African Public Sector



Image: Twitter/@KwaraKekana

For the first time in its history, the hospital trauma rescue area at the Chris Hani Baragwanath Academic Hospital, the third largest hospital in the world, had no patients on 1 January 2021.

30 April 2021

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AUTHOR: Gregory Whittaker, F.A.S.S.A.

ASSISTED BY: Simon Kroon, F.A.S.S.A.
Marinel Botes, A.M.A.S.S.A.

REVIEWERS: Lusani Mulaudzi, F.A.S.S.A.
Jannie Venter, F.A.S.S.A.
Sandy Govender, F.A.S.S.A.
Kwanda Ngwenduna, A.M.A.S.S.A.

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FOREWORD

Liability systems have sometimes been called “luxury systems” for the “unhappy few”. In fact, the unhappy few claiming from this system are of statistical insignificance by any measure. Children and their families successfully claiming from the State are outnumbered by far by those with genetic defects, lasting disabilities by prenatal disease or postnatal injury for which no one can be held liable.

In my opinion, what sets the statistically insignificant apart from the masses is the preventability of the injuries sustained. Therefore, liability systems can only be justified by the ulterior aim of reducing the number of medical malpractice incidents. If the liability system does a poor job on error reduction, we should work at improving the system. If we ultimately are convinced that other mechanisms (criminal law or disciplinary rules) provide superior incentives for prevention, then society might consider abandoning a liability system in favour of a system that is merely aiming for compensation.

With regard to compensation as a function of liability systems, the quest for alternative compensation systems in the area of medical malpractice birth injuries also raises the key question of whether we want to redistribute the proceeds of the current system over other – and presumably: more – beneficiaries. Choosing a system that compensates all children with birth defects (and their families), irrespective of whether caused by nature or by man, may sound appealing if we have notions like distributive justice, social solidarity and equal opportunities in mind. Such a broad scheme would go a long way in alleviating the burden of the stricken families and providing coverage for an adversity they could not insure against before the event.

In some countries these notions are more popular than in others, but in any event a no-fault compensation scheme in itself does not help to prevent and reduce the incidence of medical malpractice birth injuries. Therefore, government accountability, evaluation of what went wrong, and the compulsion to *learn* from mistakes, are pivotal to any system. If the liability system does not efficiently provide those features, but merely allows lawyers to *earn* from mistakes, then we should start out with amending the liability system as it stands.

In short: considering alternatives for liability should also be the moment to raise the question whether enough is being done to prevent the injury from happening and, if not, what else can be done to avoid injury? Compensating injury that could be avoided at lower cost for society is always a second-best solution.

Professor Willem H. Van Boom
Leiden University

1. INTRODUCTION

- 1.1 On medical malpractice, the renowned Economist Dr Thomas Sowell writes:
The fundamental problem is not with the amounts of money awarded, as such, but with the fact that there may be no adequate basis for any award at all.
- 1.2 The above quote highlights the two fundamental aspects of medical malpractice claims, namely the basis for the award (merits) and the amount of the award (quantum).
- 1.3 Actuaries who act as expert witnesses in the context of valuing medical malpractice claims in South African Courts are called upon to function within a holistic application of principles relating not only to their direct field of expertise, but also to the legal structure within which that expertise is sought. Invariably, for actuaries to provide meaningful input in this arena it is necessary to thoroughly interrogate the law and have a firm understanding of certain aspects of medical literature. It is therefore critical that the scope of this report be indulgently extended to provide this integrated perspective on the applicable actuarial principles presented.
- 1.4 We start by examining the magnitude of the problem facing the nine provincial Departments of Health in South Africa; tracing the contingent liability, claims paid and claims made over the last six financial years to 31 March 2020. Various data problems are identified and examples are provided of how the contingent liability can be set at more realistic levels. Section 2 concludes with examining some reasons for the increase in medical malpractice claims and what the goals of medical malpractice systems should be.
- 1.5 The law of delict and in particular the treatment of causation is the focus of Section 3. We express major concerns with the treatment of causation in birth injury matters, where the standard test for causation is too flexible given the large amounts of money that are at stake. An analysis is provided of written court judgments in matters involving the Department of Health and recommendations are built around that analysis.
- 1.6 Cerebral palsy claims are the highest net worth claims and constitute the largest proportion of both the contingent liability and claims paid. The purpose of Section 4 is to distil relevant medical literature relating to cerebral palsy and to highlight the multifactorial pathway to the condition. It is important for legal and medical experts to make a clear distinction between causation and association in birth injury matters. The use of placental pathology in the assessment of causation is discussed in detail.
- 1.7 Some analysis of the breakdown of awards in medical malpractice claims into the standard heads of damages is provided in Section 5, together with discussion around the net discount rate used to calculate lump sums. We identify certain provinces that appear to be paying excessive compensation.
- 1.8 Section 6 provides an international comparison of the health and medical malpractice compensation systems, eligibility for compensation, the determination of negligence, the onus of proof and evidence, together with the extent of damages claimable in 13 countries.

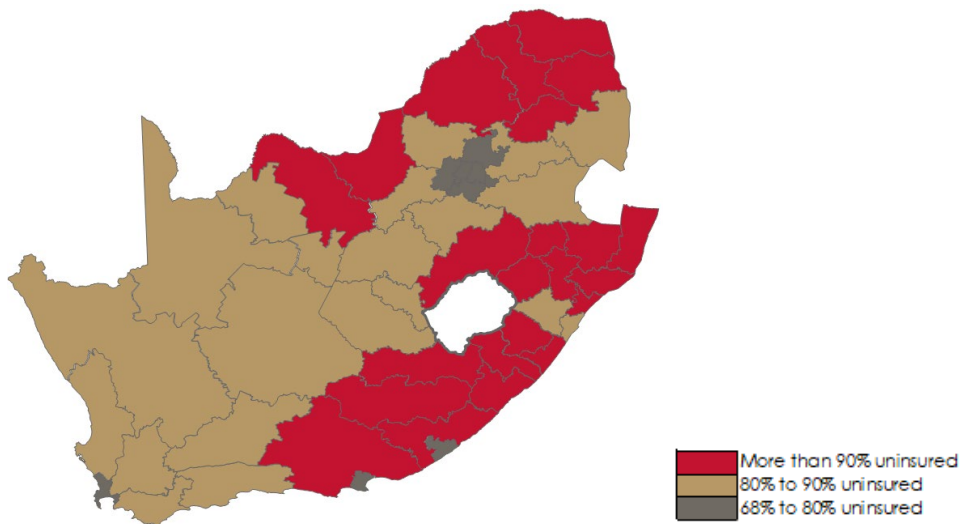
- 1.9 Generally a significant amount of time elapses between the date of the medical incident and the date of settlement. Arguably, treatment is needed in the early years when the social and economic adjustment is the greatest. Section 7 examines literature around the effectiveness of the various batteries of treatment prescribed by medical experts and highlights the need for extensive research into modalities of treatment.
- 1.10 Various legal challenges have been mounted by the Department of Health in recent years such as the public health care defence, the use of periodic payments and the undertaking to pay defence. Section 8 examines the most important decisions around the once-and-for-all rule and the afore mentioned legal challenges, leading to discussion as to the current status of the State Liability Amendment Bill that seeks to introduce structured settlements.
- 1.11 We conclude the report with information concerning current research on life expectancy of cerebral palsy litigants in South Africa and the use of reversionary trusts as a mechanism to return unused capital to the State on the early death of a successful claimant.

2. MAGNITUDE OF THE PROBLEM

2.1 GENERAL OBSERVATIONS

- 2.1.1 South Africa's population was estimated as 59,622,350 as at 1 July 2020^[1]. There were 8,925,641 beneficiaries of private medical schemes at 30 June 2020^[2].
- 2.1.2 The Constitution Twelfth Amendment Act^[3] provides for 52 district municipalities in South Africa. The percentage of persons covered by medical schemes across the 52 district municipalities was estimated in 2018^[4]. That data has been used to derive the percentage of persons not covered by medical schemes or the so-called uninsured population per district municipality as shown in Figure 1 below:

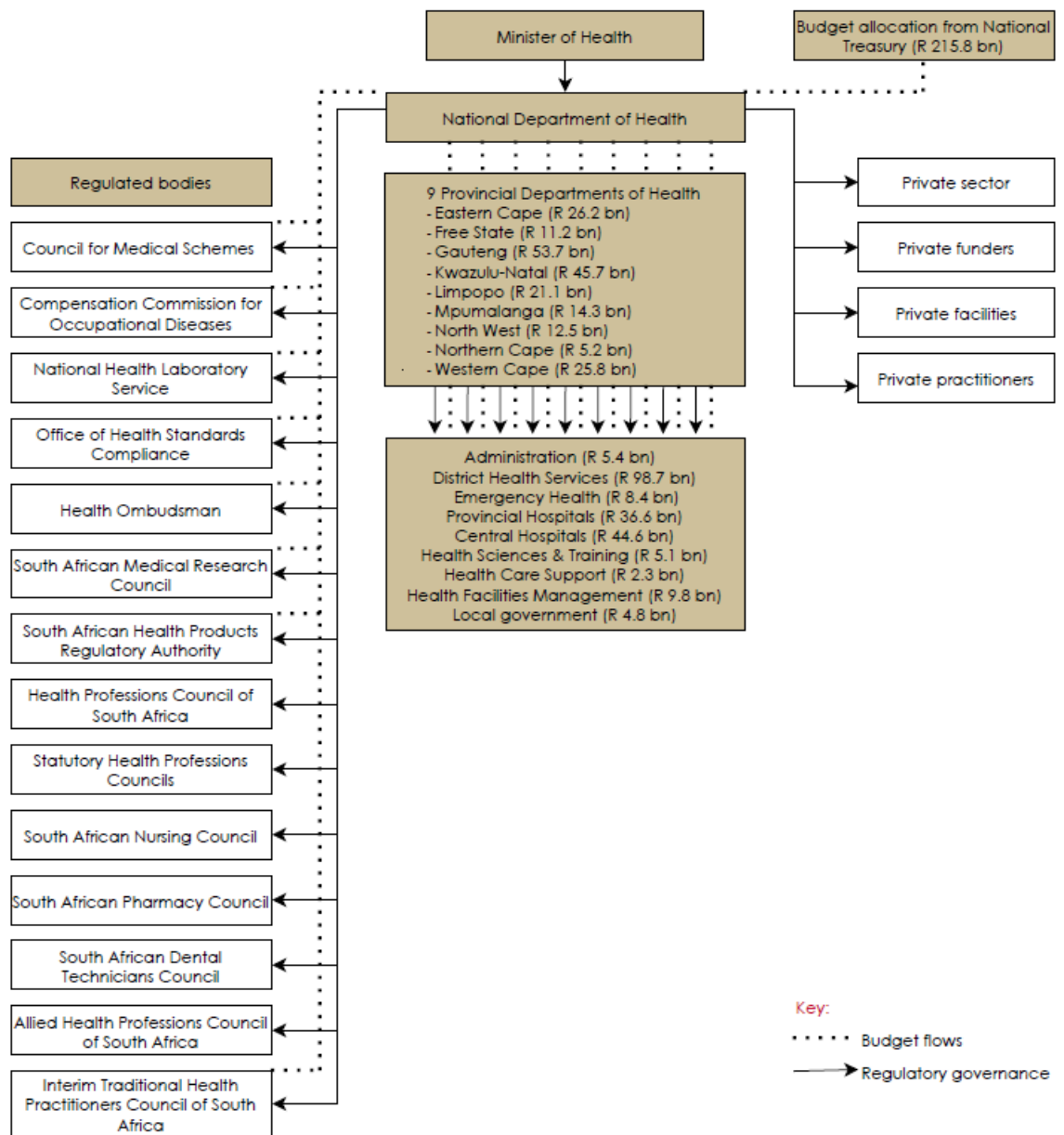
Figure 1: Uninsured population by district



- 2.1.3 Ten out of the above 52 district municipalities account for approximately 68.3% of medical scheme membership in South Africa.
- 2.1.4 The Department of Health's expenditure was estimated at R 215.8 billion for the year from 1 April 2019 to 31 March 2020^[5]. The private medical scheme industry collected gross contribution income of R 209.6 billion during the corresponding period^{[6],[7],[8]}. In 2019, out of pocket medical expenditure was estimated at R 30.0 billion^[9].

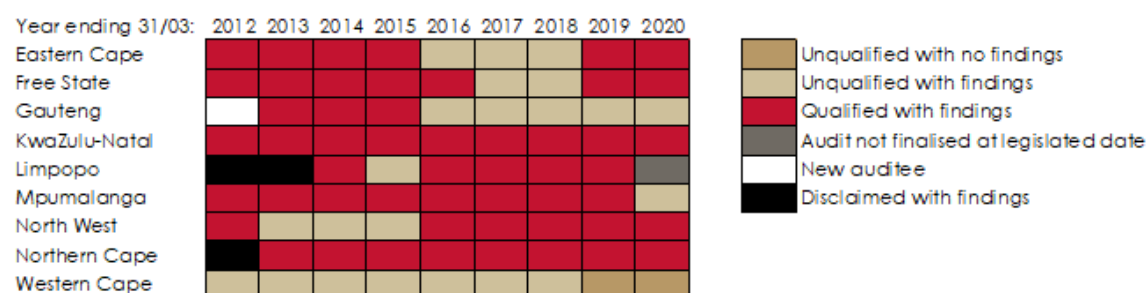
2.1.5 An overview of the Department of Health is provided below^{[10], [11]}:

Figure 2: Overview of the Department of Health



- 2.1.6 The nine provincial Departments of Health have achieved the following audit outcomes from time to time^{[12], [13]}:

Figure 3: Audit outcomes from 2011/2012 to 2019/2020 inclusive



- 2.1.7 The public health system in South Africa is primarily funded by tax revenue collected by the South African Revenue Service^[9]. The main sources of tax revenue in 2019/2020^[14] were personal income tax (39.0% of tax revenue); value-added tax (25.6% of tax revenue); company income tax (15.9% of tax revenue); and other taxes such as capital gains tax and transfer duties (19.5% of tax revenue). Tax revenue includes the Health Promotion Levy^[15] on sugary beverages which came into effect on 1 April 2018. The Health Promotion Levy supports the Department of Health's deliverables to decrease diabetes, obesity and other related diseases in South Africa. The afore mentioned levy is however not specifically ring fenced for public health care.
- 2.1.8 For the year ending 31 March 2020, approximately 45.7% of health expenditure was allocated to district health services^[5]. Public sector patients are required to enter the public health system at the primary care services level and use referral systems to access more specialized levels of care^[9].
- 2.1.9 According to the Office of Health Standards Compliance, there were 3,816 public health care establishments in South Africa during the 2018/2019 financial year^[16]. Public health care establishments are broadly broken down into 325 hospitals, 3,167 clinics and 324 community healthcare centres. During the 2018/2019 financial year, 730 health care establishments were assessed by the Office of Health Standards Compliance with the following average outcomes:

Table 1: Average outcomes for health care establishments

Compliance	Community Healthcare Centres (n=49)	Clinics (n=631)	Hospitals (n=50)	Total (n=730)	Cumulative percentage
>=80%	1	5	3	9	1.2%
70-79%	4	25	8	37	6.3%
60-69%	16	86	17	119	22.6%
50-59%	16	190	8	214	51.9%
40-49%	10	226	12	248	85.9%
<40%	2	99	2	103	100.0%

- 2.1.10 Of the 730 health care establishments that were assessed, 22.6% obtained a compliance score of 60% or more.

2.1.11 The number of birth registrations in South Africa in 2018 was 1,009,065^[17]. The number of births in the private sector in 2018 was 105,485; of which 76.9% were performed by caesarean section^[18]. The median cost of a normal vaginal delivery was R 22,656 and the median cost of a caesarean section was R 38,192. By contrast, the Department of Health Government Notice 657 of 1994^[19] provides that:

As from 1 June 1994, free health services must be provided to-

- (a) pregnant women for the period commencing from the time the pregnancy is diagnosed to forty-two days after the pregnancy has terminated, or if a complication has developed as result of the pregnancy, until the patient has been cured or the conditions as result of the complication has stabilised; ...

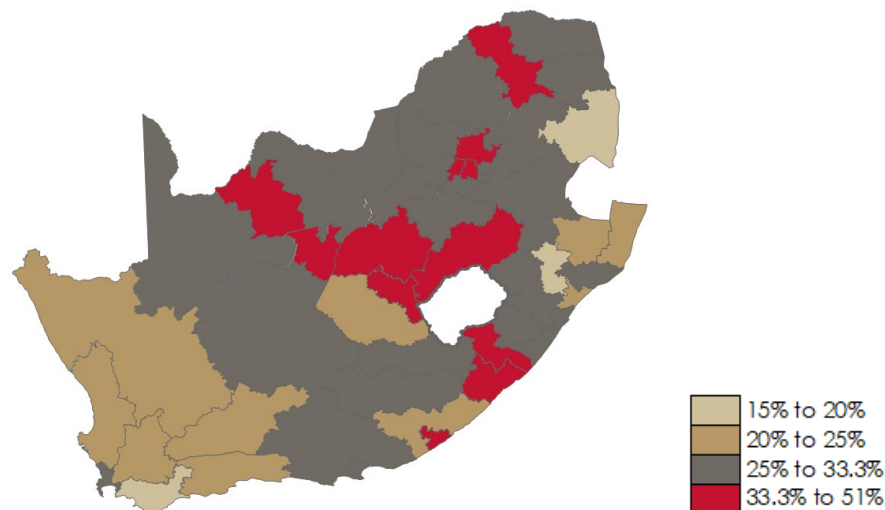
The following persons are excluded from free health services:

- (a) Persons and their dependents who are members of a medical scheme.
- (b) Non-citizens of South Africa who visit South Africa specifically for the purpose of obtaining health care.

2.1.12 There were 303 obstetricians and gynaecologists employed in the public sector and 579 employed in the private sector in 2019. Of those employed in the public sector, 190 were performing private sector work in terms of Remunerative Work Outside the Public Service^[20].

2.1.13 With effect from 1 April 2017, the Department of Health increased the number of free antenatal care visits from four to eight visits in line with recommendations from the World Health Organization. Scheduled visits occur at 14 weeks, 20 weeks, 26 weeks, 30 weeks, 34 weeks, 36 weeks, 38 weeks and 40 weeks^[21]. The percentage of women missing their first two antenatal visits in the 2019 calendar year based on data obtained from the District Health Information System^[22] – that is, the percentage who had their first antenatal visit after 20 weeks is set out in Figure 4 below:

Figure 4: Percentage of women missing their first two antenatal visits



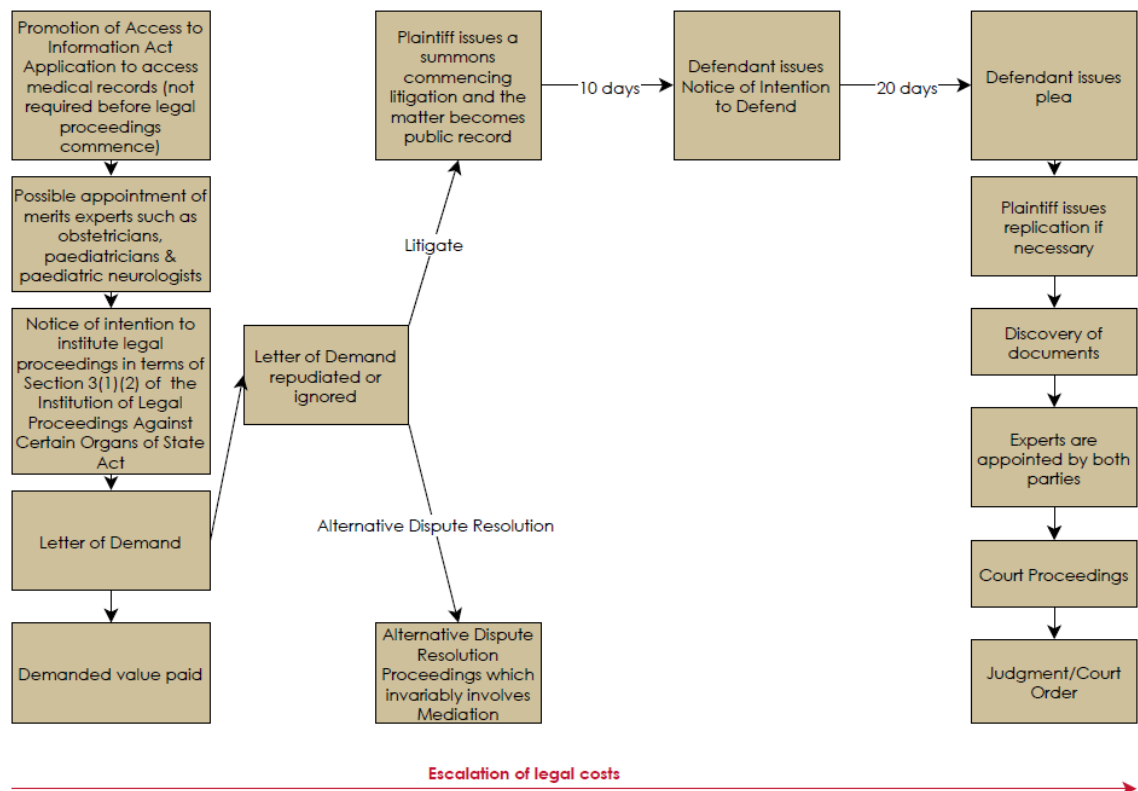
- 2.1.14 The South African Social Security Agency paid care dependency grants in respect of 157,172 children under the age of 18 as at July 2020^[23] (7.8 per 1,000 children under age 18). A person is, subject to section 5 and 7 of the Social Assistance Act ^[24], eligible for a care dependency grant if he or she is a parent, primary caregiver or a foster parent of a child who requires and receives permanent care or support services due to his or her (physical or mental) disability.

2.2 LEGAL BASIS FOR THE GOVERNMENT'S LIABILITY

- 2.2.1 Section 76(1)(h) of the Public Finance Management Act, 1999^[25] states that:
The National Treasury must make regulations or issue instructions applicable to departments, concerning the settlement of claims by or against the state; ...
- 2.2.2 Regulation 12.2.1 of the Public Finance Management Act^[26] establishes vicarious liability:
An institution must accept liability for any loss or damage suffered by another person, as for a claim against the state, which arose from an act or omission of an official, provided –
(a) the act or omission was the cause of the loss, damage or reason for the claim;
(b) the act or omission did not involve the use of alcohol or drugs;
(c) the official acted in the course of his or her employment and was not reckless, wilful or malicious;
(d) the official did not fail to comply with or ignore standing instructions, of which he or she was aware of or could reasonably have been aware of, which led to the loss, damage or reason for the claim, excluding damage arising from the use of a state vehicle; ...
- 2.2.3 Section 1 of the State Liability Act, 1957^[27] establishes that a person can claim damages negligently caused by another irrespective of whether a contract was concluded between the parties:
Any claim against the State which would, if that claim had arisen against a person, be the ground of an action in any competent court, shall be cognizable by such court, whether the claim arises out of any contract lawfully entered into on behalf of the State or out of any wrong committed by any servant of the State acting in his capacity and within the scope of his authority as such servant.
- 2.2.4 Section 2(1) of the State Liability Act establishes the nominal defendant:
In any action or other proceedings instituted by virtue of the provisions of section 1, the executive authority of the department concerned must be cited as nominal defendant or respondent.
- 2.2.5 Due to the above-mentioned legislation, claims in the public health sector are instituted against the Member of the Executive Council for Health in the province in which the delict occurred. If the health care establishment where the alleged act of negligence occurred is under municipal control, the municipality may be cited as a co-defendant.
- 2.2.6 There is no legislation in South Africa to address legal claims in the medical field^[28]. The aim of the South African Law Reform Commission's research program "Project 141: Medico-legal claims" is to introduce legislation in South Africa that will address legal claims in the medical field. The negative impact that medical malpractice claims have on the public purse and on the rendering of health services in the public and private sectors means that urgent attention must be given to regulating the system. At present, claims are generally dealt with by way of the common law of delict which is discussed in more detail in Section 3 of this report.

2.2.7 Figure 5 provides an overview of the legal process as it pertains to medical negligence claims against the Department of Health:

Figure 5: Litigation process in medical negligence claims



2.2.8 Hussain et al. provide the following outline of the stages involved in the litigation process^[29]:

Stage 1: Preliminary research

[Consultations with the client or primary witnesses, other witnesses and experts; disbursements; drafting of power of attorney to litigate; drafting letters of authority; relevant communication; copies, file administration; legal advice; fact investigation; perusal of documents; consideration of evidence; case analysis; determination of court jurisdiction; pre-litigation correspondence; settlement exchanges or meetings; alternative dispute mechanisms]

Stage 2: The official commencement of litigation for the client

[Drafting of summons, particulars of claim, or declaration; founding papers; counter claim, third party claim, or defending the claim]

Stage 3: The exchange of pleadings or papers

[Perusal or drafting of notice of intention to defend; notice of opposition; ...; drafting heads of argument; paginating and preparing court file; research; ..., plea, counter claim, plea to counter claim, replication, rejoinder, surrejoinder, rebutter, surrebutter; opposing papers in motion proceedings, replying papers in application; any further sets of papers in application]

Stage 4: Interlocutory issues

[Drafting application for summary judgement; opposing summary judgement; paginating and preparing court file; research; drafting heads of argument to present during hearing of application; appearing at the hearing; appeal where summary judgement is granted; calling for security; refusing or providing security; application to enforce notice or founding; opposing or other papers; irregular step proceedings; exceptions; applications to strike out; other applications and attendances; applications for interim payments; applications for orders suspending execution; applications for curatorship; notice of bar or related steps; removal of bar; condonation; settlement negotiations; offers to settle; court-annexed mediation; edictal citation or substituted service; joinder process; applications to intervene; drafting and making submissions as amicus curiae; process to change parties; making settlements an order of court; applying for or opposing postponements; applications to review taxation; process to authenticate documents executed outside South Africa for use in South Africa; delivering documents throughout; correspondence and communications]

Stage 5: The close of pleadings and set-down

[checking court file and attending to update; drafting or perusing agreement that pleadings are closed; filing of agreement with registrar or clerk of court; obtaining hearing date from registrar or clerk; draft notice of set-down; delivering notice of set-down]

Stage 6: Exchange of information before trial

[Discovery; medical examinations; inspection of things, plans, diagrams, models, photographs]

Stage 7: Preparation for trial or hearing

[subpoena for witnesses and documents]

Stage 8: The hearing**Stage 9: Recovery of costs and execution; and****Stage 10: Appeals and reviews.**

- 2.2.9 With effect from 9 March 2020, the Uniform Rules of Court^[30] were amended by the insertion of Rule 41A and now require that every action and application be issued and accompanied by a notice stating whether the party is willing to have the matter referred to Mediation. Alternatively, in terms of subrule 2 of Rule 41A, the notice needs to provide reasons why Mediation is inappropriate. The opposing party must similarly provide such a notice, together with reasons, with their notice of intention to defend or notice to oppose. The notices are without prejudice and are not filed with the registrar at Court.
- 2.2.10 It is understood that with the exception of a pilot Mediation project in Gauteng; many litigants do not consent to have medical malpractice matters referred to Mediation.
- 2.2.11 Consent to mediation is relevant in terms of costs in that Rule 41(9)(b) provides that:
... when an order for costs of the action or application is to be considered, the courts have regard for the notices referred to in subrule 2 ...
- 2.2.12 This may have an influence on the cost order made by a Judge should the matter before him or her be one that he or she considered ripe for Mediation.

2.3 OFFICE OF THE ACCOUNTANT GENERAL

2.3.1 The responsibility of the Office of the Accountant General is to promote and enforce transparency and effective management in respect of revenue expenditure, assets and liabilities of institutions in all three spheres of Government. This includes the administration of the National Revenue Fund and the Reconstruction and Development Programme Fund, as well as Banking Services for national departments. The Office of the Accountant General is also responsible for developing policies and frameworks on Accounting, Internal Audit and Risk Management.

2.3.2 Chapter 14 of the Office of the Accountant General's Accounting Manual for Departments (last updated October 2017)^[31] provides for the following procedure in accounting for contingent liabilities:

The amount disclosed as a contingent liability should be measured in the same manner as any provision that is, the best estimate of expenditure required to settle the obligation ... For example, any legal fees that may be incurred in a court case would be included in the estimate of the costs of the contingent liability.

Civil claims against the state (department / province) that have not been settled (by a court order or mutually between the parties) must be included in contingent liabilities. Certain types of claims are normally overstated. The amount disclosed is not necessarily the claim amount, but rather the amount determined as the most likely amount that the court will settle on. The "most likely" outcome of the settlement must be determined by a qualified legal person (such as the State Attorney or a department's internal legal services). Departmental / provincial history can also assist in determining such an estimate. The department should have processes in place that corroborate how the "most likely" outcome is determined and how the "most likely amount" is arrived at.

2.3.3 In December 2020, the Office of the Accountant General issued a revised Chapter 14 of the General Accounting Manual for comment^[32]. The revised manual provides for a more comprehensive treatment of medico-legal claims as set out in Table 2:

Table 2: Revised accounting treatment of medico-legal claims

Scenario	Condition at the reporting date	Impact on financial statements
1	The department has not reviewed or assessed the merits of the case.	No disclosure in the notes to the financial statements. Register of claims updated.
2	The Department does not admit liability, and both parties are waiting for commencement of agreed mediation / court hearing.	Department considers whether a possible obligation could exist based on past experience and includes estimate of outcome in the contingent liability note.
3	Department admits liability and both parties are waiting for commencement of agreed mediation / court hearing.	The department has admitted liability, confirming the past event giving rise to an outflow of resources. a) If the department can measure the damages to be paid to the claimant with sufficient reliability, the department records a provision in the notes to the financial statements, or, b) Given that the matter must still be heard by the Mediator / Judge, the department may not be in a position to measure the damages to be paid to the claimant with sufficient reliability. The department records a contingent liability in the notes to the financial statements.
4	The department admits liability and the mediation / court hearing has commenced.	The department will need to assess the evidence made available in the mediation / court hearing, the opinion of its own legal experts and any additional evidence provided by events after the reporting date in order to estimate the extent of the damages that may be payable. The estimated amount is recorded as a provision in the notes to the financial statements.
5	The department has not admitted liability and the mediation / court hearing has commenced.	The department will need to assess the evidence made available in the mediation / court hearing, the opinion of its own legal experts and any additional evidence provided by events after the reporting date. On the basis of such evidence: a) where it is more likely than not that a present obligation exists at the reporting date, the department discloses a provision; and b) where it is more likely that no present obligation exists at the reporting date, the department discloses a contingent liability, unless the possibility of an outflow of resources embodying economic benefits or service potential is remote.
6	The Mediator / Judge has ruled in favour of the claimant, and has determined the amount of damages payable by the department.	The department recognises a payable to the value of the damages due to the claimant.
7	The Mediator / Judge has ruled in favour of the department, and has determined the department is not liable for damages.	The department removes the disclosure of any contingent liability or provision initially recorded in the relevant note.

- 2.3.4 National Treasury provided the following breakdown of contingent liabilities per province, with the latest data being for the year ending 31 March 2020 (2019/2020). The contingent liability for medico-legal claims as at 31 March 2020 was reflected as approximately R 111.5 billion:

Table 3: Contingent liabilities per province (R'000)

Province	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
Eastern Cape	R8,210,838	R13,421,136	R16,772,732	R24,193,619	R32,864,497	R36,751,207
Free State	R540,365	R940,545	R1,306,928	R1,842,917	R2,874,754	R3,429,585
Gauteng	R10,079,281	R13,452,064	R17,844,047	R21,701,514	R19,625,835	R21,038,799
KwaZulu-Natal	R6,724,865	R9,957,126	R10,292,463	R16,638,734	R20,110,314	R23,440,969
Limpopo	R1,196,787	R1,606,657	R2,115,529	R4,874,800	R8,265,440	R10,327,987
Mpumalanga	R1,459,497	R2,366,010	R5,242,757	R7,472,985	R9,451,927	R9,457,321
Northern Cape	R174,111	R342,829	R1,220,527	R1,605,291	R2,104,584	R1,629,962
North West	R33,881	R855,737	R1,285,126	R1,697,205	R1,982,272	R5,395,624
Western Cape	R193,395	R182,025	R135,700	R90,350	R110,599	R33,155
Total	R28,613,020	R43,124,129	R56,215,809	R80,117,415	R97,390,222	R111,504,609

- 2.3.5 National Treasury provided the following breakdown of their estimates of claims payments per province, corresponding to Table 3 above. Over the six years from 1 April 2014 to 31 March 2020, estimated claims payments have amounted to approximately R 8.0 billion:

Table 4: Medical negligence claims payments per province (R'000)

Province	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
Eastern Cape	R74,868	R255,561	R208,503	R423,263	R797,434	R762,810
Free State	R196	R1,728	R1,560	R376	R3,600	R22,654
Gauteng	R241,085	R572,815	R751,082	R358,230	R586,453	R501,130
KwaZulu-Natal	R103,536	R90,367	R251,278	R461,919	R438,819	R180,444
Limpopo	R35,073	R9,622	R74,830	R26,773	R7,045	R83,571
Mpumalanga	R7,628	R15,211	R34,255	R67,782	R39,268	R45,534
Northern Cape	R3,828	R4,844	R823	R9,493	R3,550	R40,735
North West	R13,246	R6,422	R29,539	R33,274	R14,450	R18,912
Western Cape	R19,272	R28,073	R38,381	R86,984	R62,140	R60,140
Total	R498,732	R984,643	R1,390,251	R1,468,094	R1,952,759	R1,715,930
UIFW¹	R5,626,636	R5,819,803	R12,120,485	R7,030,601	R11,145,068	R7,147,540
As a % of UIFW	8.9%	16.9%	11.5%	20.9%	17.5%	24.0%

¹ Total unauthorized, irregular, fruitless and wasteful expenditure for the nine provincial Departments of Health according to the Auditor General. The value for 2019/2020 excludes Limpopo and the Western Cape where audits were not finalized at the legislated date.

- 2.3.6 From 1 April 2020 until 20 January 2021 (noting that South Africa went into a national lockdown due to the Covid-19 pandemic on 27 March 2020), an estimated R 1.6 billion has been paid in respect of claims against the various Departments of Health (mainly in respect of medico-legal payments). The Eastern Cape Department of Health paid out approximately R 870 million in claims during the above-mentioned period.

- 2.3.7 The total number of medico-legal claims submitted including letters of demand were reported as follows in the National Assembly by the Minister of Health^[33], ^[34]:

Table 5: Number of medico-legal claims lodged per province

Province	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Eastern Cape	450	524	424	524	459
Free State	44	40	44	52	67
Gauteng	396	330	521	386	120
KwaZulu-Natal	176	210	138	402	446
Limpopo	93	122	218	275	254
Mpumalanga	149	168	220	80	132
Northern Cape	53	9	32	23	19
North West	4	126	72	77	92
Western Cape	197	203	265	92	46
Total:	1,562	1,732	1,934	1,911	1,635
Per 100,000 uninsured:	3.4	3.7	4.1	4.0	3.3

2.4 PROVINCIAL DEPARTMENTS OF HEALTH

- 2.4.1 A meeting was conducted with the Western Cape Department of Health (the province with the lowest reported contingent liability) to ascertain what processes were in place to report contingent liabilities. In respect of known claims, the Western Cape Department of Health calculates the most likely settlement amounts based on active cases that are likely to succeed.
- 2.4.2 Medico-legal litigation reports were also obtained for the Northern Cape for May 2018^[35] and for Mpumalanga for May 2018^[36] from written replies in the National Assembly.
- 2.4.3 In respect of Mpumalanga, the Minister of Health noted in a written response in the National Assembly that:
Please note that what is regarded as the value of each case is actually contingent liability, i.e., it is the money that the litigant is claiming. The actual value can only be determined after the case has been settled in court or by mediation as the case may be.
- 2.4.4 It is clear from our investigations that provinces currently use different approaches to determine and quantify contingent liabilities for medical negligence claims. Hence, any comparison between the provinces and on a national level is misleading.
- 2.4.5 For most of the nine Departments of Health, the contingent liability has historically represented the additional provision each Department of Health would recognize in its accounts if damage payments were awarded on all claims equal to the amount claimed, rather than taking into account the probability of damages being paid (that is, reflecting that some claims settle at nil) and establishing a realistic case reserve for those cases deemed to have a prospect of success. Implementing the procedures set out in Table 2 above would likely result in a significant reduction in the contingent liability being reported. This has been acknowledged in Parliament as recently as November 2020 when the Deputy Minister of Health noted that^[37]:
We are sitting with billions of claims currently some of which indeed are not justifiable claims. So, only through this case management and the forensic investigations will we be able to identify those. We are working with the colleagues, the MECs and head of departments in the provinces to make sure that the intervention systems are rolled out as I have said we expect the latest by the middle of next year we should have reached all the provinces.

2.4.6 In March 2019, the Clinton Health Access Initiative (CHAI) Health Financing team was requested by National Treasury to investigate the medico-legal situation across South Africa. For that purpose, each province was requested by National Treasury to submit a registry of claims for the years 2014/2015 to 2018/2019 in the form of an Excel spreadsheet. The data specification was as follows:

- (1) Date of adverse event.
- (2) Location/facility at which the cause of action arose.
- (3) Date of notification of legal action.
- (4) Projected liability arising out of the action.
- (5) Settlement amount.
- (6) Amount spent on legal costs.
- (7) Description of the cause of action.
- (8) Notes on the defensibility of the case.

2.4.7 Numerous reservations were expressed about the data provided as follows:

- (1) Data provided was unaudited.
- (2) Claims records were duplicated.
- (3) Most provinces did not provide the date of the adverse event leading to the claim. Hence the development of a loss triangle which is the primary method used by actuaries to organize claims data could not be undertaken. We even found instances where the date of adverse event was later than the date of lodgment of the claim.
- (4) There was no standardization in the capturing of information between provinces.
- (5) There was no standardized terminology for a cause of action. For example, in our analysis of the claims register for Mpumalanga, many claims were annotated as "Maternity" of which cerebral palsy claims would be a subset.
- (6) Typographical errors.
- (7) Different methods in expressing contingent liabilities – from claim amounts it appears that many values were entered as the amount claimed in the plaintiff's particulars of claim.
- (8) Incorrect capturing of claim amounts – we found two instances where individual claim amounts were R 240,000,000 (both were in respect of cerebral palsy cases in the Eastern Cape).

2.4.8 Set out in Table 6 and Table 7 is an analysis of the Northern Cape contingent liability and Mpumalanga contingent liability in 2018:

Table 6: Northern Cape contingent liability in 2018

Type (our classification derived from case summaries)	Number	Amount	Percentage	Average
Birth related injury/death to mother	8	R91,030,000	7.8%	R11,378,750
Cerebral palsy	41	R921,530,117	78.5%	R22,476,344
Newborn death/still born/miscarriage	7	R32,360,000	2.8%	R4,622,857
Emergency medicine	2	R3,690,233	0.3%	R1,845,117
Erb's palsy/ROP/other birth injuries	2	R27,225,000	2.3%	R13,612,500
General medicine	14	R64,949,260	5.5%	R4,639,233
Other	2	R3,800,000	0.3%	R1,900,000
Surgery	10	R29,755,455	2.5%	R2,975,546
Total:	86	R1,174,340,065	100.0%	R13,655,117

Table 7: Mpumalanga contingent liability in 2018

Type (Mpumalanga Department of Health description used)	Number	Amount	Percentage	Average
Acute appendix	1	R550,000	0.0%	R550,000
Amputation	1	R1,100,000	0.0%	R1,100,000
Circumcision	1	R5,751,000	0.1%	R5,751,000
Cryptococcal meningitis	1	R21,500,000	0.4%	R21,500,000
Death	5	R8,187,940	0.2%	R1,637,588
Death of mental health care patient	1	R800,000	0.0%	R800,000
Death of patient	1	R6,050,000	0.1%	R6,050,000
Eye operation	2	R10,000,000	0.2%	R5,000,000
Head injury	2	R3,050,000	0.1%	R1,525,000
Hearing loss	1	R1,500,000	0.0%	R1,500,000
Male medical circumcision	1	R1,400,000	0.0%	R1,400,000
Maternal death	9	R6,993,434	0.1%	R777,048
Maternity	502	R5,027,874,204	95.1%	R10,015,686
Orthopaedic	57	R167,883,555	3.2%	R2,945,326
Retinopathy	1	R20,300,000	0.4%	R20,300,000
Unknown	1	R1,754,247	0.0%	R1,754,247
Vomiting	1	R3,166,659	0.1%	R3,166,659
Total:	573	R5,287,861,039	100.0%	R9,228,379

2.4.9 With respect to the Northern Cape contingent liability, a significant reduction could be made due to the following factors without further insight into individual files:

- (1) The single largest claim for R 50,000,000 is in respect of a mother who delivered a still born baby. Her uterus was removed due to damage caused by forceps during delivery. No case law could be found for damages due to the unlawful or negligent removal of a uterus in South Africa. In Swaziland, an amount of E 450,000 (R 450,000) was awarded in a similar matter in 2019^[38].
- (2) The average cerebral palsy claim of R 22,476,344 is excessive in relation to historical settlements for other provinces as discussed in Section 5. In addition, some matters may not succeed on merits.
- (3) The average claim for the death of a new born/still born/miscarriage is R 4,622,857. Such claims would be limited to funeral expenses (the average payment in respect of funeral expenses for Road Accident Fund claims was R 18,521 for the year ending 31 March 2020^[39]) and a possible claim for general damages. The general damages claim for the death of a child due to shock and emotional grief has varied in recent years, with the largest known award R 1,200,000 made by the Supreme Court of Appeal to the family of the late Michael Komape who drowned in a pit toilet in Limpopo in 2014^[40].

2.4.10 Adjusting for realistic case reserves in respect of items 2.4.9(1) to 2.4.9(3) above and without factoring in the probability of success of each matter, would reduce the contingent liability of the Northern Cape by close to R 500 million.

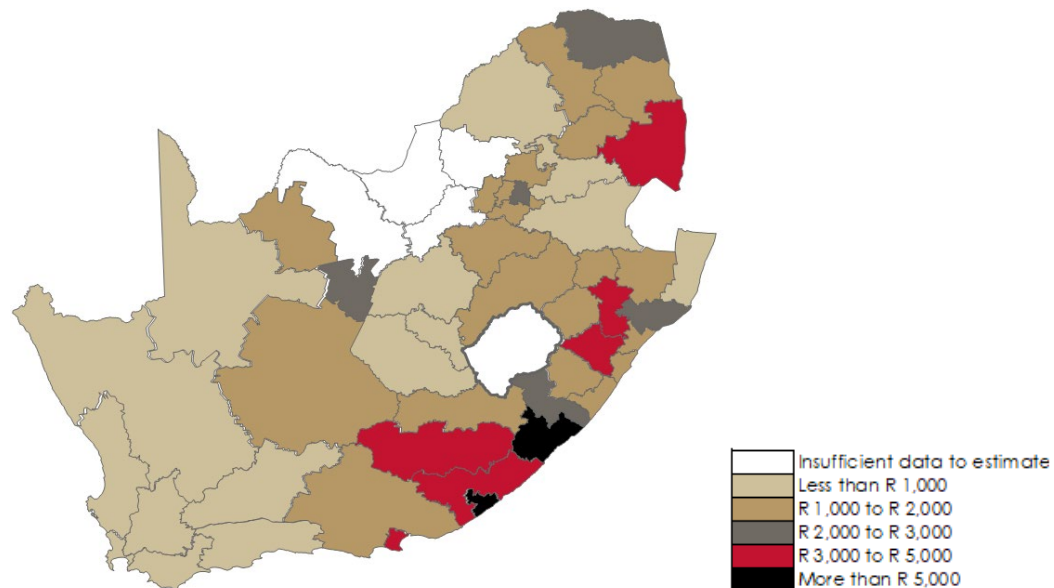
2.4.11 In a written reply in parliament, the Minister of Health provided the following summary details of the main cause of claims against the various provincial Departments of Health^[33]:

Table 8: Summary details of claims

Province	Summary details of claims
Eastern Cape	Cerebral palsy; surgical.
Free State	Cerebral palsy; wrong diagnosis/medication; surgical complications.
Gauteng	Cerebral palsy; surgical.
KwaZulu-Natal	Obstetrics & gynaecology; surgical oncology; ophthalmology.
Limpopo	Cerebral palsy; obstetrics & gynaecology; orthopaedic; other surgical.
Mpumalanga	Maternity cases; orthopaedic cases; mental health care user case.
Northern Cape	Cerebral palsy; surgical.
North West	Maternity cases; orthopaedic cases.
Western Cape	Obstetrics, surgical, neurosurgery.

2.4.12 The health care facility at which each cause of action allegedly arose was mapped to the relevant district municipality, with the exception of the North West for which no health care facility data was available. Set out in Figure 6 below is the average contingent liability per uninsured for the 52 district municipalities using the data file used by CHAI (unadjusted):

Figure 6: Average contingent liability per uninsured



2.5 DISCUSSION

2.5.1 Reasons for medical malpractice claims

- (1) As noted by Mohr^[41], in the United States, there are six reasons why medical malpractice law suits continue to this day – three of them medical and three of them legal:
 - (M1) Medical progress and innovation can induce errors.
 - (M2) There can be no malpractice without an established practice.
 - (M3) With insurance, every doctor is worth suing, not just the wealthy ones.
 - (L1) Contingency fee arrangements.
 - (L2) Jury trials instead of specialist expert juries.
 - (L3) Under the tort system, malpractice is vague, flexible and easy to manipulate.
- (2) With respect to contingency fee arrangements, it goes beyond the scope of this report to investigate aspects such as a tiered system of contingency fees (where the contingency fee scale decreases as the claim value increases); contingency fees applicable to only certain heads of damages in medical malpractice claims; and the emergence of litigation funding (together with the regulation thereof). The South African Law Reform Commission released an extensive discussion paper investigating legal fees in November 2020^[42].
- (3) In South Africa, a study by Pienaar^[43] concluded that:

Patient-centred legislation and pronouncements by our courts that constantly reiterate the importance of patient rights arguably create very fertile ground for medical negligence claims. These are, as the contribution concludes, merely contributing factors to the phenomenon under investigation.
- (4) Another reason cited for the rise of medical negligence claims was described by the Deputy Minister of Health as being^[37]:

So, they have just replaced the Road Accident Fund with medical negligence.

A lot of what used to happen with the Road Accident Fund which has now collapsed has now moved to health litigations where you will find frivolous claims also happening.
- (5) Allegations of unethical conduct by lawyers such as touting, the illegal procurement of information and obtaining patient files illegally also goes beyond the scope of this report.
- (6) The current Minister of Health in the Eastern Cape noted that^[44]:

Because the health department has been using a manual filing system, some healthcare workers have stolen patients' files, making it difficult for the department to defend itself against bogus claims.

- (7) In addition, allegations of collusion between the State Attorney's office and claimants of supposed malpractice in the Health Department goes beyond the scope of this report. In a written reply in parliament the Minister of Justice and Correctional Services noted that^[45]:

I have made a request to the President.... for the Special Investigating Unit (SIU) to investigate the said allegations.

The State Attorney's Office is extremely under-capacitated in respect of human resources. Many cases were settled on the door-steps of the court. It may have been a matter of skills and knowledge of the law in respect of medical negligence cases. The investigation of the SIU will cover the manner of operation of officials in the various institutions, namely the State Attorney's Offices, the officials at the courts, the Department of Health, the Attorneys in Private Practice and the Advocates. The investigation will study the case files and all its information to check actual information, the bills of cost and payments done in State Attorney's offices.

- (8) New medical developments such as medical tourism and telemedicine will need to be monitored and jurisdictional issues may arise where telemedicine is administered across borders for example.

2.5.2 Data

- (1) Inadequacies in the collection and analysis of appropriate data have precluded a sound actuarial analysis of the magnitude of the problem. Despite this, it is clear that the largest problem facing the Department of Health is in respect of cerebral palsy matters. The latter is therefore the focus of Section 4 of this report.
- (2) Central data collection is a prerequisite for decision making in the medical malpractice arena. The National Department of Health has the authority to require statistical reporting among the provinces, but at present there is no requirement for uniform reporting. A medico-legal unit should be established within the National Department of Health. That unit should establish a uniform statistical reporting system for medical malpractice claims and data should be reported to a single data collection agent who will compile it, validate it and make it available to relevant parties.
- (3) The date of the adverse event must be recorded for all malpractice claims. Currently there are a significant number of claims without adverse event dates. The next date that must be recorded is the date of summons or the date of notification of a claim. All dates can be gleaned from the letter of demand or summons served on the various Departments. A central repository of letters of demand should be created.
- (4) Attention must be given to the setting of case reserves. A case reserve is simply the reserve established by the State for a known adverse event where it is deemed that a payment may ensue. Case reserves can be established by the medico-legal unit in the provinces or by a formula – however, each case reserve must be individually established. It must be recognized that in the early stages of a claim, there is generally insufficient information to make a sound estimate as vital aspects such as a determination on life expectancy are unavailable.

- (5) On a broader scale, Mello and Studdert^[46] note that the lack of a national data surveillance system for tracking medical malpractice claims is a missed opportunity to improve patient safety and better understand the performance of the medical liability system.

2.5.3 Actuarial issues

- (1) The most challenging problem in establishing a realistic actuarial reserve for claims made is the protracted period of time that passes before one can know with any degree of certainty what past experience has been. This is due to the "long tail" of malpractice claims, especially those in respect of cerebral palsy. Actuarial uncertainty is high with any group of claims that both pay over an extended period of time and whose payments increase with inflation.
- (2) It can take more than five years before an average cost of claim can be established and if the number of claims and the amount paid per claim is increasing rapidly, then the base data could be of little value.
- (3) The "long tail" can be due to a variety of factors such as delays in obtaining court dates; the length of time that it takes to procure expert reports and prepare a matter adequately; and strategic delays employed by the legal parties. But by far the most important factor to investigate are issues surrounding prescription and condonation discussed in Section 3 of this report.

2.5.4 What should be the goals of medical malpractice systems?

- (1) As set out in Section 6 of this report, medical malpractice systems exist worldwide in various forms.
- (2) Frees and Gao^[47] identify the following 3 goals of medical malpractice systems:
 - Prevention.** The prevention of medical injuries and the promotion of patient safety are paramount goals of health care policy. The prospect of liability in damages acts as an incentive to act with reasonable care.
 - Compensation.** Compensation of injured patients is a core function of the law regarding medical malpractice and medical injuries.
 - Accountability.** Injured patients want to know what went wrong, who was responsible for it, and what efforts are being made to prevent future repetitions. They also want to receive an admission of fault and an apology.
- (3) The form of compensation is discussed in Section 8 of this report.

2.6 REFERENCES

1. Department of Statistics South Africa. 2020. *Mid-year Population Estimates*. Pretoria: Department of Statistics South Africa.
2. Council for Medical Schemes. 2020. *Quarterly Reports for the period ending 30 June 2020*. Pretoria: Council for Medical Schemes.
3. South Africa. Constitution Twelfth Amendment Act, 2005 (Act No. 1262 of 2005). Government Gazette No. 28364. 2005.
4. Shapiro, D. 2019. *Small area model for estimation of proportion of population covered by medical schemes* [Dataset]. South Africa: Insight Actuaries.
5. Health Systems Trust. 2020. *South African Health Review*. Durban: Health Systems Trust.
6. Council for Medical Schemes. 2019. *Quarterly Reports for the period ending 31 March 2019*. Pretoria: Council for Medical Schemes.
7. Council for Medical Schemes. 2020. *Annual Report 2019/20*. Pretoria: Council for Medical Schemes.
8. Council for Medical Schemes. 2020. *Quarterly Reports for the period ending 31 March 2020*. Pretoria: Council for Medical Schemes.
9. American Academy of Actuaries, International Actuarial Association, Society of Actuaries. 2020. *International Health Care Funding Report*.
10. Still, L. 2020. *Health Care in South Africa, 2020/2021*. Profile Media.
11. Department of Health. 2019. *Annual Report 2018/2019*. Pretoria: Department of Health.
12. Auditor General South Africa. 2019. *PFMA 2018-19 Consolidated General Report*. Pretoria: Auditor General South Africa.
13. Auditor General South Africa. 2016. *PFMA 2015-16 Consolidated General Report*. Pretoria: Auditor General South Africa.
14. Department of National Treasury and the South African Revenue Service. 2020. *2020 Tax Statistics*.
15. South African Revenue Service. 2019. *Customs and Excise Tariff*. Johannesburg: South African Revenue Service.
16. Office of Health Standards Compliance. 2019. *Annual Inspection Report 2018/19*. Pretoria: Office of Health Standards Compliance.
17. Department of Statistics South Africa. 2019. *Recorded Live Births*. Pretoria: Department of Statistics South Africa.
18. Council for Medical Schemes. 2020. *Epidemiology and trends of caesarean section births in the medical schemes' population, 2015 – 2018*. Pretoria: Council for Medical Schemes.
19. Department of National Health and Population Development, South Africa. Rendering of Free Health Services. Government Gazette No. 15817:657. 1994.
20. Ranchod, S., Smith, A. M., Strugnell, D. & Wishnia, J. 2019. *The supply of and need for medical specialists in South Africa*. Cape Town: Percept.
21. Department of Health, Mom Connect & Phila. *Improving Antenatal Care in South Africa*.
22. District Health Information Software. 2019. [Dataset]. Pretoria: Department of Health.
23. South African Social Security Agency. 2020. *Fourth Statistical Report: Payment System*. Pretoria, South African Social Security Agency.
24. South Africa. Social Assistance Act, 2004 (Act No. 13 of 2004). Government Gazette No. 26446:714. 2004.
25. Department of National Treasury, South Africa. Public Finance Management Act, 1999 (Act No. 1 of 1999).
26. Treasury Regulations for departments, [and] constitutional institutions, public entities, Parliament, and provincial legislatures. Government Gazette No. 22141. 2001.
27. South Africa. State Liability Act No. 20 of 1957.
28. Van Zyl, R. 2017. *Project 141: Medico-Legal Claims*. Pretoria: South African Law Reform Commission.
29. Hussain, I et al. *Case management in our courts* (2016) L.E.A.D.
30. Department of Justice and Constitutional Development, South Africa. Rules Board for Courts of Law Act, 1985 (Act No. 10 of 1985). Government Gazette No. 43000:32. 2020.
31. Department of National Treasury. 2017. Chapter 14: Provisions and Contingents. In *Accounting Manual for Departments*. Pretoria: Department of National Treasury.
32. Department of National Treasury. 2020. Chapter 14: Provisions and Contingents. In *Accounting Manual for Departments*. Pretoria: Department of National Treasury.
33. Parliament. National Assembly. 2020. *Question No. 95*. South Africa: Parliament.
34. Parliament. National Assembly. 2017. *Question No. 2169*. South Africa: Parliament.
35. Parliament. National Assembly. 2018. *Question No. 1692*. South Africa: Parliament.
36. Parliament. National Assembly. 2018. *Question No. 1691*. South Africa: Parliament.
37. Parliament. National Assembly. 2020. *Proceedings of the National Council of Provinces (Hansard)*. (5 November 2020). South Africa: Parliament.
38. Zeeman v The Women and Children's Hospital and Another (1264/2012) [2018] SZHC 51
39. Road Accident Fund. 2020. *Annual Report 2019-2020*. Pretoria: Road Accident Fund.
40. Komape v Minister of Basic Education (754/2018 and 1051/2018) [2019] ZASCA 192
41. Mohr, J. C. 2000. *American medical malpractice litigation in historical perspective*. Journal of the American Medical Association 283:1731–37.

42. South African Law Commission. 2020. *Project 142: Investigation into legal fees including access to justice and other interventions*. (Discussion paper 150). Pretoria: South African Law Reform Commission.
43. Pienaar, L. 2016. *Investigating the Reasons behind the Increase in Medical Negligence Claims*. PELJ / PER 2016(19). DOI <http://dx.doi.org/10.17159/1727-3781/2016/v19i0a1101>
44. <https://www.news24.com/news24/southafrica/news/why-the-eastern-cape-health-dept-faces-lawsuits-totalling-r31bn-20210318>
45. Parliament. National Assembly. 2018. *Question No. 2562*. South Africa: Parliament.
46. Mello, M. M., and D. M. Studdert. 2016. Building a national surveillance system for malpractice claims, *Health Services Research* 51: 48.
47. Frees, E.W. & Gao, L. 2020. *Predictive Analytics and Medical Malpractice*. *North American Actuarial Journal*, 24:2, 211-227, DOI: 10.1080/10920277.2019.1634597

3. MERITS

3.1 LEGAL CONTEXT

3.1.1 In understanding the legal framework within which medical malpractice claims fall, the starting point and prevailing authority is the Constitution of the Republic of South Africa^[1], being the supreme law of South Africa. All law, including the common law, derives its force from the Constitution and is subject to constitutional control.

3.1.2 Section 1 of the Constitution provides as follows:

The Republic of South Africa is one, sovereign, democratic state founded on the following values:

- (a) Human dignity, the achievement of equality and the advancement of human rights and freedoms.
- (b) Non-racialism and non-sexism.
- (c) Supremacy of the constitution and the rule of law.
- (d) Universal adult suffrage, a national common voters roll, regular elections and a multi-party system of democratic government, to ensure accountability, responsiveness and openness.

3.1.3 Adherence to the founding values in Section 1 requires a public service that complies with the principles and values of public administration. Section 195(1) of the Constitution provides as follows:

Public administration must be governed by the democratic values and principles enshrined in the Constitution, including the following principles:

- (a) A high standard of professional ethics must be promoted and maintained.
- (b) Efficient, economic and effective use of resources must be promoted.
- (c) Public administration must be development-oriented.
- (d) Services must be provided impartially, fairly, equitably and without bias.
- (e) People's needs must be responded to, and the public must be encouraged to participate in policy-making.
- (f) Public administration must be accountable.
- (g) Transparency must be fostered by providing the public with timely, accessible and accurate information.
- (h) Good human-resource management and career-development practices, to maximise human potential, must be cultivated.
- (i) Public administration must be broadly representative of the South African people, with employment and personnel management practices based on ability, objectivity, fairness, and the need to redress the imbalances of the past to achieve broad representation.

3.1.4 Relevant sections of the Constitution as they may relate to medical malpractice claims are set out below:

Application of the Bill of Rights

Section 8(1)

The Bill of Rights applies to all law, and binds the legislature, the executive, the judiciary and all organs of state.

Section 8(2)

A provision of the Bill of Rights binds a natural or a juristic person if, and to the extent that, it is applicable, taking into account the nature of the right and the nature of any duty imposed by the right.

Section 8(3)(b)

When applying a provision of the Bill of Rights to a natural or juristic person in terms of subsection (2), a court may develop rules of the common law to limit the right, provided that the limitation is in accordance with section 36(1).

Freedom and security of the person

Section 12(1)(c)

Everyone has the right to freedom and security of the person, which includes the right to be free from all forms of violence from either public or private sources;

Section 12(2)

Everyone has the right to bodily and psychological integrity, which includes the right —

- (a) to make decisions concerning reproduction;
- (b) to security in and control over their body; and
- (c) not to be subjected to medical or scientific experiments without their informed consent.

Health care

Section 27(1)(a)

Everyone has the right to have access to health care services, including reproductive health care;

Section 27(2)

The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realization of each of these rights.

Section 27(3)

No one may be refused emergency medical treatment.

Limitation of rights

Section 36(1)

The rights in the Bill of Rights may be limited only in terms of law of general application to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, taking into account all relevant factors, including

- (a) the nature of the right;
- (b) the importance of the purpose of the limitation;
- (c) the nature and extent of the limitation;
- (d) the relation between the limitation and its purpose; and
- (e) less restrictive means to achieve the purpose.

Interpretation of Bill of Rights

Section 39(2)

When interpreting any legislation, and when developing the common law or customary law, every court, tribunal or forum must promote the spirit, purport and objects of the Bill of Rights.

Inherent power

Section 173

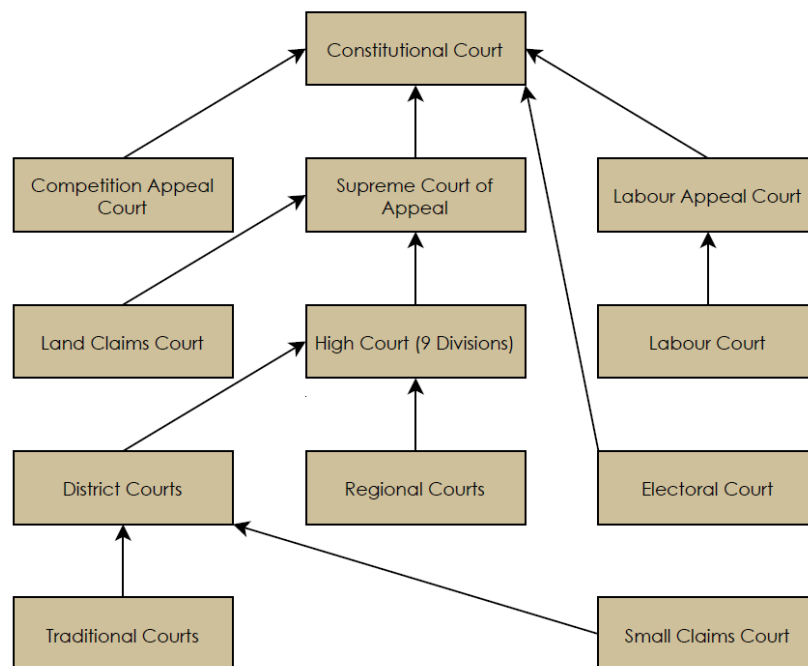
The Constitutional Court, the Supreme Court of Appeal and the High Court of South Africa each has the inherent power to protect and regulate their own processes, and to develop the common law, taking into account the interests of justice.

- 3.1.5 There is no specific medical malpractice legislation in effect in South Africa currently. These claims are governed by common law and previously decided cases. As explained by Loubser^[2]:

The important difference between South African private law and that of most other modern civil law systems is that South African private law, for the most part, continues to exist in an uncodified form as *ius commune*, or common law. Legislation overrides and may change certain common law rules, and certain areas of the law of delict are governed by specific legislation, but the *ius commune* and decided cases constitute the basic source of law. Cases decided by higher courts bind lower courts in terms of the *stare decisis* doctrine, and the development of the law is shaped by judges reasoning 'from case to case' in the tradition of common law judges.

- 3.1.6 The *stare decisis* doctrine is illustrated by the hierarchy of Courts in South Africa in Figure 7 below^[3]:

Figure 7: Hierarchy of Courts in South Africa



3.2 CLAIMS IN DELICT

- 3.2.1 Medical negligence claims in South Africa are governed under both the law of delict and of contract. In both cases the burden of proof lies upon the plaintiff to prove their claim on the balance of probabilities. This means that the plaintiff must prove to the court that it is more likely than not that her case is correct. In birth injury claims, it is usual for the mother to act as the plaintiff on her own behalf and in her representative capacity on behalf of her child. It is also possible for the father to act on behalf of the child. In addition to this, there exists a legal mechanism of appointing a curator to represent the interests of the child in litigation (*curator ad litem*).

3.2.2 A claim for breach of contract can arise when a medical practitioner fails to conduct the medical procedure agreed upon, or performs it incompletely (*Administrator of Natal v Edouard*^[4]). The aim of damages for breach of contract is to put the plaintiff back into the position as if the contract had been completed, that is, to put her in the position she would have been in if she had received sound medical treatment. These types of damages are limited to financial losses, for example, loss of earnings and medical expenses.

3.2.3 For a medical negligence claim in delict to succeed, the plaintiff must prove all five elements. These are:

- (1) The existence of a duty of care
- (2) Breach of that duty
- (3) Which causes
- (4) Reasonably foreseeable
- (5) Harm

3.2.4 Duty of care

- (1) The starting point for a plaintiff is that she will have to establish that the treating medical practitioners in the hospital or clinic owed her a duty of care. Once a mother has entered a birthing facility such as a hospital or a clinic, it is usually accepted that the institution owes her a duty of care. Similarly, where a midwife or other medical practitioner is in attendance in another setting, such as a home birth, it is likely to be accepted that she owes her patient a duty of care. Therefore, whether a duty of care exists is an issue which is unlikely to be in dispute in most birth injury cases.
- (2) However, there are some cases where this could be raised as an issue, such as where a mother arrives at a birth facility but births outside of it. In such a case, whether a duty of care is owed will depend on the facts of the case, including the advice that the mother was given by medical practitioners responsible for her antenatal care in respect of where she should go when she went into labour; and whether the clinic was closed, or whether it was open but no medical staff were available to assist. For example, in the case of *NM obo TM v Member of Executive Council, North West Department of Health*^[5] the plaintiff attended the clinic only to be advised by the security guard that no nurses were on duty. She consequently gave birth to the child outside of the clinic, in her vehicle. The child was born with cerebral palsy. The court found that the clinic was a 24-hour clinic, that there was no evidence that it was closed on the day, and that it appeared that no staff were available to help the plaintiff resulting in her giving birth outside. Therefore, in this case, a duty of care was found to exist. Had the clinic been closed, the defendant may have been able to argue that they did not undertake a legal duty of care towards the patient.

3.2.5 Breach of duty of care

- (1) Once the plaintiff has established that a duty of care exists, she must next show that the medical practitioners treating her breached this duty of care. The test for whether or not a medical practitioner has breached their duty of care towards a patient, is whether or not the medical practitioner's care fell below that which the patient could reasonably expect. This is not the highest possible standard of care, but rather a reasonable level of skill and care^[6]. A case from 1924, *Van Wyk v Lewis*^[7] offers guidance in respect of how this is to be interpreted:
[In] deciding what is reasonable the court will have regard to the general level of skill and diligence possessed and exercised at the time by the members of the branch of the profession to which the practitioner belongs.
- (2) This means that if a medical practitioner's management of a patient is considered to be reasonable by a responsible body of their peers, a court would be unlikely to find that they were negligent. It is for this reason that the evidence of medico-legal experts tends to be of vital importance in medical negligence cases.
- (3) For example, in birth injury cases, plaintiffs will frequently allege that medical practitioners breached their duty of care by failing to conduct a caesarean section (C-section) timeously, when signs of foetal distress have been observed on the cardiotocography (CTG) machine. In such a case, it is likely that both the plaintiff and defendant would rely upon medico-legal evidence by an expert obstetrician/gynaecologist, who would be asked to confirm whether the treating doctor's course of action fell below the standard that the patient could reasonably expect.
- (4) The use of expert evidence to guide the court on establishing a breach of the duty of care is well illustrated in *K v MEC for Health, Eastern Cape*^[8]. The Court examined the expert witnesses on whether or not a delay in C-section of almost two hours after foetal distress was noticed was justified. The defendant expert witness, Dr van Helsdingen, defended the delay in conducting a C-section on the basis that CTG readings are often an inaccurate measure of foetal distress. He testified:
I have never been sued for doing an unnecessary caesar. But boy have I been sued for not doing the caesar when it was necessary. So thousands of caesars are done on the basis that they think there is a foetal hypoxia and they know they are going to get sued if the baby is harmed, they are wrong 30, 40, 70% of the cases. Now how academic, how true, and how good is that legally wise if nothing else?
- (5) Meanwhile, the plaintiff's expert witness, Dr Nelson gave the following view, paraphrased by the Court:
Based on his vast practical experience as a specialist in the course of which he had performed approximately 5000 caesarean sections he was of the strongly held view that even if the CTG was wrong in its positive prediction in 70% of cases a medical practitioner would ignore continuing sinister signs on the CTG at his or her peril.
- (6) The court questioned the reliability of Dr van Helsdingen's evidence on various grounds, including his reliance on unfounded hearsay evidence, and his concession in oral evidence that he had no grounds for changing his opinion in his supplementary report. The court therefore gave more weight to Dr Nelson's evidence as being indicative of the general level of skill and diligence of medical practitioners in this field. Consequently, the court found in favour of the plaintiff that there was an 'unacceptable and unexplained delay' in the C-section being performed.

- (7) As illustrated by this example, proof of this element of the delict relies heavily on the quality of the evidence of expert witnesses in their analysis of the available facts of the actions of the medical professionals and the extent to which these opinions are upheld under cross examination in the court.
- (8) The opinion of medical experts is central to the determination of the required level of care and whether there was a breach of it. The requirement in evaluating such evidence is that expert witnesses support their opinions with valid reasons. Where reasons are advanced in support of an opinion, the probative value thereof is strengthened.

3.2.6 Causation

- (1) Once the plaintiff has established that the standard of care afforded to her fell below that which she could have reasonably been entitled to expect, the next step is for her to prove that the breach in standard of care caused the injury. This is known as causation. Causation is often the most challenging aspect of a birth injury claim to prove.
- (2) For example, it is widely recognised that the CTG machine should be monitored regularly throughout active labour, and vaginal examinations should also be conducted regularly. In the cerebral palsy claims presented to South African courts, it is often the case that the level of CTG monitoring was inadequate. However, establishing this breach in the duty of care owed to the plaintiff is not enough to win the case. The plaintiff will often find herself having to prove that the failure to conduct CTG monitoring caused her child to suffer hypoxic ischemic injury during birth, leading to cerebral palsy. This is also known as the “but for” test. The court will ask itself, but for the failure to monitor CTG, would the child – on the balance of probabilities – have suffered a hypoxic ischemic injury?
- (3) The plaintiff must show a strong factual link between the breach in duty, and the harm which was caused. The negligent conduct by the defendant does not need to have been the only cause of the injury, however the plaintiff must prove that the negligence caused or materially contributed to the injury^[9]. The corollary of this is that the defendant has the opportunity to present its own evidence of the probability that the factual link does not exist.
- (4) This issue was examined in the case of *Goliath obo O v MEC Department of Health North West Provincial Government*^[10]. In that case, the evidence of an expert radiologist was relied upon by the plaintiff to prove that the child's brain injury occurred at the time of, or prior to labour, due to a lack of oxygen. Both the plaintiff and the defendant's experts agreed that there was a lack of CTG monitoring. The plaintiff's case was that the baby suffered from lack of oxygen, as the mother's pelvis was too narrow, and therefore the baby could not be delivered naturally. The plaintiff argued that had proper CTG monitoring and vaginal examinations taken place, this would have been observed, leading to the decision to conduct a Caesarean section being made.

- (5) The defendant's experts did not concede that the lack of monitoring was causative of the child's injuries. The defendant's experts suggested other potential causes existed to pose risks to the baby, including that the birth may have been beyond the 40 week gestation period, the use of alcohol and snuff by the mother during pregnancy and her admitting to eating soil during her pregnancy. However, these factors were not dealt with properly in the defendant's presentation of the evidence to the court and were not proven. The court therefore found on behalf of the plaintiff, on the basis that – on the balance of probabilities – the failure to monitor the plaintiff and her child during the active phase of labour was solely causative of the child's injuries.
- (6) By contrast, in the case of *AN v MEC for Health, Eastern Cape*^[11] the plaintiff failed to establish that the failure to monitor CTG was causatively linked to the child's brain injury. This case differed in that experts were able to establish that the brain injury took place within a 45 minute period of active labour. Expert evidence also demonstrated that the brain damage took place due to a sudden, total deprivation of oxygen to the baby's brain caused by cord compression, rather than a progressive event. This would not have been preventable by C-section, because a C-section takes around 45 minutes to perform. Therefore, the only option to expedite delivery would have been vacuum extraction. However, the court found that on the balance of probabilities, there would have been no warning that the cord compression event was about to take place, therefore it was not reasonable to expect that the medical practitioners should have known that an expedited delivery was indicated.

3.2.7 Foreseeability

- (1) In addition to proving that the injury was caused by the negligent conduct of the defendant, the plaintiff must also establish that the injury was a reasonably foreseeable consequence of the defendant's negligent conduct. This is also known as the test for "remoteness".
- (2) In birth injury claims, hypoxic ischaemic injury would be considered by the court to be a reasonably foreseeable consequence of most commonly cited failings of medical staff such as the failure to monitor the labour and failure to conduct a Caesarean section timeously. Therefore, in these types of cases, remoteness is unlikely to be an issue.
- (3) However, the plaintiff may struggle to establish that the injury was reasonably foreseeable where the alleged failing by medical practitioners, was a failure to provide information. This issue came up in the case of *P N.O. v Member of the Executive Council for Health and Social Development*^[12] where, after discharge from hospital, the child developed jaundice, and subsequently developed cerebral palsy as a result of the high levels of bilirubin in her blood. Both the plaintiff and the defendant's experts were in agreement that if the child had been seen by a qualified medical practitioner before day three of life, the brain injury could have been prevented. They agreed that by day six of life, when she was admitted to hospital, irreversible brain injury had already taken place.

- (4) The Judge found that the case turned upon “the obligations of the State medical facilities who attend upon the delivery of babies and the immediate care of mothers and babies post-partum to provide information and direction to mothers to the effect that the babies should be examined on or before day three of life by a qualified health care practitioner”. The plaintiff claimed that she was not told that the child should be seen by a qualified medical practitioner on day three of her child's life. There was no evidence in the child's medical notes to suggest that this advice was given. The mother was discharged within 24 hours of birth. Her child's Road to Health chart only advised her to bring her child for a check-up after six weeks. She gave evidence that she was not given any information in respect of dangerous signs to look out for such as jaundice. In reaching judgment, the court assumed that had she been told to return on day three of her child's life, she would have done so.
- (5) In this case, the court found that the injury caused to the child was a reasonably foreseeable consequence of the failure to “put in place structures which would, as a matter of procedure, inform the plaintiff that she should have the child assessed by an appropriately qualified medical practitioner by day three of life and that this failure caused the damage in issue”. However, there are other examples of medical negligence cases where a failure to give information to a patient will not pass the reasonable foreseeability test.

3.2.8 Harm

- (1) The final aspect of a medical negligence claim which must be proven is that an injury must occur. It is not enough for a plaintiff to show that a medical practitioner has breached their duty of care. Harm, usually in the form of a physical injury, must be a consequence of that breach of duty.
- (2) In birth injury claims, the injuries to the child will often be documented via reports from medical experts such as a paediatric neurologist who can confirm that a child is suffering from cerebral palsy. Where injury to the mother is also claimed, this will usually be evidenced by a report from an obstetrician or gynaecologist. It is also possible for plaintiffs to claim for psychiatric injury, however this must be in addition to, rather than as an alternative to, claiming damages for physical injury.
- (3) For example, a mother could claim damages for physical injuries caused to herself during the birth and she could also claim damages for psychiatric harm that she suffered as a result of her experiences of negligent treatment. In this case she would be a primary victim, therefore she would be entitled to recover any psychiatric harm including shock and trauma flowing from the negligence. If a child suffered birth injuries due to medical negligence, which caused the mother psychiatric harm, the mother would be able to claim psychiatric harm as a secondary victim, provided that she could prove that she had suffered a detectable psychiatric injury. This on the basis that she is a secondary victim, with close ties of love and affection to the primary victim (the child)^[13].
- (4) However, if neither the mother or the child had suffered physical injuries as a result of the medical negligence, the mother could not usually make a standalone claim for psychiatric harm.

- (5) Once the plaintiff has established the above five factors, she is entitled to claim damages to compensate her for her loss. The aim of damages under delict is to put the plaintiff in the position that she would have been in if the negligence had not occurred. This can include damages for financial loss, for example, loss of earnings and medical expenses and non-financial loss, for example, pain and suffering and diminished quality of life.

3.3 REVISITING CAUSATION

- 3.3.1 The term causation differs when used by lawyers and statisticians respectively. This can pose a challenge in medical negligence claims such as birth injury matters, where the intricate evidence of medico-legal experts (which can be statistically based) is then utilised in legal argument by the legal representatives in order to make a finding on causation (in the legal sense).

3.3.2 Causation in statistics

- (1) Scheines^[14] explains that there are two steps to demonstrate causation in statistical science:
- (a) Show a statistical association between the purported cause and effect.
 - (b) Eliminate all other possible explanations of this association.
- (2) Statisticians use mathematical formulae to calculate whether there is an association, and the extent of that association. If an association is apparent, they then move to consider if there are any other possible explanations for the association.
- (3) In law, the court, influenced by the pleadings of the parties, selects the scope of the inquiry into whether or not the breach in standard of care caused the injury and in most instances, unless specifically raised as a defence, will not eliminate all other possible explanations. By contrast, a scientific approach requires all possible causal factors to be considered. Therefore, at this stage of a statistician's inquiry, they are open to any possible causes. If confounding factors are identified, the statistician can then deploy strategies such as multiple regression to statistically adjust the results to account for these challenges. A statistician can then compare their results with other forms of scientific evidence such as biological, toxicological, mechanistic and/or animal study evidence.
- (4) In practice, in the context of medical negligence, eliminating all other possible explanations of the association can be challenging. Counterfactual examples are unobservable because it is not possible to go back in time and remove the cause from the population which has been affected. Therefore, statisticians are forced to compare two distinct actual populations instead. This brings with it the additional challenge of ensuring that the association is due to the cause which has been hypothesised rather than an extraneous factor.

3.3.3 Causation in law

- (1) Causation in the South African law of delict comprises two enquiries: factual causation and legal causation. Factual causation is determined by using the “but for test”. Legal causation relates to whether the harm was a reasonably foreseeable consequence of the negligent act^[15]. Legal causation is not a “true issue of causation”; instead it is a “policy-based mechanism for eliminating from the causal net those factual consequences for which it would be unreasonable or undesirable to impose liability”^[16]. This section will focus on factual causation.
- (2) To perform the test for factual causation, the court must hypothetically eliminate the negligent conduct, and make an enquiry as to whether the harm caused would have ensued “but for” the negligent conduct^[17]. In cases where the negligence in question takes the form of an omission, this enquiry may be more complex and involves a consideration of whether reasonable conduct in the place of the omission would in probability have prevented the harm.
- (3) The courts have acknowledged that the “but for” test may be incapable of determining causation in cases where two, or multiple causes were operative simultaneously. In cases such as this, case law in South Africa dating back to 1957 has been willing to find liability where the negligent act has made a “material contribution” to the harm which has been caused^[18].
- (4) An important precedent of this in the medical negligence context is the case of *Minister of Police v Skosana*^[19]. In that case, an inebriated man drove into a ditch. Police arrived on the scene and took the other passengers to hospital. Meanwhile, the driver was taken to the police station and spent the night in a cell. Early the next morning a health care professional that reviewed him advised that he urgently required medical treatment. He was taken to hospital, but later died of internal injuries. The question was whether his death had been caused by the car accident, or the delay in providing medical treatment. The court applied the material contribution test to find that the police were liable for their delay in taking the man to hospital. The court found on behalf of the plaintiff in spite of the fact that medical evidence could not determine with certainty what the probable outcome would have been had the man been conveyed directly from the scene of the accident to the hospital. This demonstrates the court's willingness to find a causative link between the wrongful conduct and the harm caused, even where there are other causative factors at play.
- (5) The current case authority for factual causation in South African delictual claims is *Lee v Minister of Correctional Services*^[20,21,22]. This case concerns a prisoner who contracted tuberculosis (TB) whilst he was an inmate at Pollsmoor Prison. He alleged that he contracted the disease due to the prison's negligence – that is, its failure to take adequate precautions to protect him from contracting TB. He also pleaded a breach of his constitutional rights. It was not in dispute that during the five-year period of his incarceration, he was subjected to overcrowded conditions, often sharing a one-person cell with two other prisoners, and being locked up for up to 23 hours per day. TB is known to proliferate in crowded conditions. The prison authorities had no system in place for screening TB, and relied upon prisoners self-reporting symptoms of TB.

- (6) At the trial, medico-legal evidence was adduced which suggested that over half of the population of South Africa has been infected with the TB organism at some point, though in the majority of cases it lies dormant and does not cause active illness. However, as a foundation for the enquiry, the defendant accepted, and the court allowed itself to assume, "not as a matter of statistical probability, but as a matter of probable fact", that Mr Lee had been infected with TB whilst incarcerated, rather than prior to his indictment. This premise is significant to understanding the way in which the courts deal with causation; it would be scientifically impossible for Mr Lee to have categorically excluded other opportunities for infection, including the police cells, police van, courts and prior to his indictment. Therefore, the court was willing to assume, in favour of Mr Lee, that the infection occurred whilst in prison. The High Court ended its enquiry into causation there, and upheld the claim.
- (7) However, this was overturned by the Supreme Court of Appeal (SCA) on the basis of causation. The SCA found that where a delict case concerns an omission to act, the court must find that the defendant was obliged to initiate reasonable action. It must ask itself what would have happened had the action been initiated. This is known as a hypothetical enquiry. In order to succeed, the hypothetical enquiry must show that had reasonable action been initiated, the harm would have, on the balance of probabilities, been avoided. The SCA found that the question that the trial court should have asked itself "was not whether the incarceration caused the harm, but whether it was caused by the negligent omission".
- (8) The SCA agreed with the plaintiff that there had been negligent omissions by the prison authorities. It held that reasonable action on behalf of the prison would have constituted "a consistent system of some kind... to screen prisoners, isolate any that were found to be contagious and administer treatment". Such a system was "at best sporadic and at least in some respects non-existent". The SCA upheld the High Court's findings that the systemic failings by the prison to provide TB prevention to the prison population were "indefensible". However, the SCA held that Mr Lee had failed to prove that these negligent omissions were causative of him contracting TB.
- (9) According to the court, Mr Lee faced an "insuperable hurdle" because "whatever management strategies might be put into place there will always be a risk of contagion [of TB] if only because diagnosis is necessarily a precursor to intervention". The SCA noted that Mr Lee had several TB tests returned negative, in spite of showing symptoms of TB, which highlighted the difficulty in demonstrating how non-negligent conduct on behalf of the prison would have prevented him from developing the disease. Consequently, the court found that:
- The difficulty that is faced by Mr Lee is that he does not know the source of his infection. Had he known its source it is possible that he might have established a causal link between his infection and specific negligent conduct on the part of the prison authorities. Instead he has found himself cast back upon systemic omission. But in the absence of proof that reasonable systemic adequacy would have altogether eliminated the risk of contagion, which would be a hard row to hoe, it cannot be found that but for the systemic omission he probably would not have contracted the disease. On that ground I think that the claim ought to have failed.

- (10) Mr Lee appealed to the Constitutional Court (CC). The nine judges who heard his case were split in their decision. Nkabinde J gave the majority judgment with four other judges concurring. She agreed with the SCA that there was a negligent breach on the part of the prison authorities. She then turned to consider whether the negligent omission caused the applicant harm in becoming infected with TB. Nkabinde J first considered factual causation. In discussing the insertion of a hypothetical positive act, in cases of omission to act, she stated that the rule is “not inflexible”. Nkabinde J said that:
- There are cases in which the strict application of the rule would result in an injustice, hence a requirement for flexibility. The other reason is because it is not always easy to draw the line between a positive act and an omission. Indeed there is no magic formula by which one can generally establish a causal nexus. The existence of the nexus will be dependent on the facts of a particular case.
- (11) In the present case, it was not simply a negligent omission to provide TB prevention measures, but also a failure of a positive obligation under the Bill of Rights to keep prisoners in conditions consistent with human dignity. Nkabinde J found that the SCA had erred in dismissing Mr Lee's claim on the basis that “he had failed to prove that reasonable systemic adequacy would have ‘altogether eliminated’ the risk of contagion” and that he “does not know the source of the infection”. She found that the substitution of reasonable alternative measures was not necessary in order to prove causation, and moreover that the law “does not require evidentiary proof of the alternative but merely substitution of a notional and hypothetical lawful, non-negligent alternative”.
- (12) Nkabinde J highlighted the case precedent of *Siman*^[23] which demonstrated that the hypothetical substitution may not be appropriate where there are concurrent or supervening causes and should not be applied inflexibly. She also found that the substitution exercise involves an evaluation of normative considerations, which are a “mixed question of fact and law”, that is, what would the appropriate conduct of the prison have been? She suggested that this renders the distinction between factual and legal causation less clear. Nkabinde J therefore found that:
- There was thus nothing in our law that prevented the High Court from approaching the question of causation simply by asking whether the factual conditions of Mr Lee's incarceration were a more probable cause of his tuberculosis, than that which would have been the case had he not been incarcerated in those conditions.
- (13) Nkabinde J found that if a non-negligent system reduced the risk of general contagion, then specific individual contagion within that system would also be less likely. She disagreed with the SCA that it was not possible to make this type of inference, instead finding that the flexibility of South African delictual law allowed such an inference to be made. Nkabinde J stated that it was not necessary to develop the common law in order to reach such a conclusion. She held that:
- Our law has always recognised that the but for test should not be applied inflexibly. A court ultimately has to make a finding as to whether causation was established on a balance of probabilities on the facts of each specific case. Causation will not always follow whenever a wrongful and negligent omission is shown.
- (14) In terms of legal causation, she found that the SCA was correct to reject the contention of the Minister for Correctional Services that imposing liability would place “an inordinate burden on the state”.

- (15) Cameron J gave the minority judgement, with three other judges concurring with him. Cameron J held that
... it cannot be said that it is more probable than not that "but for" the negligence of the prison authorities, Mr Lee would not have contracted tuberculosis (TB). The only conclusion possible on the evidence is that the prison authorities' negligent conduct increased the overall risk that Mr Lee would contract TB.
- (16) Cameron J highlighted the unique nature of TB, how science is incapable of identifying "which one of innumerable exposures was the probable source of infection" and the way in which it can progress from dormant to active. Taking this into account, Cameron J suggested that:
Since Mr Lee could not pinpoint who had infected him, it was "just as likely as not" that he was infected by a prisoner whom the prison authorities could not reasonably have known might pass the disease on to him. It was therefore not possible to find that a negligent omission by the prison authorities probably caused his infection.
- (17) Cameron J concluded that the scientific nature of TB made it impossible for Mr Lee to prove that his particular case was caused by negligent omission. He found that this existing "but for" test placed all claimants unable to trace the source of their infection in the position of "almost never be(ing) able to succeed" because the defendant need only show a small chance that the infection may have been contracted anyhow. He referred to jurisprudence in the UK which has expanded the "but for" test to make space for what are known as "indivisible injury" claims such as claims relating to mesothelioma arising from asbestos exposure. Similar to TB, mesothelioma can be caused by exposure to a single asbestos fibre. Claimants were unable to show which negligent employer had caused their illness. The House of Lords found that claimants were able to claim from anyone of their negligent employers. Cameron J said he believed that the common law of South Africa should be developed in order to enable claimants in Mr Lee's situation to receive a just outcome.
- (18) Cameron J disagreed with Nkabinde J that it was enough to satisfy factual causation to show that a non-negligent system reduced the risk of harm. He found that:
Firstly it is not possible to infer probable factual causation from an increase in exposure to risk by itself. By corollary, where the actual origin of the injury cannot be traced (as with Mr Lee's TB), it is impossible to say that infection was probably caused by a negligent exposure to risk, as opposed to an exposure that no amount of care on the prison authorities' part could have avoided.

Second, the very nature of negligent conduct is that it increases risk and thus makes harm more likely to occur. To infer probable factual causation merely from increased likelihood of harm is to suggest that probable factual causation follows from every finding of negligence. But increased likelihood, or an overall increase in risk, still does not tell us whether the negligent conduct was more probably than not the cause of the specific harm.

- (19) Causation may not be inferred from any increase in risk because this approach leaves no room for assessment of the amount of risk exposure that occurred, how much of it was attributable to the negligence of the defendant, and what level of risk exposure should lead to recovery of compensation. Cameron J further criticizes the approach in the majority decision saying:
- The intricacies of this area of law, in my view, require accommodation of these complexities. Thus, it would seem that on my colleague's approach, if, before proper measures were in place, a prisoner had a 90% chance of contracting TB, but proper measures reduced this to 85%, the fact that the prisoner was negligently exposed to an increase in risk would by itself render the defendant liable. In other words, even if the harm were likely to result despite reasonable measures being taken, the defendant would still be liable because the risk was increased, even if only nominally.
- (20) The minority decision supported the development of the law to allow for compensation of a claimant negligently exposed to risk of harm, who suffers harm. He opined that the development of the law should start in the High Court and should involve "full assessment of the intricacies of a system of risk-based compensation".

3.3.4 Why are the Lee decisions important?

- (1) Due to the *stare decisis* doctrine, and because of the Constitutional Court being the highest court in the land, almost all considerations of causation as an element of the medical malpractice delict will follow the principles established in the majority decision of the Constitutional Court in the Lee case. This interpretation of the "but for" test is of particular relevance to birth injury matters where the scientific reason for the foetal distress that led to the birth injury cannot be traced.
- (2) The Lee decisions reflect the deep complexity of determining causation as one of the factors of a delict. The issues ventilated in these matters were considered by one acting judge in the High Court (De Swardt AJ), five judges in the Supreme Court of Appeal (Mpati P, Navsa, Nugent, Snyders JJA and Ndita AJA) and nine judges in the Constitutional Court (Majority decision: Nkabinde J, Moseneke DCJ, Froneman J, Jafta J and Van der Westhuizen J and Minority decision: Cameron J, Mogoeng CJ, Khampepe J and Skweyiya J). Interestingly, the decisions of all of the involved judges cumulatively over the three levels of the courts was that six judges found there was causation and nine judges found that this element had not been fulfilled.
- (3) The scenario in the Lee case strongly reflects the differences in the concepts of causation for law and causation for statistics.
- (4) Most medical malpractice cases do not have the benefit of being considered by several Judges and are usually heard by a single High Court Judge.
- (5) Preparation and presentation of a defence of causation is as important as the defence of the breach of duty of care in medical malpractice claims.

3.4 CASE STUDIES OF CAUSATION IN MEDICAL NEGLIGENCE JUDGMENTS

3.4.1 This section looks at the way in which the *Lee* test for factual causation has subsequently been applied in medical negligence claims by considering four case studies.

3.4.2 ***Lushaba v MEC for Health, Gauteng [2014]***^[24]

- (1) In *Lushaba v MEC for Health, Gauteng*, the plaintiff sued the MEC for medical negligence relating to a birth injury, at the Charlotte Maxeke Johannesburg Academic Hospital. The plaintiff had suffered from abruptio placentae, which is a medical emergency whereby the placenta separates, or begins to separate, from the foetal wall. It is a progressive condition. The foetus suffered from hypoxia, and the child was born with cerebral palsy. Her claim related to the delay in performing a caesarean section.
- (2) The court found that the plaintiff had presented as an extreme medical emergency and ought to have been treated as such. Evidence suggested that, on the balance of probabilities, the baby had not incurred brain damage by 12h00 because she had a heart rate of 150bpm. Had the caesarean been performed at, or shortly after 12h00 brain damage would most likely have been averted. By 13h45, when the caesarean was commenced, she had suffered brain damage. By 14h30, there was a 50% abruption and the heart rate was at 100bpm. Experts agreed that had the caesarean section been performed as soon as possible after 12h00, this would have most likely ensured a better outcome.
- (3) The court applied the material contribution test set out in *Blyth v van den Heever*^[9]:
... did negligence on the part of respondent cause or materially contribute to this condition in the sense that respondent by the exercise of reasonable professional care and skill could have prevented it from developing.
- (4) The court then referred to *Lee*, highlighting that the “hypothetical non-negligent conduct in this situation is not difficult to postulate”. Performing the caesarean section at 12h00 “had a better chance of preventing the negative outcome than the conduct adopted by the defendant”.
- (5) In this case, the harm caused to the baby was caused by an unknown combination of negligent and non-negligent factors. Any harm caused to the baby by the degree of placental separation before 12h00 was non-negligent, whereas any harm caused by placental separation subsequent to 12h00 was negligent by virtue of the delay in performing the caesarean section.
- (6) The court applied the principles of the *Lee* case, even though the scenario was different to *Lee* (where the harm was known to be caused by one single factor, that is, one single TB organism, but it was not known whether this occurred due to negligent omission, or not). However, the test in *Lee* does not provide a nuance to differentiate between the scenario in *Lee* and the situation at hand, which, while similar, constituted both negligent and non-negligent elements. Following *Lee*, the court found that the causative enquiry was satisfied by the finding that the baby “would be less likely to be born with cerebral palsy had the caesarean been performed without delay”.

3.4.3 ***Oppelt v Department of Health, Western Cape [2015]***^[25]

- (1) This matter concerned a claim for medical negligence relating to a four-hour delay in surgery following the plaintiff dislocating vertebrae in his spine playing rugby. He subsequently suffered from paralysis. Hospital guidance provided that patients with spinal injury should be treated within four hours. The case was dismissed by the SCA on the basis of causation, and the plaintiff appealed to the CC. The CC found that the SCA had erred in focussing on scientific proof instead of assessing where the balance of probabilities lies based on an evaluation of the whole evidence.
- (2) Applying *Lee*, the CC held that "ultimately, it is a matter of common sense whether the facts establish a sufficiently close link between the harm and the unreasonable omission". The court stated that:

Here, the so-called "mental removal of the defendant's omission" points to an indisputable causal link between the omission and the resultant quadriplegia... the applicant asserts, correctly in my view, that failure by the respondent's employee to provide him with reasonable medical attention within four hours denied him a 64% chance of probably making a full recovery or substantial recovery from the harm of permanent quadriplegia.
- (3) The court held that the delay in performing surgery was the factual cause of the plaintiff's paralysis.

3.4.4 ***S & Another v Life Healthcare Group (Pty) Ltd & Another [2017]***^[26]

- (1) This matter is also a claim concerning asphyxia during labour, resulting in the child being born with cerebral palsy. The two defendants were the company which owns the private hospital where the birth took place, and the specialist obstetrician and gynaecologist (OB/GYN) who attended the birth. The hospital accepted that there was negligence on the part of its nursing staff. Meanwhile, the OB/GYN denied that he was negligent.
- (2) Parties accepted that the foetus was in distress during labour. The hospital accepted that there were warning signs on the CTG which should have been recognised by its nursing staff and that the deprivation of oxygen could have been prevented by delivering the baby by way of an emergency caesarean section. The hospital sought a contribution from the OB/GYN on the basis that they were joint and severally liable. The doctor only arrived at hospital mid-way through the labour, and denied a duty of care existed between him and the patient prior to arrival. He contended that a different doctor was the patient's obstetrician and that he was merely covering for him in the event of an emergency or a delay.
- (3) He denied negligence, and if found to be negligent, he denied a causal relationship between the negligence and injury to the baby. The court found that the doctor owed a duty of care from the moment of his first telephonic instruction to the nursing staff regarding the patient. The court found the doctor's failure to review the patient every few hours during labour (he did not review her at all during the first 8.5 hours of her labour) was unacceptable and negligent. Reviewing her personally would have allowed the doctor to contextualise the CTG readings with other relevant information.

- (4) In respect of causation, the question that the court had to answer was: if the doctor had attended to the patient shortly after receiving the phone call from nursing staff at 18h35 suggesting that there had been a deceleration in the baby's heart rate, had realised that there was a problem, and had performed an emergency caesarean, would this have avoided the harm that caused the cerebral palsy?
- (5) If this hypothetical sequence of events had occurred, the baby would have been delivered some time between 19h30 and 20h00. Medico-legal expert Dr Van Helsdingen could not say whether delivery at this time would have prevented injury to the baby. The court stated that:
- The onus to prove a causal link between Dr Suliman's negligence and the cerebral palsy suffered by the baby was on the hospital. This had to be established on a balance of probabilities. In this case it had to be shown that, if Dr Suliman had gone to the hospital an hour after the 18h35 phone call, as the experts said a reasonable obstetrician would have done, the baby would not have suffered cerebral palsy. In the light of the evidence of Dr Van Helsdingen, I agree with counsel for the doctor that this was not established on a balance of probabilities.
- (6) The High Court therefore dismissed the claim against the doctor.
- (7) The plaintiff appealed to the SCA. The SCA held that the High Court had placed too much weight on one part of Dr van Helsdingen's evidence, particularly given that he had contradicted himself in other sections of his evidence, suggesting that an earlier intervention would have prevented the cerebral palsy. It emphasised the importance of considering the evidence of medico-legal experts in the whole, and stated "it is the exclusive duty of the court to make the final decision on the evaluation of an expert opinion". The SCA held that the question that the High Court should have asked was:
- Was it more probable than not that the birth injuries suffered by the baby could have been avoided, if Dr Suliman had attended the hospital earlier, after the 18h35 phone call?
- (8) Unlike the High Court, the SCA made explicit reference to *Lee*. It also adopted the spirit of *Lee* by highlighting the significance of normative assumptions in making a finding on factual causation:
- The real issue between Dr Suliman and the hospital was not whether his earlier attendance upon Mrs S would have prevented the harm to N, but whether he was under an obligation to attend earlier... In my view the attitude of Dr Suliman that he had no doctor-patient relationship with the patient was too lackadaisical and, as indicated earlier, legally and morally indefensible.
- (9) The SCA overturned the decision of the High Court and found the OB/GYN to be jointly liable with the hospital at a ratio of 60% to the doctor, and 40% to the hospital. This greater apportionment of liability to the doctor was on the basis that he was a "specialist who abdicated his duties". Whilst the nursing staff were culpable in failing to make accurate observations, the court felt that the doctor's "hands off" approach was worthy of a larger portion of the blame.
- (10) This case is noteworthy because it shows a clear implementation of the dicta of *Lee* into the field of birth injury.

3.4.5 **Lomalisa v M [2017]**^[27]

- (1) This is another case which highlights the difficult challenge which courts face in how to use medico-legal evidence to make determinations upon causation in birth injury claims. Similar to *S and another*, the appeal related to a dispute between the OB/GYN and the hospital in respect of who was liable for damages for severe cerebral palsy suffered by a baby during her birth. The High Court had found doctor and hospital to be jointly and severally liable, with the doctor responsible for the costs of the action. The doctor appealed on the basis that the trial court erred in finding that he neglected his duty of care to properly monitor his patient, and that the administration of a Cytotec pill (Misoprostol) for the induction of labour was causative of the baby's injuries.
- (2) Dr Sevenster gave evidence in respect of the dangers of Misoprostol and gave the opinion that the cerebral palsy was caused by the patient being left unattended after the medication was administered. He opined that the severe contractions experienced by the patient were a sign that she was suffering from hyper-stimulation of the uterus; though CTG records were not available to corroborate this. He was critical of the lack of CTG and partogram records.
- (3) The OB/GYN testified that Misoprostol is the most common drug used in South African hospitals to induce labour, and that he had followed the doses which were recommended, at the time. In his experience, administering the drug had never caused hyper-stimulation of the cervix. He did not observe anything untoward in the condition of the patient or the unborn child. He claimed to have evaluated a print-out of the CTG and found that everything was normal. The doctor's medico-legal expert, Dr Mashamba, did not testify at trial.
- (4) The trial court held that the OB/GYN was negligent in failing to monitor the patient, and to review her properly to identify if there was any cause for concern. Instead, when he observed that the dilation of the respondent's cervix was slow on 10 December 2008, he prescribed Pitocin which could have contributed to the hyper-stimulation of the uterus of the respondent with disastrous consequences.
- (5) The SCA found that it was the hospital's responsibility to monitor the patient, and that there was no evidence that the doctor was asked to attend but failed to do so, therefore it discarded this ground of negligence. In respect to the dose of Cytotec, the doctor had testified that he was using the dose that was recommended at the time, therefore the SCA discarded this ground of negligence as well. Therefore, it concluded that the OB/GYN was not negligent. Nonetheless, it addressed the issue of causation, stating:

The following facts and circumstances need to be taken into account in this regard. Dr Sevenster conceded that more than 50% of cerebral palsy is simply unexplained. There were no hospital records which recorded any foetal distress. Dr Sevenster conceded that it is only in approximately 2% of all cases that Cytotec causes a hyper-stimulation of the uterus. There exists no medical records which indicate that there was in fact a hyper-stimulation of the uterus after the administration of the Cytotec.

- (6) The court also highlighted that no evidence had been presented as to what occurred between 10 December 2008 and 29 December 2008 when the baby was discharged from hospital. It is accepted that the baby suffered various seizures during this period, but the "effect or cause of the seizures was not even considered".
 - (7) The SCA criticised the lack of expert evidence in respect of the issue of causality:
Dr Sevenster readily conceded that he is not a pharmacologist and that he has extremely limited experience with Cytotec. He testified that he has never used Cytotec in his own practice. His only knowledge in respect of Cytotec is with reference to literature. No evidence was presented by the respondent that 100 mcg of Cytotec would be more dangerous than 50 mcg of Cytotec. It found that the trial court had failed to establish a causal link between the administration of Cytotec, the alleged hyper-stimulation of the uterus, and the cerebral palsy.
 - (8) Here, the SCA relied upon statistical evidence which suggested that more than 50% of cerebral palsy cases are "simply unexplained". The use of this statistic, without contextualising it by explaining the cause of the remainder of cases, can be viewed as problematic. The SCA criticised the trial court for failing to make findings in respect of when the cerebral palsy would have occurred, that is, was it on 9 December when the Cytotec was administered or on 10 December at the time of the birth. The SCA was highly critical of the evidence of Dr Sevenster on several accounts, on the basis that he had made speculative assertions designed to advance the plaintiff's case.
 - (9) It referred to the test in *Lee* but did not specifically apply it to the facts of the present case. It consequently upheld the appeal, dismissing the claim against the OB/GYN and awarded costs against the plaintiff.
 - (10) Whilst the law dictates that the issues of breach of duty and causation are to be dealt with separately, this case suggests that in reality it is difficult to separate the two within the court's mind. Had the court found that the administration of Cytotec was negligent, the court might have gone to greater lengths to find a causative link between the medication and the harm caused to the plaintiff. It seems that here, having decided no negligence took place, the court then fell back on statistical evidence to also cast a doubt upon causation, and sought to draw the time period after the child's birth into the court's consideration.
- 3.4.6 It is clear that applying the current test for factual causation in South African courts, especially in cases of birth injury, is not a straightforward exercise, nor does it lead to consistent results. Nuances to the "but for" test are undoubtedly required in order to ensure just results, especially where there are multiple competing causes of an event. However, the declaration of a "flexible" test in *Lee* without a clear refinement of how and in what circumstances it should be applied has led to a lack of legal certainty and an even greater gap between legal causation and statistical causation.

3.5 ANALYSIS OF WRITTEN JUDGMENTS

- 3.5.1 The largest publicly available collection of court judgments is found on the Southern African Legal Information Institute (SAFLII) online repository^[28]. SAFLII aims to promote the rule of law and judicial accountability by publishing legal material for open access in line with the objectives of the global free access to law movement. SAFLII is dependent on the various registrars around the country to send it cases as they are handed down. Recent cases are usually uploaded within days of SAFLII receiving the case from the respective registrar. However, the case may not appear on SAFLII immediately because it is either being typed by the court's typing pool or it is being transcribed. It is important to note that court orders are not available on SAFLII.
- 3.5.2 All judgments containing the phrases "health" and "negligence" were mined. Out of 1,193 judgments; 206 were selected for further analysis as these could specifically be identified as claims against one of the nine provincial Departments of Health.
- 3.5.3 The types of judgments involving the Department of Health ranged from those dealing with merits only, quantum only, merits and quantum, and procedural issues such as applications for condonation of failures to follow procedural steps, particularly the notice to the State required under the Institution of Legal Proceedings against Certain Organs of State Act 40 of 2002^[26].
- 3.5.4 Various commercial databases and publications also exist. These include the South African Law Reports; Juta's Unreported Judgments; Lexis Nexis Case Law; and The Quantum of Damages in Bodily and Fatal Injury Cases. It was not feasible to mine the applicable judgments available from the commercial databases to ascertain if any additional cases could be found over and above those available on SAFLII. This can perhaps be an area for further research.

3.5.5 The following data was extracted from written court judgments involving the Department of Health:

- (1) The provincial Department of Health cited as the defendant.
- (2) The date of the judgment.
- (3) The date of the adverse event if available.
- (4) The percentage of damages awarded in favour of the plaintiff (a value of 0% would mean that the matter was successfully defended by the Department of Health).
- (5) The name of the first hospital cited.
- (6) The name of the first clinic cited.
- (7) A classification of the broad type of claim being one of a birth related injury or death to the mother; cerebral palsy; the death of a new born, a still birth or miscarriage; the death of a patient; emergency medicine related; Erb's Palsy, retinopathy of prematurity or other birth related injuries that are not classified as cerebral palsy; general medicine related; surgery related; or other.
- (8) An indication if a lack of record keeping was a reason for negligence.
- (9) An indication if a delay in treatment was a reason for negligence.
- (10) An indication if misdiagnosis was a reason for negligence.
- (11) An indication if improper treatment was a reason for negligence.
- (12) An indication if lack of consent was a reason for negligence.
- (13) If the matter was a cerebral palsy case:
 - (a) an indication of whether lack of foetal heart rate monitoring was proven.
 - (b) the method of birth delivery was recorded if stated.
 - (c) an indication if this was the mother's first pregnancy was recorded if stated.
 - (d) an indication if the mother was a teenager was recorded if stated.
 - (e) an indication if the birth weight was less than 2.5kg was recorded if stated.
 - (f) the gestational age was recorded if stated.
 - (g) the APGAR score at 1 minute, 5 minutes and 10 minutes was recorded if stated.
 - (h) the Gross Motor Function Classification System Level was recorded if stated.
 - (i) the name of the expert obstetrician, expert paediatrician and expert paediatric neurologist briefed by the plaintiff was recorded if stated.
 - (j) the name of the expert obstetrician, expert paediatrician and expert paediatric neurologist briefed by the defendant was recorded if stated.

3.5.6 The amount of data that could be extracted varied according to the type of judgment and the amount of detail provided in the judgment.

3.5.7 Table 9 below is a summary of written judgments of medical malpractice litigation against the nine Provincial Departments of Health:

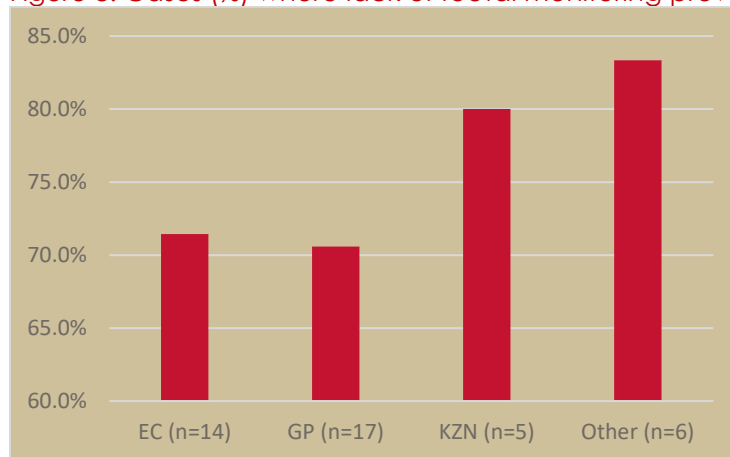
Table 9: Summary of written judgments

Province (n=206)	Number	Percentage
Eastern Cape	59	28.6%
Free State	21	10.2%
Gauteng	72	35.0%
KwaZulu-Natal	12	5.8%
Limpopo	5	2.4%
Mpumalanga	10	4.9%
North West	14	6.8%
Northern Cape	5	2.4%
Western Cape	8	3.9%
Year litigation ended (n=206)		
2006 - 2008	6	2.9%
2009	1	0.5%
2010	3	1.5%
2011	2	1.0%
2012	7	3.4%
2013	5	2.4%
2014	16	7.8%
2015	23	11.2%
2016 (8.8) ¹	23	11.2%
2017 (7.5) ¹	25	12.1%
2018 (7.3) ¹	33	16.0%
2019 (9.6) ¹	30	14.6%
2020 (9.1) ¹	32	15.5%
Reason(s) cited for negligence where stated (n=130)		
Lack of record keeping	36	
Delay in treatment	79	
Misdiagnosis	23	
Improper treatment	108	
Lack of consent	7	
Lack of professional qualifications	13	
Type of claim (n=206)		
Not stated or not applicable	18	8.7%
Birth related injury/death to mother	14	6.8%
Cerebral palsy	81	39.3%
Death of a new born/still born/miscarriage	11	5.3%
Death of a patient	5	2.4%
Emergency medicine	25	12.1%
Erb's palsy/ROP/other birth injuries	4	1.9%
General medicine	4	1.9%
Other	8	3.9%
Surgery	36	17.5%
Outcome of litigation where fully discernible (n=139)		
100% of damages	103	74.1%
Apportionment of damages	4	2.9%
No compensation (merits lost)	32	23.0%

¹ Average number of years from the date of the adverse event to the date of judgment.

- 3.5.8 In approximately 75% of cerebral palsy judgments, lack of foetal monitoring was proven. A provincial breakdown is shown in Figure 8:

Figure 8: Cases (%) where lack of foetal monitoring proven



- 3.5.9 Out of 81 cerebral palsy judgments, the same expert appeared in approximately 20% of the matters. It appears that experts providing evidence in these types of matters come from a limited pool. The danger is therefore that the Court is being exposed to a limited set of ideas.
- 3.5.10 Out of 81 cerebral palsy judgments, the birth weight was under 2.5kg in two matters, above 2.5kg in 20 matters and not stated in 59 matters. As discussed in Section 4, birth weight is a significant risk factor in cerebral palsy.
- 3.5.11 Out of 139 matters, only four resulted in an apportionment of damages^[29]. It is unclear why contributory negligence is not argued in cerebral palsy matters. This is especially so, given the multitude of risk factors that can contribute to a cerebral palsy outcome as discussed in Section 4. If contributory negligence of 10% can be proven in respect of each plaintiff for example, the State would save hundreds of millions of rand in claims payments.

3.6 RECOMMENDATIONS

3.6.1 Record keeping

- (1) Section 13 of the National Health Act^[30] imposes an obligation on the person in charge of a health care establishment to ensure the creation and maintenance of health records containing prescribed information for every user of health services. In this regard the relevant section states that:
Subject to National Archives of South Africa Act, 1996(Act 43 of 1996), and the Promotion of Access to Information Act, 2000(Act 2 of 2000), the person in charge of a health establishment must ensure that a health record containing information as may be prescribed is created and maintained at that health establishment for every user of health services.
- (2) The person in charge of a public health care establishment in possession of a user's health records must set up control measures to prevent unauthorised access to those records and to provide storage facilities for the purposes of keeping the health records of patients. Any person who fails to perform the duty imposed on them in terms of Section 17(1) of the National Health Act commits an offence and is liable on conviction to a fine or to imprisonment for a period not exceeding one year or to both a fine and such imprisonment.
- (3) There are high demands on medical and nursing personnel in maternity units, and record-keeping is compromised as a result. Efficient systems must be in place for preparing and preserving hospital and medical records in order to comply with the National Health Act and the Guidelines for Maternity Care in South Africa^[31]. This is a non-negotiable absolute requirement, the non-compliance with which will continue to result in an escalation of claims against the Department of Health.
- (4) Without compliance with these rules the Department of Health would not be able to defend itself effectively against escalating malpractice claims. Compliance with both rules is unrelated to either the volume of patients or the number of claims being lodged. Compliance is about having efficient systems in place and law abiding, accountable employees responsive to patient needs.
- (5) It is recommended that the Department of Health introduce a special reporting requirement on the identification of a child born at a facility as having been born with a brain injury. This can be modelled on the United Kingdom's National Neonatal Data Set^[32] that consists of a defined list of data items that are extracted from electronic clinical records created by clinical staff on all admissions to neonatal critical care units in England.

3.6.2 Capping the time between the incident date and date of claim

- (1) Many claims in respect of birth-related injuries are only pursued several years after the alleged adverse event (see Table 9). This is possible because the running of prescription is suspended in respect of minors until they reach the age of majority. The Courts appear to give a good deal of latitude to claimants who fail to give, or timeously give, notice in terms of the Institution of Legal Proceedings against Certain Organs of State Act 40 of 2002^[33] which is another mechanism which is meant to assist the State to timeously prepare for legal proceedings brought against its departments.

- (2) The years of delay between the birth injury event and the eventual hearing of oral evidence from the medical personnel involved creates several enormous disadvantages to the preparation of a defense of the claim. There is an attrition of medical doctors who go on to specialize or leave the country, making witnesses unavailable especially where claims are pursued some years after the alleged damage-causing event. The movement of medical personnel is much more fluid in the public sector, and medical staff simply cannot be located to give evidence of cases that occurred many years ago.
- (3) Over the passage of time, records may be lost, go missing and/or are destroyed, and evidence from attending doctors and nursing staff is often not of meaningful assistance given both the passage of time and the very large number of patients they have treated in the ensuing period.
- (4) Capping the time between the date of the incident and the date of the claim would reduce the long-tail nature of the claims. There are many examples of the capping of the time between the date of the incident and the date of the claim internationally as discussed in Section 6.

3.6.3 Judicial review of the "but for" test in birth injury claims

- (1) A logical or scientific mind can find many ways in which to criticize the "but for" test. Politis^[16] highlights several key criticisms:
 - (a) It is based on a "clumsy, indirect process of thought that results in circular logic". The judge must eliminate the negligent event and try to imagine how events would have progressed without the negligent event, but with the retention of all the other antecedents. This invariably results in the judge actually searching for a different possible cause of the event. This criticism appears particularly valid in cases with multiple defendants where the court is seeking to attribute liability between them. In reality, there is a dynamic relationship between the actors, and it is practically impossible to extract the negligent act of one, whilst maintaining the same factual matrix.
 - (b) It fails in cases of so-called "cumulative causation". For example, if multiple fatal shots were fired at a person at once, no individual shooter could individually be held liable.
 - (c) It is an "ex-post facto expression of a predetermined causal nexus" – that is, it is not a true test, it is rather, a "convenient and known way of expressing an already determined causal link".
 - (d) Whilst the "material contribution" theory is often offered as an exceptional alternative to the "but for" test, it is in fact fundamentally opposed to it, because a "contributing factor" may be far wider than a necessary condition. This criticism is key to the difficulties the courts currently face in interpreting the Lee test, in medical negligence claims, where the lines often seem blurred between an increase in risk, and a causative factor.
- (2) In a birth injury case, it may be helpful for a court to explore the causative effects of different medical interventions or the lack thereof performed during labour and delivery upon the development of cerebral palsy.

- (3) The lack of clarity in respect of how the flexibility of the “but-for” test should be applied is problematic, particularly as it appears to conflate a negligent omission causing an increase in risk of harm, with a negligent omission causing harm.

3.6.4 Foetal monitors

- (1) James, Maduna and Norton^[34] found that:
Cardiotocography knowledge remains a challenge for practising midwives in South Africa. The study findings show that midwives lack knowledge regarding CTG interpretation. The limited CTG knowledge of the midwives in KwaZulu-Natal public hospitals was possibly because of a lack of in-service training, as more than half of the participants (70%) indicated a need for in-service training. Clinical experience and prolonged exposure to regular use of CTG in labour wards did not appear to have a positive influence on the knowledge levels of the midwives. The interpretation and management of CTG is a complex task that requires a sound knowledge of FHR patterns, foetal physiology and intrapartum management, as it is applied to the specific clinical needs of each patient.
- (2) Nurses leaders should be identified who understand the risk profile of the public health care establishment, are provided with copies of court findings and judgments particular to their establishment, understand the provincial and national trends of medical malpractice, and include relevant staff in the development of solutions.
- (3) Consideration can be given to a learnership program to train matriculants as foetal monitoring personnel at problematic hospitals and clinics. Simple cell phone technology could be used to record foetal heart rates and any other constant monitoring that is required by the Guidelines for Maternal Health in South Africa. In addition to improving the level of medical care provided, this information could then be stored for use in future evidence if required.

3.6.5 Medical Malpractice Specialty Courts and Assessors

- (1) The South African government has established specialist courts for various matters such as the Labour Court, the Competition Appeal Court and Land Claims Court (see Figure 7 above). In certain instances, these courts have exclusive jurisdiction.
- (2) As noted by Mohr^[35], even as early as the 1850s physicians campaigned for specialist expert juries, something rarely done in the US legal system. Whilst South Africa does not have a jury system, using medically trained judges would ensure that judgments are based on sound medical and scientific principles. Consideration could be given to piloting the creation of specialist medical malpractice courts.

- (3) In turn, consideration should be given to the appointment of assessors in complex medical malpractice matters. However, as noted by Lerm^[36]:

The appointment of assessors in civil matters is, however, restricted to the lower courts, as neither the Supreme Court Act 59 of 1959 nor the Uniform Rules of Court provide for the appointment of assessors in civil proceedings in the superior courts.

It is evident that not enough has been done in South Africa to investigate the introduction of a mechanism to make use of assessors in complex civil matters. Despite their inherent powers, judges have shown a reluctance to engage the services of assessors to assist them. It is for this reason that a more structured approach is recommended. This may entail legislative reform. The appointment of expert assessors should perhaps be embodied with greater clarity in the Uniform Rules of Court.

To avoid miscarriages of justice and the expense of appeals, a second head with the requisite knowledge, experience and skill of reasoning in the relevant field will serve as a potential benefit, saving litigation costs and raising public confidence in the judicial system.

3.6.6 Early notification scheme for obstetric brain injury

- (1) Payment of compensation to the injured party is, with few exceptions, delayed beyond the time when the patient needs it most – that is, when making social and economic adjustment to the injuries.
- (2) Criteria such as that defined by the Royal College of Obstetricians and Gynaecologists^[37] should be used to capture incidents of obstetric brain injury within 30 days of their occurrence so as to disrupt what has become quite a formulaic and lengthy path from the incident to a settlement. Admissions of fault and payments to families within months of the time of incident would result in significant cost savings.
- (3) It is vital to investigate the difference in cost savings by implementing an early notification scheme versus implementing caps on certain heads of damages such as non-economic losses or general damages. That goes beyond the scope of this report and is an area for further research.

3.7 REFERENCES

1. South African Government. 2021. *Constitution of the Republic of South Africa*. Available: <https://www.gov.za/documents/constitution/constitution-republic-south-africa-1996-1>
2. Loubser, M.M. 2020. *Tort law in South Africa*. Netherlands: Wolters Kluwer.
3. The South African Judiciary. 2020. *Judiciary Annual Report 2019/2020*. Midrand: The South African Judiciary.
4. Administrator of Natal v Edouard 1990 (3) SA 581 (AD)
5. NM obo TM v Member of Executive Council, North West Department of Health (CIVAPFB01/2019) [2019] ZANWHC 45
6. Mitchell v Dixon 1914 AD 519 at 525
7. Van Wyk v Lewis 1924 438 (AD)
8. K v MEC for Health, Eastern Cape (3180/2014) [2018]
9. Blyth v van den Heever [1980] 1 All SA 148 (A)
10. Goliath obo O v MEC Department of Health North West Provincial Government (29/2015) [2019] ZANWHC 31
11. AN v MEC for Health, Eastern Cape 2019 (4) All SA 1 (SCA)
12. P N.O. v Member of the Executive Council for Health and Social Development (Gauteng) (34461/14) [2017]
13. Road Accident Fund v Sauls (423/2000) [2001] ZASCA 135
14. Scheines, R. 2008. Causation, Statistics, and the Law. *Law and Philosophy*. Available: https://kilthub.cmu.edu/articles/journal_contribution/Causation_Statistics_and_the_Law/6491105
15. Muller v Mutual and Federal Insurance Co. Ltd 1994 (2) SA 425 (C) 451 J-452 B
16. Politis, A. *An analysis of causation in medical law* Dissertation for Doctor of Laws, under the supervision of Professor PA Carstens University of Pretoria, 2018
17. Kotze, S.R. *Contemporary perspectives on factual causation in the South Africa law of delict: a study with reference to medical negligence*. Submitted in partial fulfilment of the requirements for the degree of Master of Law prepared under the supervision of Professor P.A. Carstens Faculty of Law University of Pretoria.
18. Silva's Fishing Corporation (Pty) Ltd v Maweza 1957 (2) SA 256 (AD)
19. Minister of Police v Skosana 1977 (1) SA 21(A)
20. Lee v Minister of Correctional Services 2011 (6) SA 564 (WCC) (High Court Judgment)
21. The Minister of Correctional Services v Lee (316/11) [2012] ZASCA 23 (23 March 2012)
22. Lee v Minister of Correctional Services 2013 2 SA 144 (CC)
23. Siman & Co (Pty) Ltd v Barclays National Bank Ltd 1984 (2) SA 888 (A)
24. Lushaba v MEC for Health, Gauteng (17077/2012) [2014] ZAGPJHC 407
25. Oppelt v Department of Health, Western Cape (CCT185/14) [2015]
26. S & Another v Life Healthcare Group (Pty) Ltd & Another 2017 4 SA 580 (KZD)
27. Lomalisa v M [2017] ZANWHC 58 (17 August 2017)
28. Southern African Legal Information Institute. 2021. *Databases*. Available: <http://www.saflii.org/content/databases>
29. South Africa. Apportionment of Damages Act No. 34 of 1956.
30. South Africa. National Health Act No. 61 of 2003.
31. Department of Health. 2016. *Guidelines for Maternity Care in South Africa*. Pretoria: Department of Health.
32. https://datadictionary.nhs.uk/data_sets/clinical_data_sets/national_neonatal_data_set/national_neonatal_data_set_-_episodic_and_daily_care.html
33. South Africa. The Institution of Legal Proceedings against Certain Organs of State Act No. 40 of 2002.
34. James, S., Maduna, N.E. & Morton, D.G. 2019. *Knowledge levels of midwives regarding the interpretation of cardiotocographs at labour units in KwaZulu-Natal public hospitals*. *Curationis* 42(1), a2007. Available: <http://doi.org/10.4102/curationis.v42i1.2007>
35. Mohr, J. C. 2000. *American medical malpractice litigation in historical perspective*. *Journal of the American Medical Association* 283:1731–37.
36. Lerm, H. 2012. *Two heads are better than one*. De Rebus. Available: <http://www.derebus.org.za/two-heads-better-one/>
37. Royal College of Obstetricians and Gynaecologists. 2021. *Each Baby Counts*. Available: <https://www.rcog.org.uk/eachbabycounts>

4. CEREBRAL PALSY

4.1 DEFINITION

- 4.1.1 Cerebral palsy (CP) refers to a group of neurological disorders that permanently affect body movement and muscle coordination and appear in infancy or early childhood. CP is caused by damage to or abnormalities inside the developing brain that disrupt the brain's ability to control movement and maintain posture and balance. The term *cerebral* refers to the brain; *palsy* refers to the loss or impairment of motor function^[1].
- 4.1.2 To describe the extent of the mobility limitations in CP, the most commonly used system is the Gross Motor Function Classification System (GMFCS) summarized in Table 10 below^[2]:

Table 10: Gross Motor Function Classification System

Classification level	General description of physical functioning
I	Walks and runs without support. Coordination, speed and balance reduced.
II	Walks without support but may use support in some situations. Difficulty running.
III	Walks with support. Often uses wheeled mobility in the community.
IV	Uses powered mobility or is pushed in a manual chair for most mobility needs.
V	Is transported in a wheelchair for all mobility situations.

- 4.1.3 The signs of CP usually appear in the early months of life, although specific diagnosis may be delayed until age two years or later. Infants with CP frequently have developmental delay, in which they are slow to reach developmental milestones such as learning to roll over, sit, crawl, or walk. Some infants with CP have abnormal muscle tone. Decreased muscle tone (hypotonia) can make them appear relaxed. Increased muscle tone (hypertonia) can make them seem stiff. In some cases, an early period of hypotonia will progress to hypertonia after the first two to three months of life. Children with CP may also have unusual posture or favour one side of the body when they reach, crawl, or move. It is important to note that some children without CP also might have some of these signs^[1].
- 4.1.4 The Department of Health provides a Road to Health book free of charge to the parents of all babies in both the public and private health care sectors. The book is provided at birth by staff at the health care facility or if a birth takes place at home the book must be provided the first time a health worker sees the baby^[3]. Page 23 and page 24 of the Road to Health clearly set out developmental milestones in the first six years of life^[4]. This is an under-utilised tool in the education and awareness of the early signs of CP, particularly in instances of litigants who appear to launch medical negligence claims very late.

4.2 PREVALENCE

- 4.2.1 It is commonly reported in medical literature that the prevalence of CP is 2 per 1,000 live births. The prevalence of CP as derived from various international studies is summarized in Table 11 below:

Table 11: CP prevalence

Country/region	Sample data/size	Period	CP prevalence per 1000	Trend over time	Observations by birth weight or gestational age
Metropolitan Atlanta (USA) ^[5]	Population aged 8 years	1985-2002	2.2 1-year survivors	1.2% p.a. increase	No trend
California (USA) ^[6]	6.2 million births where diagnosis was before November 2006	1991-2001	1.4 live births (dataset might not contain all CP cases in the region)		
Jiangsu (China) ^[7]	Children under 7 years	May-July 1997	2.8 children <7 years		See Figure 9
Australia ^[8]	Individuals with pre- or perinatal CP included in Australian register	1995-2009	1.4 to 2.1 varies by State	Decrease of 0.43 lives per 1000 over the period. Decrease was more significant over the latter period.	
Europe ^[9]	Population based CP registers	1980-2003	1.18 to 2.3 live births	0.7% p.a. decrease	See Figure 10
Japan ^[10]	CP registration system	1988-1997 & 1998-2007	1.88 live births	Significant decrease in CP prevalence in the latter period	70% of children diagnosed with CP were born either pre-term or with low birthweight
Canada ^[11]	CP registry	1999-2001	2.3 children aged 9 to 11 years		
Uganda (rural east) ^[12]	Health and Demographic Surveillance System	March-June 2015	2.9 children aged 2 to 17 years		Post-neonatal prevalence was much higher than in high income countries (25% vs 5-6%)

Figure 9: Prevalence of CP in China by birthweight per 1000^[7]

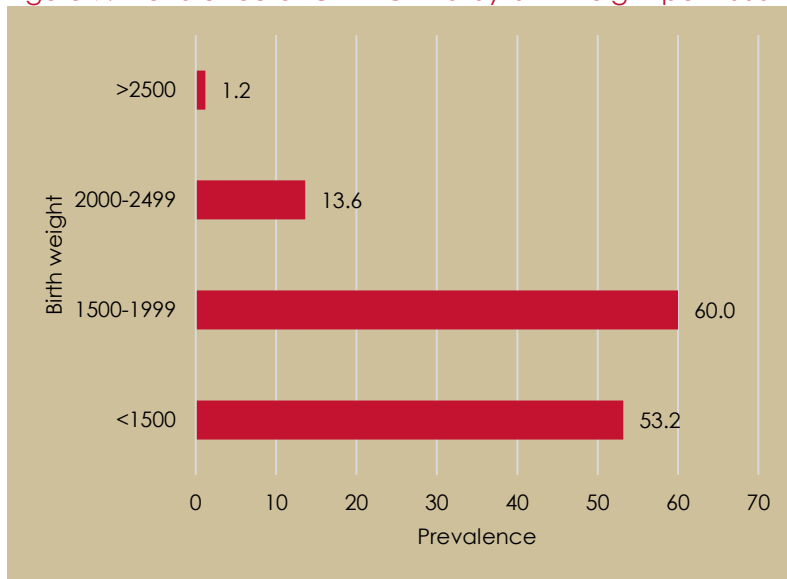
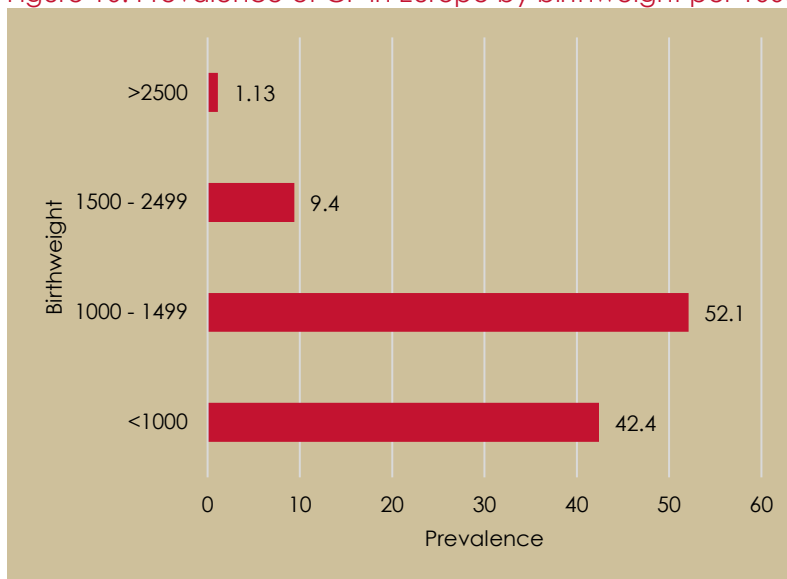


Figure 10: Prevalence of CP in Europe by birthweight per 1000^[9]



4.2.2 There are numerous problems in measuring and comparing CP prevalence:

- (1) In many instances, different prevalence studies – either conducted in the same area or in different areas – are not directly comparable. This is often due to a different type of population used as a denominator – for example using a birth cohort vs neonatal survivors vs using survivors aged younger than 8 years^[7].
- (2) Factors affecting comparability include the death of children with CP before cross-sectional studies can be concluded and the distribution of birthweights in the target population. The convention in CP epidemiology is to use the term “birth prevalence” as opposed to “incidence” as it is unknown how many children die before their CP is diagnosed.

- (3) As noted by Galea et al. [8]:
In CP research, mortality remains an important variable to take into consideration particularly for infants born before 28 weeks, therefore the use of neonatal survivors as the denominator is useful to be able to compare birth prevalence across jurisdictions and over time. The reported birth prevalence of CP will be lower when birth prevalence is reported per 1,000 live births. This may explain some of the variation in birth prevalence for this gestational age group internationally.
- (4) As noted by Oskoui et al. [11]:
Using a live birth denominator when the numerator is being captured during a later time period (after 2 years of age in CP) can be misleading if migration of the population and infant mortality are not accounted for. This effect is more pronounced among premature newborns that have a higher mortality rate.

4.3 RISK FACTORS

- 4.3.1 Prospective studies to determine risk factors across CP populations are expensive and difficult, noting that only approximately two per thousand pregnancies will result in a child with CP^[13]. The bulk of research has been done by way of retrospective studies which involved studying the obstetric and perinatal histories of groups of CP children and control groups without CP.
- 4.3.2 Set out below is a summary of a selection of the risk factors as discussed in sections 4.3.3 to 4.3.12 below, together with their effects on the risk of a child having CP:

Table 12: CP risk factors

Risk factor	Effect on risk of child having CP	Magnitude of increase
Maternal obesity	Increase	30%
Maternal alcohol consumption	Increase	Twofold
Maternal thyroid disorder	Increase	Threefold
Chorioamnionitis	Increase	Fourfold
Other maternal infections	Increase	Twofold
Gestational age	Increase	30 times
Birthweight	Increase	24 times
Antenatal death of a twin	Increase	Sixfold
Intrauterine growth restriction (IUGR)	Increase	Tenfold

4.3.3 Maternal obesity

- (1) Both obesity and morbid obesity in women needing prenatal hospitalization have been found to be independently associated with moderate to severe CP. A diagnosis of obesity in the mother has been associated with an increased risk of delivering a child with CP of 30%. An even higher risk has been associated with infants born to a mother with a diagnosis of morbid obesity during a prenatal hospitalization. Studies have also identified the possibility that inflammation brought on by obesity of the mother may be especially harmful in pregnancies that are already complicated by other underlying inflammatory conditions^[14].

- (2) The risk of giving birth to a child with CP has been shown to increase by approximately 4% for every unit increase in Body Mass Index (BMI). Overweight and obese women (BMI of 25 – 29.9 and ≥ 30 , respectively), have been shown to have an excess risk of approximately 60% of having a child with CP when compared to women with lower normal BMI (BMI of 18.5 – 22.9). The prevalence of CP has been shown to range from 1.4 per 1,000 children in mothers with a BMI between 13.2 and 19.4 (the first decile), to 2.5 per 1,000 children in mothers with a BMI between 29.4 and 64.4 (the tenth decile). It has been suggested that the association between maternal obesity and offspring with CP is not due to genetic factors but due to a direct and harmful effect of the mother's overweight status through the intrauterine environment. Babies of overweight women also tend to be large, which increases the risk of a difficult labour and therefore also birth injury^[15].

4.3.4 Maternal alcohol consumption and smoking

- (1) Heavy alcohol consumption by the mother has been shown to be a direct cause of pre- and peri-natal CP. It has also been shown to be an indirect cause of post-neonatally acquired CP. In an Australian population of non-Aboriginal CP children, a threefold increase has been reported in the chances of pre- and peri-natal CP when a maternal alcohol diagnosis is made during pregnancy. For this group of non-Aboriginal children, the chances of post-neonatally acquired CP increased eightfold with any alcohol-related diagnosis. For Aboriginal children, the odds of pre- and peri-natal CP showed a twofold increase when an alcohol-related diagnosis – indicating heavy maternal alcohol drinking – was made within one year of pregnancy^[16].
- (2) A significant association has been shown between heavy maternal smoking during pregnancy (that is, more than 10 cigarettes per day) and having a child with spastic CP. As noted by Miller et al. ^[17]:
- Maternal smoking during pregnancy is associated with placental malformation and malfunction, foetal growth restriction and preterm deliveries. Smoking effect may be mediated by these factors ...

4.3.5 Maternal thyroid disorder

- (1) Maternal thyroid disorder when identified during pregnancy has been associated with an increase in the risk of unilateral spastic CP. It has been found biologically plausible that the risk of unilateral CP increases threefold with thyroid disorder identified during pregnancy. As noted by Petersen et al. ^[18]:
- We found a tendency to increased risk of unilateral spastic CP in children born to women with thyroid disorders identified during pregnancy. These children will probably have been exposed to abnormal thyroid hormone levels in utero, as abnormal levels may be present for a period before the disorder is diagnosed and treated for the first time ...

4.3.6 Infections

- (1) Genitourinary and respiratory infections in the mother that are diagnosed during either a pre-natal hospitalization or birth hospitalization have been found to be significantly associated with CP. The association between maternal infections and a higher risk of CP have been found in both pre-term and full-term infants. A diagnosis of maternal infection in hospital during pregnancy has been associated with a more than twofold increase in the risk of CP. These infections include both intrauterine and extrauterine infections such as chorioamnionitis, genitourinary infections and respiratory infections. As noted by Bear and Wu^[19]:

There are several potential explanations for the association between prenatal respiratory infections and cerebral palsy seen in our study. First, respiratory infections of sufficient severity to occur during a hospitalization might lead to a systemic inflammatory response that predisposes the foetal brain to injury, a mechanism that has been previously suggested for intra-amniotic infections. The respiratory infection could lead to a prolonged period of maternal hypoxemia that could then cause or predispose the foetal brain to injury. The antibiotics themselves used to treat infections during the hospitalization could also contribute to the risk of developing cerebral palsy as suggested by the ORACLE II trial ...

- (2) A significant association between untreated vaginal infections and spastic CP has been shown in international studies. Maternal fever during pregnancy has been significantly associated with giving birth to a child with CP overall. Untreated vaginal infections have been strongly correlated with spastic CP in children with Apgar scores of less than 10 at five minutes after birth. This may show that foetal distress as expressed as a low Apgar score is an in-between or effect modifier in the connection between vaginal infection and spastic CP^[17].
- (3) The chances of a child having CP have been found to increase by 27% in cases where the mother had a genitourinary infection. Infections during the first two trimesters have been found to be more strongly associated with CP in pre-term and low birthweight infants when compared to infections in the last trimester. These infections include chlamydia, trichomoniasis and urinary tract infections. Children whose mothers had chlamydia have been reported to have twice the chance of any CP diagnosis^[20].
- (4) Children whose mothers were prescribed any antibiotic or were diagnosed with a maternal infection in hospital during pregnancy have been shown to be more likely to have CP than children who were not exposed to these factors. An increased risk of CP has been associated with mothers who were prescribed nitrofurantoin (an antibiotic used to treat lower urinary tract infections) or was diagnosed with genitourinary tract infections in hospital during pregnancy. As noted by Miller et al. (our emphasis underlined)^[21]:

Part of the immune response to infections is the possible increase of brain vulnerability, which may cause foetal white matter damage, identified as an important risk factor for the development of CP in preterm infants. Gestational age may modify the potential effect or act as a mediator on the causal pathway from infection to CP, inasmuch as intrauterine infection/inflammation has been identified as a cause of preterm delivery. Less is known about the potential effects in term infants...

Several studies support relations between intrauterine infection and the development of periventricular leukomalacia, which is typically found in children with spastic CP, children who were preterm, and occasionally children who were term. The immune response to infections, including the release of cytokines, may be an aetiological factor for encephalopathy and possible CP leading to white matter brain damage by affecting foetal blood flow or the haemo-static system, coagulation necrosis of white matter, and increased permeability of the blood-brain barrier (facilitating microbial products and cytokines passing into the brain). Our associations of maternal infections with spastic CP are not new and are consistent with previous research...

- (5) Histological signs of chorioamnionitis, or intrauterine infection, have been shown to be detectable in more than 50% of women who give birth prematurely, with the majority of patients having no clinical signs of infection^[22]. This type of infection has been shown to be the most frequently reported perinatal infection^[23]. Chorioamnionitis has been associated with an increased risk of CP^[22]. Infants of normal birthweight whose mothers were diagnosed with chorioamnionitis have been shown to be more hypotensive, need intubation, have neonatal seizures, and have a clinical diagnosis of hypoxic-ischaemic encephalopathy^[24]. Intrauterine infection – as evidenced by histological chorioamnionitis – has been associated with a fourfold increase in the risk of CP^[25].

4.3.7 Gestational age

- (1) Preterm delivery has been shown to occur in approximately 35% of all CP cases^[25].
- (2) Low gestational age has been considered to be the most important risk factor for CP. In international studies, the prevalence of CP has been shown to reduce as gestational age increases^[13]:

Figure 11: Gestational age

Proportion of CP births	28%	15%	58%
Proportion of all births	1%	4%	95%
	Very pre-term	Moderate pre-term or near term	Term
	< 32 weeks	32-36 weeks	> 37 weeks

- (3) Infants who are born before 32 weeks of gestation have been shown to have an increased risk of CP when compared to infants with all other gestational ages with an odds ratio of 70.6^[26].
- (4) Infants who were born very premature (that is, gestational age of less than 28 weeks) have been found to be 26 times more likely to have CP than full-term infants.^[6] The risk of CP at less than 33 weeks' gestation has been shown to be 30 times higher than for those infants born at term^[25].

- (5) As noted by Reddihough and Collins^[24]:
The increasing numbers of low birthweight infants with cerebral palsy may be due to their survival and subsequent development of brain damage from complications of their immaturity such as intraventricular haemorrhage. Alternatively, these children may be damaged before birth and the same influences that damaged them may also have been the cause of their preterm birth...

4.3.8 Low birthweight

- (1) Infants who are small for their gestational age are more likely to have CP than infants with birthweight in the 40th to 60th percentiles. The increase in risk of CP for birthweight below the third percentile has been shown to be 12-fold^[26].
- (2) Infants with very low birthweight have been found to be 24 times more likely to have CP than normal birthweight infants^[6].

4.3.9 Lack of prenatal care

- (1) Mothers who are younger than 18, older than 35, have no prenatal care and low insurance status have been found to be at increased risk of having a child with CP^[6].

4.3.10 Multiple births

- (1) Multiple pregnancies have been associated with preterm delivery, poor intrauterine growth, birth defects and intrapartum complications^[24].
- (2) Multiple pregnancies increase the risk of CP twofold for each twin^[25].
- (3) The prenatal death of a co-twin has been associated with a sixfold increase in the rate of CP per twin confinement or an 11-fold increase in the rate of CP per child^[24].

4.3.11 Intrauterine growth restriction (IUGR)

- (1) IUGR has been associated with a 10-fold to 30-fold increase in the risk of CP. As noted by MacLennan et al. ^[25]:

IUGR can be due to many known and unknown causes, but usually reflects poor implantation and poor placentation from genetic, anatomical (for example uterine fibroids, congenitally abnormal uterus, abnormal placental site), or pathological (for example, preeclampsia, diabetes, systemic lupus) causes. IUGR increases in late pregnancy when growth velocity should be at its greatest and foetal demand may outstrip placental and maternal supply. This usually creates an asymmetrical growth restriction where the baby is lighter than its length suggests.

A growth-restricted foetus may show signs of possible foetal compromise during labor. This can reflect reduced capacity/reserves to withstand the normal stresses of labor, established neurological and ongoing foetal compromise, or both. It is not possible to distinguish between these timings.

4.3.12 Tight/entangled umbilical cord

- (1) Cord entanglement has been shown to be a risk factor for CP^[26].
- (2) A tight umbilical cord around the foetal neck at delivery or a true umbilical knot have been shown to increase the risk of spastic quadriplegia 18-fold^[25].

4.3.13 Other risk factors

- (1) Other risk factors include:
 - (a) History of another relative with CP^[26]
 - (b) Bleeding during pregnancy^[26]
 - (c) Illicit drug use^[26]
 - (d) Mothers having three or more previous miscarriages^[26]
 - (e) Hypertension in pregnancy^[23]
 - (f) Instrumental deliveries (as opposed to spontaneous vaginal or elective caesarean deliveries) and breech delivery^[23]
 - (g) Low maternal age (younger than 20 years) and advanced maternal age (older than 35 years)^[13]
 - (h) Intellectual disability and seizures present in the mother^[24]
 - (i) Short or long interpregnancy interval^[13]
 - (j) Infertility treatment^[13]
 - (k) An epidemic of CP was identified in Japan during 1953 to 1960 due to families eating fish contaminated by methyl mercury and a trio of spasticity, deafness and intellectual disability was identified in New Guinea during the 1960s due to a lack of iodine during early pregnancy^[24].

4.3.14 Factors that reduce the risk of CP

- (1) Studies have suggested that magnesium sulphate can function as a protective factor in the development of CP in preterm infants^[24].

4.4 CAUSES

4.4.1 Introduction

- (1) For close to a century, the majority of CP cases were believed to be caused by asphyxia during either labour or the perinatal period. The prevalence rates of CP were used to measure the outcomes of obstetric practice and quality of infant care and researchers believed that improvements in these areas would lower the prevalence rate of CP. This resulted in an increase in the use of interventions such as electronic foetal monitoring and caesarean sections. This theory was however challenged when stillbirths and infant deaths declined but the CP prevalence rates remained constant^[24].

- (2) CP is generally perceived to be a result of numerous interacting factors and events, as opposed to a single cause^[9]. It is therefore rather a sequence of events that cause the motor damage^[24]. As noted by Nelson^[27]:

Although any 1 factor, if severe, may be sufficient to cause CP, more often it is the presence of multiple risk factors that overwhelms defense mechanisms and leads to CP...

Although often discussed as if they were causes of later disability, low Apgar scores and respiratory depression and other signs of neurologic depression in the newborn infant are results of their own antecedents, and if adequate resuscitation is available are not causes in themselves. These signs are not specific to asphyxial etiologies and do not serve to establish the cause of depression in the neonate. A single severe exposure such as uterine rupture or massive abruption can be sufficient to cause CP, but much more often it is not a single cause, but rather multiple concurrent risk factors that precede CP. And multiple risk factors markedly increase risk...

4.4.2 Pre-natal Cerebral palsy

- (1) The causes of pre-natally acquired CP include:
- (a) Heavy maternal alcohol consumption^[16]
 - (b) Congenital brain malformations – which includes malformations of cortical development – has been shown to be an important cause of antenatal CP^[24]
 - (c) Vascular events ,for example, middle cerebral artery obstruction^[24]
 - (d) Maternal infections during the first two trimesters, including rubella, cytomegalovirus and toxoplasmosis^[24]
 - (e) Metabolic disorders^[24]
 - (f) Maternal ingestion of toxins^[24]
 - (g) Genetic syndromes^[24]
 - (h) Placental pathology such as chorioamnionitis, villitis of unknown origin (VUE) and fetal vascular malperfusion (FVM) is discussed in more detail in Section 4.6.

4.4.3 Peri-natal Cerebral palsy

- (1) Obstetric emergencies such as obstructed labour, antepartum haemorrhage or cord prolapse, may result in the foetus being compromised and subsequently resulting in hypoxia. However, important criteria have to be met in order for a CP case to be ascribed to an acute intrapartum episode^[24]. In this regard, MacLennan et al. note that nine criteria can help to identify the few cases of “severe *de novo* acute intrapartum hypoxia” as set out below^[25]:

Essential criteria to show presence of hypoxia at birth are:

- (1) A metabolic acidosis at birth (pH <7.00 and Base Excess <-12).
- (2) Early moderate to severe neonatal encephalopathy.
- (3) Cerebral palsy of spastic quadriplegic or dyskinetic type.
- (4) Exclusion of other identifiable causes of cerebral palsy, for example, coagulation or genetic disorders, infectious conditions, intrapartum pyrexia, antepartum hemorrhage, prematurity, intrauterine growth restriction, tight nuchal cord, complications of multiple pregnancy.

Five non-specific criteria collectively point toward acute or chronic causes of hypoxia. If most are met, they suggest timing of neuropathology near delivery. If most are not met, they suggest longer-standing pathological process. These criteria are:

- (5) Sentinel (signal) hypoxic event sufficient to cause sudden severe hypoxia in healthy foetus, for example, cord prolapse, antepartum hemorrhage, ruptured uterus.
- (6) Sudden sustained foetal heart rate bradycardia from that event.
- (7) Apgar score <4 after 5 min.
- (8) Signs of multisystem failure in neonate.
- (9) Early (within 5 d) neuroimaging signs of edema and intracranial hemorrhage.

- (2) Asphyxia is a lack of oxygen in the brain caused by an interruption in breathing or poor oxygen supply. It is common for a short period of time in babies due to the stress of labor and delivery. However, if the supply of oxygen is cut off or reduced for lengthy periods, an infant can develop a type of brain damage called **hypoxic-ischaemic encephalopathy** which destroys tissue in the cerebral motor cortex and other areas of the brain. This type of damage can also be caused by severe maternal low blood pressure, rupture of the uterus, detachment of the placenta, or problems involving the umbilical cord, or severe trauma to the head during labor and delivery^[28].
- (3) It is believed that clinically defined birth injury or birth asphyxia account for only a small proportion of CP cases^[27] – reported to be less than 12% of overall CP cases^[29]. However, many cases are mis-labelled as being due to asphyxia during birth^[25].
- (4) A wide discrepancy between the proportion of CP cases attributable to birth asphyxia has been reported between countries – the main reasons being questionable definitions of “birth asphyxia” and “CP”. An analysis of available literature during 2013 noted that the reported percentage of CP cases with birth asphyxia ranged from 3% to 50%. Ellenberg and Nelson^[29] however note that the experience of controlled prospective studies in representative populations have been consistent in reporting that the majority of infants with neonatal encephalopathy, and the smaller group of those infants who have CP, did not experience acute asphyxia events during birth.

- (5) Birth hypoxia is most often assumed from clinical observations, and not measured directly. Other events/conditions have been associated with similar manifestations for example, inflammatory conditions. Ellenberg and Nelson note that (our emphasis underlined)^[29]:

When a massive placental abruption occurs in the delivery of a late preterm or term infant, the infant may be born pale, limp, apneic, and unresponsive to stimulation. In that situation, it would seem legitimate to conclude that interruption of oxygen supply and ischemia were the cause of the clinical findings. When another infant is born pale, limp, apneic, and unresponsive, it may seem to attendants that the infant must also have suffered an interruption of oxygen supply or ischemia, even if no such asphyxial events were observed. However, newborn infants have a limited range of responses. Intrauterine exposure to inflammation or vasculopathy can mimic all features of the clinical picture of birth asphyxia, even producing abnormal foetal heart rate patterns and severe acidosis. Infants who are seriously affected by either asphyxial or inflammatory pathology, or perhaps other antecedents, may exhibit depression of consciousness in the first hours and days of life and may have neonatal seizures; they are at risk for long-term neurologic disability, including CP...

If the role of birth asphyxia as an initiating factor on the causal pathway to CP is to be correctly assessed, a surrogate must be used that is relatively specific to birth asphyxia and not itself an early symptom of the developing disorder. An important and recurring issue is the conflating of proximal effects or joint consequences of a factor underlying both, with causes. For example, foetal monitoring abnormalities, low Apgar scores, and neonatal seizures are often taken as indicators of asphyxia, although none of these signs is specific to asphyxial birth; all are often related to underlying placental pathology. The most common antecedent of low Apgar scores is maternal fever in labor or a diagnosis of chorioamnionitis. Neonatal seizures are commonly a result of perinatal stroke or inflammation. None of these findings – low abnormal foetal heart rate patterns, low Apgar scores, or neonatal seizures – has birth asphyxia as its only or even its major cause. As already mentioned, the behavioral repertoire of a newborn infant is limited, and many different antecedents elicit a similar pattern of response...

So long as effective neonatal resuscitation is available, low Apgar scores are a result of prior causes. Neonatal seizures are early manifestations of brain injury, sometimes relatively mild and reversible, sometimes severe and associated with long-term disability. These signs are compatible with the possibility that the brain damage underlying CP is already present in many of these infants. The confusion of causes with proximal effects was especially notable in studies that used encephalopathy in the neonate, commonly called HIE, or neonatal seizures as indicators of hypoxic or ischemic births. As Kurinczuk et al. stress, the inclusion of intrapartum complications and of proximal effects into the criteria for birth asphyxia is 'a tautology indeed.'...

The 23 studies reviewed were investigations of association, not of causation. If care is taken to create definitions of interruption of oxygen flow or blood flow to the infant ('sentinel events') and definitions of CP that are free of observable etiologies other than birth asphyxia, such studies could provide hints of causation. The data from four papers...with a definition of CP that excluded non-asphyxial etiologies and had definitions of birth asphyxia that used only clinically recognized acute asphyxial events of birth to define birth asphyxia, produced among the five (of seven) lowest case exposure rates (12% or less) for CP and birth asphyxia...

Birth asphyxia may truly be more common as a cause of CP in regions of limited resources, but we could not distinguish this possibility because of the weaknesses of the definitions offered in these reports.

- (6) Ellenberg and Nelson conclude that^[29]:

The current data do not support the belief, widely held in the medical and legal communities, that birth asphyxia can be recognized reliably and specifically on the basis of clinical signs such as aberrant foetal heart rate patterns, Apgar scores, respiratory depression, neonatal seizures, or acidosis, or that most CP is due to birth asphyxia... Although not optimal, the best identifier now available at a population level for asphyxial birth is the occurrence of sentinel events such as uterine rupture, major placental abruption, or cord prolapse...

It is likely that placental disorders underlie much of what has been referred to in the past by vague terms such as 'maternal deprivation of supply,' 'chronic hypoxia,' and 'placental insufficiency.' Studies that include maternal and pregnancy factors, outcomes, and placental histology are needed to identify specific placental lesions, their etiologies, and their (probably multiple) consequences...

- (7) MacLennan et al. note that^[25]:

'Birth asphyxia' is an outdated term that may wrongly convey that a baby born with signs of foetal and neonatal compromise must have undergone an acute hypoxic event in late labor and/or birth. These clinical signs may also be present when there has been much longer-standing foetal compromise with possible secondary hypoxia near delivery...

4.4.4 Post-natal Cerebral palsy

- (1) Causes of post-natally acquired CP include^[24]:

- (a) Child abuse
- (b) Motor vehicle and other vehicle injuries
- (c) Near drowning
- (d) Infections and diseases such as meningitis, septicemia, and malaria

4.5 **APGAR SCORES**

- 4.5.1 The Apgar scoring system was developed by Dr Virginia Apgar during the 1950s and is a method of evaluating the physical condition of an infant after birth. The score consists of five parameters, namely heart rate, respiration, muscle tone, reflex irritability and colour. Each one of the afore-mentioned criteria is given a rating of 0, 1 or 2 to give a final Apgar Score out of 10. The higher the score, the better the health of the infant. A total score of 7 or higher is an indication that the infant's condition is good to excellent^[30].
- 4.5.2 Not all of the criteria are equally important, with heart rate and respiration being the most important and colour least important. This led to an alternative score, namely A-C (Apgar minus colour) score to be proposed, thus allowing for a total score out of 8. The purpose of this score was to reflect the effect of drugs on neonates more accurately, however it was not widely adopted^[31].
- 4.5.3 Initially, the Score was recorded one minute after birth.^[31] However, the 5-minute score has come to be considered the better indicator of survival in infants.^[30] Studies have also shown a shift to higher Apgar scores from those measured at one minute to those measured at five minutes^[32].

4.5.4 Uses

- (1) The original aim of the Apgar scoring system was to predict the survival of an infant during the neonatal period with neonates with Apgar scores of 0 to 3 at five minutes being at the highest risk of neonatal death^[30].
- (2) This numerical scoring system encourages delivery room personnel to pay close attention to the newborn^[30] and ensures observation and documentation of the newborn's condition after birth^[31].
- (3) Provides criteria for newborn resuscitation^[31]. The five-minute Apgar Score, and specifically the difference between the one-minute and five-minute score is an indication of the effectiveness of resuscitation efforts^[33].

4.5.5 Advantages

- (1) Measured soon after birth and is a quick way to evaluate the physical condition of the newborn^[30].
- (2) Characteristics to be measured are easily identifiable and can easily be taught to delivery room staff^[30,31].
- (3) Can be measured without special equipment^[31].

4.5.6 Criticisms

- (1) It was never the intention of the Apgar score to be used as a predictor of neurological development of a newborn^[30]. The one-minute score may be used to identify the infants who need special attention, however, this score does not show a correlation with future outcomes. Even a low five-minute score (a score between 0 and 3) shows a poor correlation with future neurological outcomes. International studies have shown that a five-minute Apgar score of between 0 and 3 is associated with an increased risk of CP, however, this increase is only from 0.3% to 1%. An infant with an Apgar score of 0 to 3 at 5 minutes and an Apgar score of 4 or more at 10 minutes only has a 1% chance of having CP at seven years of age. Studies have also shown that 75% of children who developed CP had a normal Apgar score after birth. A low five-minute Apgar score alone therefore does not serve as proof that later CP was caused by perinatal asphyxia^[33].
- (2) Apgar scores of 0 to 3 as measured at 10, 15 and 20 minutes show increased correlations with future neurological outcomes^[33]. Even though cerebral asphyxia may manifest as a low five-minute Apgar score, the following range of criteria has to be present at birth for substantial cerebral hypoxia to be presumed^[31,33]:
 - (a) Apgar score of 0 to 3 at ten minutes/longer than five minutes (with no other cause evident)
 - (b) Infant has to remain hypotonic for at least a number of hours
 - (c) Early perinatal seizures
 - (d) Multiple organ dysfunction
 - (e) Umbilical cord artery pH of less than 7

- (3) Hypoxia can be confirmed by establishing metabolic acidemia in umbilical cord blood. The absence of this means intrapartum asphyxia is unlikely^[33]. The measurement of the pH of umbilical-artery blood has subsequently been adopted as an aide to the Apgar score for evaluating the condition of a newborn. International studies have however shown that the five-minute Apgar score is a better predictor of neonatal outcome than measuring umbilical-artery blood pH. These studies also showed that the combination of a five-minute Apgar score of 0 to 3 and umbilical-artery blood pH of 7.0 or less increases the relative risk of death in both term and preterm newborns^[30]. Earlier studies showed that low Apgar scores with cord blood values which are close to normal (as measured by partial pressure of carbon dioxide, pH levels and buffer base) usually occur in newborns exposed to heavy maternal medication, general anaesthesia, or both^[31].
- (4) A low Apgar Score does not necessarily imply asphyxia, for example^[30,33]:
- (a) Elements of the Apgar Score such as tone, colour and reflex irritability depend in part on the physical maturity of an infant. A normal premature infant may therefore be assessed as having a low Apgar Score without any evidence of cerebral depression or anoxic insult.
 - (b) Administration of drugs to the mother, including sedation, may affect tone as well as responsiveness.
 - (c) Neurological conditions may decrease tone and affect respiration.
 - (d) Cardiorespiratory conditions may affect heart rate, respiration and tone.
- (5) The Apgar score is in any event hearsay if the person who determined the score is unavailable to give evidence.

4.5.7 Analysis

- (1) Despite the guidelines noted above, set out below is the outcome of merits trials in respect of matters where Apgar scores were recorded at various durations. None of the cases showed an Apgar score of between 0 and 3 at five minutes.

Table 13: Apgar scores and outcome of merits

1min	5min	10min	Outcome
2	5		100.0%
2	5	9	100.0%
3	4	0	100.0%
3	5		100.0%
3	5		100.0%
4	8		100.0%
4	7		100.0%
4	5	5	100.0%
4	5		100.0%
4		8	100.0%
4	6	8	100.0%
4	7	9	0.0%
5	7		0.0%
5	7		0.0%
5	6	6	100.0%
5	7		100.0%
6	9		0.0%
8	10		100.0%
8	10		0.0%
9	10	10	0.0%
9	10	10	100.0%
10	10	10	100.0%

4.6 PLACENTAL PATHOLOGY

4.6.1 Main functions of the placenta

- (1) The placenta is a specialized pregnancy organ which acts as the lungs, gut, kidneys, and liver of the foetus during pregnancy^[34]. It nourishes and protects the foetus, is responsible for gas exchange and facilitates maternal adjustments to pregnancy^[34,35]. It also facilitates the exchange of nutrients and waste products between the mother and the foetus^[36]. The placenta has been referred to as the “central regulator of the intrauterine environment”^[37].
- (2) The placenta acts as an immunological shield for the unborn foetus^[34] and regulates the absorbency of antibodies^[38]. It has the ability to detect and respond to infection and inflammation caused by for example, bacteria, viruses, parasites, and fungi^[38] and ensures that the foetus can develop in a safe and independent environment^[34].

- (3) The placenta is an endocrine organ which means that it synthesizes and secretes hormones that control maternal body functions and metabolism^[34]. It is responsible for producing many important hormones, with these hormones having a variety of purposes during different gestational events – from pregnancy establishment, to foetal development and labour.^[35] In early pregnancy this involves promoting the accumulation of maternal nutrient reserves for foetal use later on or for lactation^[34].
- (4) This organ can be thought of as comprising of two main parts: a foetal and maternal component which have to interact effectively to facilitate a healthy pregnancy^[34]. The border between maternal and foetal cells is in the placenta and the foetus is exposed to any abnormalities in the maternal or intrauterine environments through this organ. The placenta acts as the regulator of all interactions between the mother and the foetus^[38].

4.6.2 Factors that adversely affect placental development

- (1) Abnormalities of the placenta have been widely recognized as having an immediate effect on the outcome of a pregnancy and also on the long-term health of the child. As noted by Burton and Jauniaux^[34]:
Recent changes in human environmental habitats caused by pollution, habits such as smoking, and the increased use of medical and recreational drugs have challenged the concept of a natural protective role of the placental barrier.
- (2) On account of the many roles that the placenta plays in gestational processes, it is also implicated in complications such as growth restrictions and hypoxia which in turn are associated with the development of neurological problems. For example, a disruption in the maternal blood flow into the placenta can cause inappropriate exchange of nutrients and respiratory gases between the mother and the foetus. This in turn can cause foetal malnutrition, intrauterine hypoxia and abnormal placental weight or birth weight of the infant^[38]. An abnormal production of placental hormones can adversely affect placental development, gestational processes, and foetal development. Altered levels of placental hormones have been associated with pre-eclampsia, ectopic pregnancies, and spontaneous abortions^[35].
- (3) Maternal drinking and smoking directly affects the placenta, including the blood flow to and from the placenta as well as its weight and structure^[39]. Studies have shown that the prevalence rate of placental abruption is significantly higher when the mother drinks and smokes during pregnancy – where placental abruption has been found to be the cause of 10% of all preterm births. It has also been found that factors such as lower maternal employment, hypertension and maternal use of methamphetamine are associated with a higher frequency of placental abruption^[40].

- (4) The Western Cape region has been reported to have one of the highest prevalence rates of Foetal Alcohol Syndrome (FAS) in the world with a reported prevalence of 80 per 1,000. South Africa has also been reported to be experiencing an epidemic of expecting mothers using a crystallized form of methamphetamine, which has been associated with an increased risk of preterm birth, infants who are small for their gestational age and neurobehavioral problems. A study conducted among Cape Town women found alcohol exposure during pregnancy leads to a reduced placental weight and lower placenta-to-birth-weight ratio – which in turn leads to a decreased delivery of oxygen and nutrients to the unborn foetus. Marijuana and methamphetamine use during pregnancy have been shown to cause chronic hypoxia by decreasing the blood flow to the placenta^[37].
- (5) Maternal hypertension has been shown to cause maternal under-perfusion of the placenta. This leads to the placenta being unable to meet all the needs of the foetus^[41].
- (6) Maternal anemia has been associated with effects on the placental process of producing new blood vessels, intrauterine hypoxia, and perinatal brain injury^[38].

4.6.3 Placental examinations

- (1) The placenta has been referred to the “putative diary of intrauterine life promising to explain the mysteries underlying poor pregnancy outcome” ^[36]. The aim of placental pathology is to make sense of adverse clinical outcomes^[42] but can also assist in quality assurance, risk management and patient education^[36]. Placental examinations can be a way of investigating the intrauterine environment to make sense of the present condition of a neonate^[43].
- (2) In the early stages, placental pathology focused on macroscopic abnormalities of the placenta^[36].
- (3) Subsequent studies laid the groundwork for the current understanding of placental pathology, including studies identifying specific placental lesions, studies showing links between placental defects and adverse pregnancy outcomes and studies that have assisted in developing systematic approaches to placental diagnosis^[36]. Current placental pathology examinations may include a detailed gross and microscopic pathological report^[43].
- (4) International studies have attempted to offer explanations for the underutilization of placental pathology. Reasons that were considered include the financial pressures on hospitals (however noting the cost of a routine examination to be moderate), complexity of reports and the misunderstanding between pathologists and clinicians. The terminology used by placental pathologists is not directly linked to a final clinical diagnosis. For example, the pathologist cannot diagnose pre-eclampsia but can identify lesions indicative of Maternal Vascular Malperfusion (MVM) which is well-matched with pre-eclampsia. In order to address these problems, a workshop was held in the Netherlands during 2014 where discussions were held regarding standards for macroscopic and microscopic placental examinations, sampling, and reporting^[44].

- (5) International studies have found that the gross examination of a placenta should ideally be done within a day of delivery. Placental tissue can however still contain valuable information if it has been refrigerated and examined within 72 hours after delivery. The placenta therefore does not have to be discarded if immediate investigation is not possible^[44].

4.6.4 South African context

- (1) As noted by Professor C.A. Wright^[41]:
The placenta is the most under-examined, under-utilised and under-appreciated organ in the human body...For 9 months it works day and night, devoting its entire life span to the foetus, and yet after delivery, with perhaps a cursory glance, it is relegated to the ashes.
- (2) Possible reasons for the underutilization of placental pathology in South Africa include^[41]:
- (a) Surgical pathologists have inadequate exposure to placental pathology during their training.
 - (b) Different terminology relating to the placenta's pathology.
 - (c) There is no *"one-to-one correlation"* between the placenta's pathology, the clinical presentation, or the final outcome.
 - (d) Pathologists are reluctant to examine placentas due to the number of these organs that may have to be subjected to examination.
- (3) As noted by Turowski et al. ^[44]:
Submitting all placentas for pathologic examination is not clinically indicated and would be fiscally disastrous for most institutions...
- (4) There are no national guidelines in the South African healthcare system for the histopathological examination of placentas. There are however local guidelines, which are variably implemented^[45]. At Tygerberg Hospital, a tertiary referral academic hospital, placentas are selectively chosen for histopathological evaluations following an adverse maternal or perinatal outcome according to a set of well documented protocols^[41].
- (5) It has been recommended that^[46]:
If a placenta is submitted for histopathological examination, the accompanying clinical data on the request form should be as comprehensive as possible and should include, at a minimum, gestational age, obstetric history, comorbidities, pregnancy outcome and clinical diagnosis...
- (6) Local studies have shown that, on average, only two sections of placental parenchyma are sampled per placental specimen in the National Health Laboratory Service at the Charlotte Maxeke Johannesburg Academic Hospital. In Lancet Laboratories in Richmond, Johannesburg (private sector) the norm is to sample seven blocks of placental parenchyma. In this regard it is noted that as an example, at least six sections of placental parenchyma is needed to detect 85% to 95% of cases of chronic villitis of unknown aetiology^[45].

- (7) Other differences observed in placental pathology practices between the public sector and private sector (as represented by the two institutions mentioned above) include:
- (a) The use of checklists and templates in the private sector when compiling histopathological reports. These may help the pathologist to make an accurate diagnosis and to communicate the diagnosis effectively to the clinician^[45].
 - (b) The use of a specialized pathologist with experience in placental pathology in the private sector vs pathology "generalists" in the public sector. In this regard, it is however noted that South Africa has only 100 pathologists per 55 million people based on 2016 statistics, with the bulk of these practicing in the private sector^[45].
- (8) A study conducted in the Western Cape found that only 6% of placentas of live births revealed no abnormalities, whereas only 2.2% of placentas of intrauterine death cases had no abnormalities. The placentas included in the sample were all singleton placentas with gestational age of ≥ 24 weeks that were submitted to the Division of Anatomical Pathology at Tygerberg Hospital between 1 January 2011 and 31 December 2012^[46].

4.6.5 Uses of placental pathology

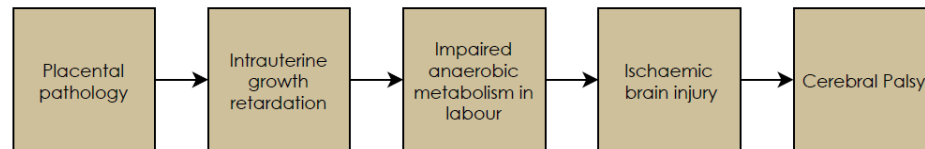
- (1) Placental pathology examinations can be useful for parents to make sense of pregnancy complications and may be useful for clinicians in determining and understanding the underlying mechanisms that lead to adverse pregnancy outcomes and also for informing future pre-pregnancy interventions and care^[43].
- (2) International studies have shown that specific placental pathologies can independently predict specific neonatal outcomes. Timely examination of the placenta can therefore be used to inform neonatal therapy for compromised neonates^[43]. Examples include a diagnosis of a candida infection in a pre-term infant that may require the addition of an anti-fungal agent to the neonate's treatment^[44].
- (3) Histopathological examination of the placenta may provide information that may otherwise not be known through clinical investigations. Placental pathology has been shown to support a diagnosis of acute chorioamnionitis that could not be determined clinically^[41]. A study conducted in the Western Cape found that in the study group, 100 cases of chorioamnionitis were diagnosed clinically, whereas 265 cases were diagnosed histologically^[46].
- (4) Sub-Saharan Africa has been making a slow improvement in the rate of stillbirths that occur in the region. Placental pathology can be used as a method to obtain additional information regarding stillbirths in an attempt to reduce these rates. It also plays an important role in studying the causes of spontaneous second trimester miscarriages and preterm delivery^[47]. Reluctance to consent to a perinatal autopsy remains a problem and as such placental pathology is often the only source of information concerning causes of stillbirths and neonatal deaths^[46].

- (5) Placental histology can assist in identifying the cause of perinatal deaths – including unexplained intrauterine death (IUD) – which can assist in targeting care more effectively. This can assist parents to get closure and prevent them from blaming themselves or the attending clinician for something that might have gone wrong during the antenatal period^[46]. A study conducted during 2006 and 2007 at the Tygerberg Hospital found that of the 162 placentas that were sent for histology, 58 reports resulted in a change to the primary cause of death. Placental histology also assisted in assigning causes of death in 46 cases that were previously classified as unexplained^[48].
- (6) Placental pathology can be used to identify high-risk factors for adverse pregnancy outcomes.
- (7) In very low birth weight infants, placental pathology can be used to identify the causes of foetal growth restriction and to identify significant foetal inflammatory responses to infection. In term and near-term infants, placental pathology can be used to determine which processes play a role in central nervous system injury^[49].
- (8) Placental examination can be used to identify abnormalities with a risk of recurrence in subsequent pregnancies, for example, placental maturation defect^[41] and villitis of unknown aetiology which has a risk of recurrence with increased severity^[46]. This presents an opportunity for intervention in subsequent pregnancies^[48].
- (9) Severe defects in the delivery of blood to and from the placenta which causes asphyxia of the unborn infant is usually referred to as **sentinel events**. The depressed neurological state of the newborn is referred to as **neonatal encephalopathy** (NE). Sentinel events that can be identified by placental pathology include^[49]:
 - (a) Premature separation of the placenta from the uterus
This is caused by a rupture of the maternal arteries that supply the placenta or uterine rupture. The former cause has risk factors that include drug use (such as cocaine and nicotine) and forces linked with trauma or heavy physical labour. Risk factors for the latter include a former caesarean section. In these circumstances, placental pathology can help to make a diagnosis if the blood becomes embedded in the placenta (as opposed to, for example, remaining next to the uterus).
 - (b) Umbilical cord obstruction
Complete umbilical cord obstruction can be associated with cord prolapse, knots, foetal entanglements and twisting of the cord. A diagnosis in this regard can be made by examining a histological sample of the section close to the umbilical cord insertion site.
- (10) Identification of Tuberculosis in placentas can aid in identifying high-risk infants and in starting treatment for infected mothers and infants as quickly as possible. This is particularly important in cases where HIV infection is also present^[50].
- (11) Placental pathology can be used to identify maternal conditions that affect placental function. This can help to identify women who require a higher level of antenatal surveillance. An example includes the Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) that has been shown to affect the oxygenation processes in the placenta which has been associated with adverse perinatal outcomes^[51].

4.6.6 Placental pathology and Cerebral palsy

- (1) The aetiology of cerebral palsy can be thought of as^[52]:
... a sequence of causal factors occurring in series or in parallel that ultimately lead to a damaging event or events to the developing brain ...".
- (2) Eunson sets out the causal pathway from placental pathology to CP as follows:^[52]

Figure 12: Causal pathway



- (3) Eunson notes that^[52]:
Other than the single catastrophic placental event such as retroplacental haemorrhage, there is no single placental pathology that is strongly associated with cerebral palsy. Rather, it is the extent of placental pathology that is important. The placenta has about 30% spare capacity. Once this spare capacity is used up, foetal growth will be affected. The three broad placental pathologies are:
 - Abnormalities of vascular development
 - Acquired inflammatory lesions
 - Acquired degenerative lesion ... usually thrombotic in nature
Chronic inflammatory lesions in the placenta and membranes of premature infants are strongly associated with periventricular lesions and diplegic cerebral palsy ...
- (4) Studies where placental examinations were performed have shown that only approximately 10% of cerebral palsy cases are caused by intrapartum hypoxia. It is now commonly accepted that it is the combined effect of various earlier and recent insults that increase the risk of brain injury – where histopathological examinations of the placenta can aid in identifying these effects. Perinatal asphyxia “may be a CONSEQUENCE of rather than a CAUSE of neurological injury”^[41]. Placental histology can provide objective insights which can inform decisions during the litigation process^[46].
- (5) As noted by Bateman^[53]:
Wright said numerous studies had shown that babies who had ‘an event’ during the course of their mother’s pregnancy, went into labour already compromised. The placenta was normally ‘relegated to the sink’. Her experience at Tygerberg Hospital in the year 2000 was that she saw just six placentas from an ‘excellent’ and extremely busy neonatal unit that year. Through her advocacy and that of her colleagues, this improved to 848 placentas a year (still just 15% of deliveries) by 2004/5, when there were only 30 cases of clinically suspected intrapartum hypoxia. On examination, the placenta was normal in only one of these 30 cases the remainder all showing some degree of pathology unsuspected by the attending clinician.

- (6) As noted by Kos^[54]:

In all the surveys, neurological impair is the leading cause of the reasons for liability claim, with the cerebral palsy being the most serious damage. The possible etiologies have been discussed for years, and although the damage to neural tissue is debatable, there is still no agreement upon the timing of the damage. Some authors think that 90% of the cases of cerebral palsy are not due to intrapartum events, while in the opinion of others most of the devastating events occurred in the perinatal period. It is still impossible to firmly determine in each single case whether the hypoxic insult has developed during delivery, in the first few hours after birth, or was already present before the labor began, as a consequence of long-lasting hypoxia during pregnancy.

The basis of litigation claims against obstetricians, anesthesiologists and neonatologists is the notion that foetal death or neurological disabilities are the result of failure or delay in intervention or inappropriate management of injuries believed to have occurred during the process of delivery. The intense foetal monitoring and changes in methods of delivery have decreased the incidence of cerebral palsy, but not substantially.

The placenta is an easily available specimen and the costs of a routine pathological examination are moderate, so in all doubtful cases, the clinicians should not hesitate to ask for a pathological analysis and opinion.

- (7) A study conducted in the Tygerberg hospital found that out of all the placentas submitted for placental histopathology after suspected intrapartum hypoxia, 70% were diagnosed with intrauterine infection. This serves as confirmation that these foetuses were already compromised before entering the labour stage^[41]. Placentas have up to 50% reserve capacity and even though a compromised placenta may function satisfactorily, it may be unable to cope with the stress of normal labour which then leads to hypoxia during delivery^[46]. Examination of the placenta plays a major role in determining the timing of intrauterine events that may be linked to adverse pregnancy outcomes^[41].
- (8) Placental lesions which involve the placental vasculature or placental parenchyma have been associated with CP and neurological injury at term^[46].

4.7 RECOMMENDATIONS

- 4.7.1 After more than three decades of the routine use of electronic foetal monitoring for the diagnosis and treatment of foetal distress, there appears to be inconclusive evidence of its advantage in long-term foetal outcome^[55]. However, this is routinely used in building a case of negligence against the Department of Health. More scientific methods must be introduced to determine the actual pre-natal event or unrecognized intrapartum event (such as chorioamnionitis) that leads to CP. A developed but under-utilized method is placental pathology.
- 4.7.2 The placenta often plays a key role in understanding adverse foetal outcomes such as hypoxic brain injury, cerebral palsy, foetal growth restriction, stillbirth, and neonatal death. Placental pathologic examination may provide evidence of susceptibility to diseases such as diabetes and can be of enormous value to women experiencing an adverse pregnancy outcome. In the medico-legal environment, placental pathology is an indispensable tool in correctly assessing causation.
- 4.7.3 Clinicians and policymakers must develop clear guidelines for the submission of the placenta for histopathological examination in the public sector. As noted by Savage-Reid et al. ^[45]:
- In a litigious society, histopathological examination of the placenta is invaluable... and this further highlights the need for clear guidelines for the submission of the placenta for histopathological examination...
- 4.7.4 In addition:
- The placenta is a common specimen, and the findings can have major clinical and/or legal implications. Placental pathology training workshops may serve to better equip pathologists in diagnosing placental pathology and more focused training at the registrar level would be of value. Increasing the number of pathology registrar posts will also aid in addressing the shortage of pathologists and may also encourage pathologists to pursue sub-specialisations within pathology. Furthermore, important recommendations for the NHLS are to adopt a placental histopathology reporting template and to perform more extensive sampling of placental specimens to adequately detect key pathologies. Where resources may restrict this at the NHLS, carefully selecting placentas for more sampling based on the clinical history provided on the laboratory request forms (for example, a patient with a poor obstetric history or a baby with low Apgars) may be an option.
- 4.7.5 A full histological examination of the placenta costs between R 2,000 and R 2,500 in a private laboratory.

4.8 REFERENCES

1. National Institute of Neurological Disorders and Stroke. 2019. *Cerebral palsy Information Page*. Available: <https://www.ninds.nih.gov/Disorders/All-Disorders/Cerebral-Palsy-Information-Page>
2. Cerebral palsy Alliance. *Gross Motor Function Classification System (GMFCS)*. Available: <https://cerebralpalsy.org.au/our-research/about-cerebral-palsy/what-is-cerebral-palsy/severity-of-cerebral-palsy/gross-motor-function-classification-system/>
3. Western Cape Government. 2019. *New road to health booklet - Side by side on the road to health*. Available: <https://www.westerncape.gov.za/general-publication/new-road-health-booklet-side-side-road-health#:~:text=The%20new%20Road%20to%20Health,or%20private%20health%20care%20facilities>
4. Department of Health. 2018. *Road to Health*. Pretoria: Department of Health.
5. Christensen, D., Doernberg, N., Goodman, A., Schieve, L., Van Naarden Braun, K. & Yeargin-Allsopp, M. 2016. Birth Prevalence of Cerebral palsy: A Population-Based Study. *Pediatrics*. 137(1):1–9. DOI: 10.1542/peds.2015-2872
6. Danielson, B., Fuentes-Afflick, E., Gilbert, W.M., Smith, L.H., Wu, Y.W. & Xing, G. 2010. Racial, Ethnic, and socioeconomic Disparities in the Prevalence of Cerebral palsy. *Pediatrics*. DOI: 10.1542/peds.2010-1656
7. Li, S., Li, Z., Lin, Q. & Liu, J. 1999. Prevalence of cerebral palsy in China. *International Journal of Epidemiology*. 28:949-954
8. Blair, E., Badawi, N., Delacy, M., Galea, C., Gibson, C., Goldsmith, S., McIntyre, S., Reid, S.M. et al. 2018. Cerebral palsy trends in Australia (1995–2009): a population-based observational study. *Developmental Medicine & Child Neurology*. 61(2):186-193. Available: <https://onlinelibrary.wiley.com/doi/full/10.1111/dmcn.14011>
9. Andersen, G.L., Cans, C., De La Cruz, J., Krägeloh-Mann, C., Platt, M.J. & Sellier, E. 2015. Decreasing prevalence in cerebral palsy: a multi-site European population-based study, 1980 to 2003. *Developmental Medicine & Child Neurology*. 58(1):85-92. Available: <https://onlinelibrary.wiley.com/doi/full/10.1111/dmcn.12865>
10. Kobayashi, Y., Touyama, M., Touyama, J. & Toyokawa, S. 2016. Trends in the prevalence of cerebral palsy in children born between 1988 and 2007 in Okinawa, Japan. *Brain & Development*. 38(9):792-799. DOI: 10.1016/j.braindev.2016.03.007
11. Dagenais, L., Joseph, L., Oskoui, M. & Shevell, M. 2013. Prevalence of Cerebral palsy in Quebec: Alternative Approaches. *Neuroepidemiology*. 40:264-268. DOI: 10.1159/000345120
12. Andrews, C., Eliasson, A.C., Forssber, H., Kakooza-Mwesige, A., Mangen, F.W. & Peterson, S. 2017. Prevalence of cerebral palsy in Uganda: a population-based study. *Lancet Global Health*.
13. Ahlin, K., Cans, C., Himmelmann, K. & Jacobsson, Bo. 2011. Risk factors for cerebral palsy in children born at term. *Acta Obstetrica Et Gynecologica Scandinavica*. 90(10):1070-81. DOI: 10.1111/j.1600-0412.2011.01217.x
14. Cheng, Y.W., Gilbert, W.M., Janik, M.D.C., Newman, T.B., Wu, Y.W. & Xing, G. 2013. Maternal Diagnosis of Obesity and Risk of Cerebral palsy in the Child. *Pediatrics*. 163(5). DOI: 10.1016/j.jpeds.2013.06.062
15. Forthun, I., Wilcox, A.J., Strandberg-Larsen, K., Moster, D., Nohr, E.A., Lie, R.T., Surén, P. & Tollanes, M.C. 2016. Maternal Prepregnancy BMI and Risk of Cerebral palsy in Offspring. *Pediatrics*. 138(4). DOI: 10.1542/peds.2016-0874
16. O'Leary, C.M., Watson, L., D'Antoine, H., Stanley, F. & Bower, C. 2012. Heavy maternal alcohol consumption and cerebral palsy in the offspring. *Developmental Medicine & Child Neurology*. 53(3):224-230. DOI: 10.1111/j.1469-8749.2011.04201.x
17. Streja, E., Miller, J., Bech, B.H., Greene, N., Pedersen, L.H., Yeargin-Allsopp, M., Van Naarden Braun, K., Schendel, D.E. et al. 2013. Congenital cerebral palsy and prenatal exposure to self-reported maternal infections, fever, or smoking. *American Journal of Obstetrics & Gynecology*. 209(4): 332.e1–332.e10. DOI: 10.1016/j.ajog.2013.06.023
18. Petersen, T.G., Andersen, A.N., Uldall, P., Paneth, N., Feldt-Rasmussen, U., Tollanes, M.C. & Strandberg-Larsen, K. 2018. Maternal thyroid disorder in pregnancy and risk of cerebral palsy in the child: a population-based cohort study. *Pediatrics*. DOI: 10.1186/s12887-018-1152-5
19. Bear, J.J. & Wu, Y.W. 2016. Maternal Infections During Pregnancy and Cerebral palsy in the Child. *Pediatric Neurology*. 57: 74–79. DOI: 10.1016/j.pediatrneurol.2015.12.018
20. Mann, J.R., McDermott, S., Bao, H. & Bersabe, A. 2008. Maternal genitourinary infection and risk of cerebral palsy. *Developmental Medicine & Child Neurology*. 51(4):282-288. DOI: 10.1111/j.1469-8749.2008.03226.x
21. Streja, E., Miller, J., Bech, B.H., Uldall, P., Pedersen, L.H., Yeargin-Allsopp, M., Van Naarden Braun, K., Schendel, D.E. et al. 2013. Maternal Infections during Pregnancy and Cerebral palsy: A Population-based Cohort Study. *Paediatric and Perinatal Epidemiology*. 27(6): 542–552. DOI: 10.1111/ppe.12082
22. Colford, J.M. & Wu, Y. 2000. Chorioamnionitis as a risk factor for cerebral palsy: A meta-analysis. *Journal of the American Medical Association*. 284(11):1417-1424. DOI: 10.1001/jama.284.11.1417
23. McIntyre, S., Taitz, D., Keogh, J., Goldsmith, S., Badawi, N. & Blair, E. 2012. A systematic review of risk factors for cerebral palsy in children born at term in developed countries. *Developmental Medicine & Child Neurology*. 55(6):499-508. DOI: 10.1111/dmcn.12017

24. Collins, K.J. & Reddihough, D.S. 2003. The epidemiology and causes of cerebral palsy. *Australian Journal of Physiotherapy*. 49:7-12. Available: <https://reader.elsevier.com/reader/sd/pii/S0004951414601835?token=6F03DA0527A9BF30F25A9AEBA12BDD B1357105FC46774924218F0F65A4EECE48D2D6E631E62C7FF870E2381880B3DB97>
25. MacLennan, A.H., Thompson, S.C. & Gecz, J. 2015. Cerebral palsy: causes, pathways, and the role of genetic variants. *American Journal of Obstetrics & Gynecology*. 213(6):779-788. Available: <https://www.sciencedirect.com/science/article/pii/S0002937815005104>
26. O'Callaghan, M.E., MacLennan, A.H., Gibson, C.S., McMichael, G.L., Haan, E.A., Broadbent, J.L., Goldwater, P.N. & Dekker, G.A. 2011. Epidemiologic Associations With Cerebral palsy. *Obstetrics & Gynecology*. 118(3):576-582. DOI: 10.1097/AOG.0b013e31822ad2dc
27. Nelson, K.B. 2008. Causative Factors in Cerebral palsy. *Clinical Obstetrics and Gynecology*. 51(4):749-762. Available: <https://pedclerk.bsd.uchicago.edu/sites/pedclerk.uchicago.edu/files/uploads/Cause.pdf>
28. National Institute of Neurological Disorders and Stroke. 2020. Cerebral palsy: Hope Through Research. Available: <https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Hope-Through-Research/Cerebral-Palsy-Hope-Through-Research>
29. Ellenberg, K. & Nelson, K.B. 2012. The association of cerebral palsy with birth asphyxia: a definitional quagmire. *Developmental Medicine & Child Neurology*. 55(3):210-216. DOI: 10.1111/dmcn.12016
30. Casey, B.M., McIntire, D.D. & Leveno, K.J. 2001. The continuing value of the Apgar score for the assessment of newborn infants. *The New England Journal of Medicine*. 344(7):467-471. Available: <file:///D:/Chapter%204%20references/The%20Continuing%20Value%20of%20the%20Apgar%20Score%20for%20the%20assessment%20of%20newborn%20infants.pdf>
31. Finster, M. & Wood, M. 2005. The Apgar Score Has Survived the Test of Time. *Anesthesiology*. 102:855-7.
32. Drage, J.S., Kennedy, C. & Schwarz, B.K. 1964. The Apgar score as an index of neonatal mortality. *Obstetrics & Gynecology*. [2021, February 18].
33. Committee on Fetus and Newborn. 1986. Use and Abuse of the Apgar Score. *Pediatrics*. 78(6):1148-1149. Available: <http://pediatrics.aappublications.org/content/78/6/1148>
34. Burton, G.J. & Jauniaux, E. 2015. What is the placenta? *American Journal of Obstetrics & Gynecology*. Available: <https://www.ajog.org/action/showPdf?pii=S0002-9378%2815%2900851-0>
35. Costa, M.A. 2016. The endocrine function of human placenta: an overview. *Reproductive BioMedicine Online*. 32:14-43. Available: <https://www.rbmojournal.com/action/showPdf?pii=S1472-6483%2815%2900495-2>
36. Redline, R.W. 2015. Classification of placental lesions. *American Journal of Obstetrics & Gynecology*. Available: <https://www.ajog.org/action/showPdf?pii=S0002-9378%2815%2900533-5>
37. Carter, R.C., Wainwright, H., Moltano, C.D., Georgieff, M.K., Dodge, N.C., Warton, F., Jacobson, J.L., Jacobson, S.W. et al. 2016. Alcohol, Methamphetamine, and Marijuana Exposure Have Distinct Effects on the Human Placenta. *Alcoholism: Clinical and Experimental Research*. 40(4):753-764. DOI: 10.1111/acer.13022
38. Hsiao, E.Y. & Patterson, P.H. 2012. Placental regulation of maternal-foetal interactions and brain development. *Developmental Neurobiology*. 72(10):1317-1326. Available: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/dneu.22045>
39. Elliott, A.J., Kinney, H.C., Haynes, R.L., Dempers, J.D., Wright, C., Fifer, W.P., Angal, J., Boyd, T.K. et al. 2020. Concurrent prenatal drinking and smoking increases risk for SIDS: Safe Passage Study report. *EClinicalMedicine*. 19.
40. Odendaal, H., Wright, C., Schubert, P., Boyd, T.K., Roberts, D.J., Brink, L., Nel, D. & Groenewald, C. 2020. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 253:95-102.
41. Wright, C.A. 2014. The placenta—a Cinderella story. *South African Family Practice*. 49(7):4-8. Available: <https://doi.org/10.1080/20786204.2007.10873588>
42. Sprong, K.E., Wright, C.A., Mabenge, M. & Govender, S. 2020. Beckwith-Wiedemann syndrome is associated with congenital cytomegalovirus in an HIV-exposed neonate. *South African Journal of Obstetrics & Gynecology*. 26(2). Available: <https://doi.org/10.7196/SAJOG.2020.v26i2.1595>
43. Beaudet, L., Karuri, S., Lau, J., Magee, F., Lee, S.K. & Von Dadelszen, P. 2007. Placental pathology and clinical outcomes in a cohort of infants admitted to a neonatal intensive care unit. *Journal of Obstetrics & Gynecology Canada*. 29(4):315-323. DOI: 10.1016/S1701-2163(16)32431-8.
44. Turowski, G., Parks, W.T., Arbuckle, S., Jacobsen, A.F. & Heazell, A. 2018. The structure and utility of the placental pathology report. *Journal of Pathology, Microbiology and Immunology*. 126:638-646. DOI: 10.1111/apm.12842
45. Savage-Reid, M.J., Wright, C.A. & Wade, R. 2020. The spectrum of placental pathology in a public v. private laboratory practice in Gauteng Province, South Africa. *South African Journal of Obstetrics & Gynecology*. 26(2).
46. Malusi, Z., Schubert, P.T., Theron, G.B. & Wright, C.A. 2019. The value of histopathology of the placenta in a tertiary referral hospital in South Africa. *South African Journal of Obstetrics & Gynecology*. 25(2):64-67. Available: <https://doi.org/10.7196/SAJOG.2019.v25i2.1434>
47. Odendaal, H., Wright, C., Brink, L., Schubert, P., Geldenhuys, E. & Groenewald, C. 2019. Association of late second trimester miscarriages with placental histology and autopsy findings. *European Journal of Obstetrics and Gynecology and Reproductive Biology*. 243:32-35.

48. Theron, G., Hall, D. & Steyn, D.W. 2010. Total perinatally related losses at Tygerberg Hospital – A comparison between 1986, 1993 and 2006. *South African Medical Journal*.
49. Redline, R. 2013. Correlation of Placental Pathology with Perinatal Brain Injury. *Surgical Pathology Clinics*. 6(1):153-180. Available: <https://doi.org/10.1016/j.path.2012.11.005>
50. Rabie, U. 2014. The Contribution of the Placenta to the Diagnosis of Congenital Tuberculosis. M.Path. (Professional) dissertation. Stellenbosch University.
51. Shanes, E., Mithal, L.B., Otero, S., Azad, H.A., Miller, E.S. & Goldstein, J.A. 2020. Placental Pathology in COVID-19. *American Journal of Clinical Pathology*. 154:23-42. DOI: 10.1093/AJCP/AQAA089
52. Eunson, P. 2012. Aetiology and epidemiology of cerebral palsy. *Paediatrics and Child Health*. 22: 361-366.
53. Bateman. 2014. Discard the placenta at your peril, pathologist warns doctors. *South African Medical Journal*. 104(11). Available: <http://www.samj.org.za/index.php/samj/article/view/8991/6368>
54. Kos, M. 2012. Placenta: A silent witness: Clinical and forensic importance of placental examination. *Materia Medica*. 28. 533-539. Available: https://www.researchgate.net/publication/272904815_Placenta_A_silent_witness_Clinical_and_forensic_importance_of_placental_examination
55. Hacker, N., Gambone, J., Hobel, C. 2010. *Hacker & Moore's Essentials of Obstetrics and Gynaecology 5th Edition*. Philadelphia, United States: Elsevier.

5. QUANTUM

5.1 HEADS OF DAMAGES

5.1.1 Rule 18(10) of the Uniform Rules of Court states that^[1]:

A plaintiff suing for damages shall set them out in such manner as will enable the defendant reasonably to assess the quantum thereof: Provided that a plaintiff suing for damages for personal injury shall specify his date of birth, the nature and extent of the injuries, and the nature, effects and duration of the disability alleged to give rise to such damages, and shall as far as practicable state separately what amount, if any, is claimed for –

- (a) medical costs and hospital and other similar expenses and how these costs and expenses are made up;
- (b) pain and suffering, stating whether temporary or permanent and which injuries caused it;
- (c) disability in respect of –
 - (i) the earning of income (stating the earnings lost to date and how the amount is made up and the estimated future loss and the nature of the work the plaintiff will in future be able to do);
 - (ii) the enjoyment of amenities of life (giving particulars); and stating whether the disability concerned is temporary or permanent; and
- (d) disfigurement, with a full description thereof and stating whether it is temporary or permanent.

5.1.2 There is a division of damages into general damages and special damages. As noted in *Prince v Road Accident Fund*^[2]:

This applies to bodily injury cases which recognizes the distinction between general and special damages. All patrimonial loss actually incurred, such as for example medical and hospital expenses and past loss of earnings is treated as special damage. Quite apart from this all non-patrimonial loss, such as pain-and-suffering, loss of amenities, and loss of expectation of life is classified as general damage. However patrimonial loss, which up to the trial has not yet crystallized in actual loss but remains prospective, remains general damage, such as future medical expenses and future loss of earnings. It is thus important to understand that past loss of earnings is treated as special damages, whilst future loss of earnings is treated as general damages.

5.1.3 The typical heads of damages claimed in a cerebral palsy (CP) claim are for future loss of earnings, past medical expenses, future medical expenses and general damages. Actuarial calculations are normally relied upon in calculating future loss of earnings and the capitalized value of future medical expenses. South African courts place more reliance on actuarial calculations than do other jurisdictions such as the United Kingdom^[3].

5.1.4 The 1885 matter of *Clair*^[4] is the earliest account of an actuary being of assistance to South African Courts in calculating damages. Numerous actuaries throughout the last 135 years have since contributed to South African common law.

- 5.1.5 The most cited precedent for the involvement of actuaries in South African courts is the matter of *Southern Insurance Association Ltd v Bailey*^[5]. Nicholas JA explained that two possible approaches are available to the court in assessing loss of earnings:
- Any enquiry into damages for loss of earning capacity is of its nature speculative... All that the Court can do is to make an estimate, which is often a very rough estimate, of the present value of the loss. It has open to it two possible approaches. One is for the Judge to make a round estimate of an amount which seems to him to be fair and reasonable. That is entirely a matter of guesswork, a blind plunge into the unknown. The other is to try to make an assessment, by way of mathematical calculations, on the basis of assumptions resting on the evidence. The validity of this approach depends of course upon the soundness of the assumptions, and these may vary from the strongly probable to the speculative. It is manifest that either approach involves guesswork to a greater or lesser extent. But the Court cannot for this reason adopt a non possumus attitude and make no award.... In a case where the Court has before it material on which an actuarial calculation can usefully be made, I do not think that the first approach offers any advantage over the second. On the contrary, while the result of an actuarial computation may be no more than an 'informed guess', it has the advantage of an attempt to ascertain the value of what was lost on a logical basis; whereas the trial Judge's 'gut feeling' (to use the words of appellant's counsel) as to what is fair and reasonable is nothing more than a blind guess.
- 5.1.6 There is inconsistency between the reporting of the monetary value of awards in judgments and court orders. These range from those that merely provide the total value of the claim; to those that provide a breakdown of the claim into general damages and special damages as described in paragraph 5.1.2; to those that provide a breakdown of the claim into individual items of loss as noted in paragraph 5.1.3 above (and in some instances the costs of a curator or trustee are provided).
- 5.1.7 If consideration is given to capping damages for example, it will be essential to report claims with specific heads of damages so as to assess the impact of various methods of caps.
- 5.1.8 Loss of income claims are typically a small component of the total loss in catastrophic medical negligence claims such as cerebral palsy. Low life expectancies and relatively young claimants would virtually always result in no change in compensation if the Road Accident Fund cap and method of calculation were applied to medical negligence claims for future loss of income^[6].
- 5.1.9 A study by Sharkey^[7] suggests that in the event of non-economic caps being imposed without capping the economic losses incurred by the plaintiff, the plaintiff's attorneys are more prone to increase the economic damages proven and thus causing an overall increase in the damage awards. This reiterates the importance of considering the interaction between different mechanisms when assessing the overall effect.

5.2 ANALYSIS OF CLAIMS PAID

5.2.1 Total claims payments and the average claim size derived from the actual number of claims settled as reported by the Minister of Health in 2020 are set out in Table 14^[8]:

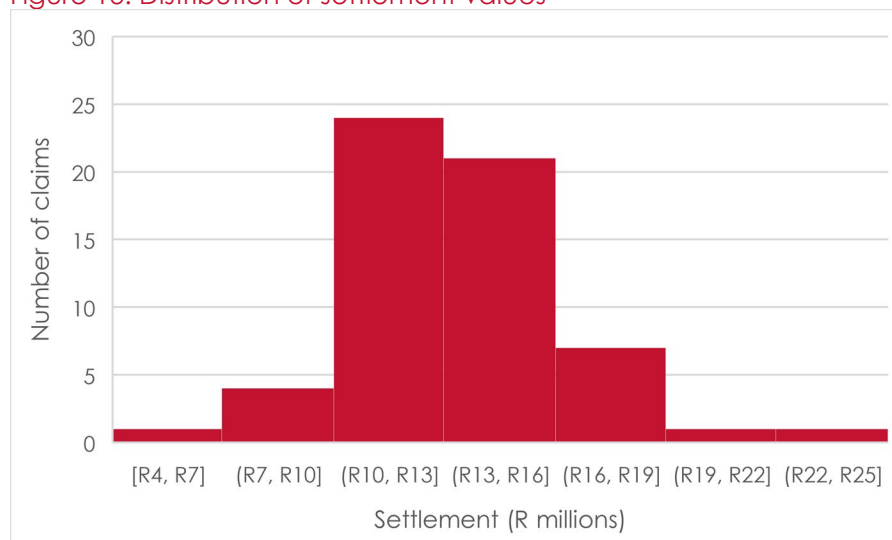
Table 14: Amount paid (number of claims)

Province	2017/2018		2018/2019	
	Total claims paid	Average claim size	Total claims paid	Average claim size
Eastern Cape	R427,706,139	R7,249,257	R797,120,477	R9,162,304
Free State	R14,150,000	R2,830,000	R10,400,258	R1,485,751
Gauteng	R243,250,339	R3,287,167	R378,983,766	R5,414,054
KwaZulu-Natal	R134,436,667	R890,309	R444,129,605	R5,164,298
Limpopo	R17,550,000	R1,950,000	R9,800,000	R1,633,333
Mpumalanga	R25,947,455	R1,037,898	R25,597,039	R1,422,058
Northern Cape	---	---	R3,600,000	R1,800,000
North West	R34,633,129	R3,463,313	R34,027,548	R4,861,078
Western Cape	R86,873,631	R1,737,473	R60,971,722	R1,905,366
Total	R984,547,359	R2,570,620	R1,764,630,415	R5,602,001

5.2.2 The average claim size in the Eastern Cape is significantly higher than elsewhere in the country. Data must be made available showing the average claim size for CP claims in the Eastern Cape and that must be compared to the rest of the country. Reasons must then be identified for the higher quantum values, such as excessive compensation in respect of specific disciplines such as future dental treatment.

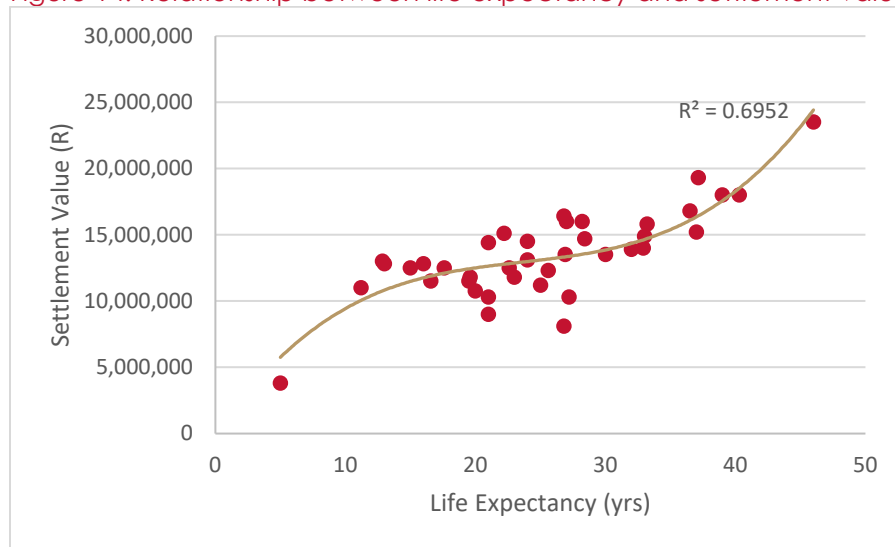
5.2.3 We obtained court orders and settlement values in respect of 59 CP cases in an anonymized province with a total settlement value of R 771.5 million as shown in Figure 13 below:

Figure 13: Distribution of settlement values



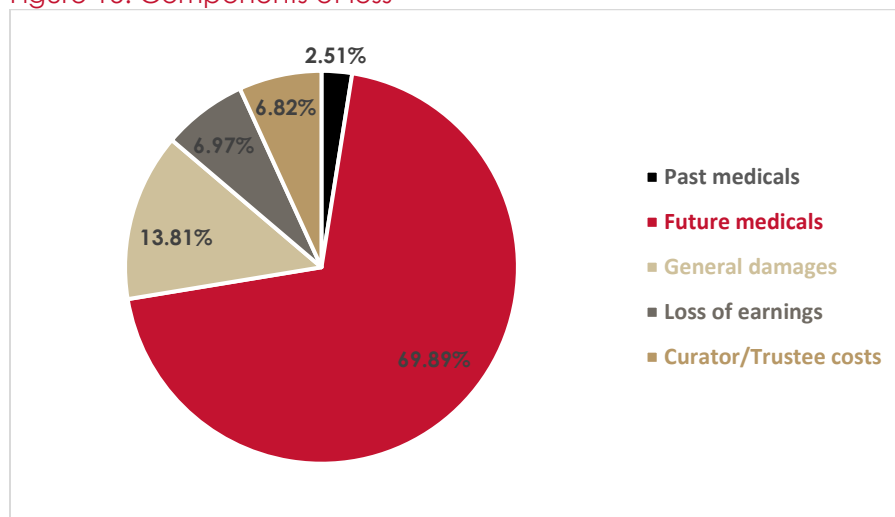
- 5.2.4 The relationship between the life expectancy agreed to and the settlement value for 39 of the above CP cases is set out in Figure 14:

Figure 14: Relationship between life expectancy and settlement values



- 5.2.5 A breakdown of CP claims into five components of loss were available for 15 of the above matters as summarized in Figure 15:

Figure 15: Components of loss



5.2.6 There are a number of Non-Governmental Organizations (NGOs) that provide services to those affected by CP. Some of these are listed below:

(1) **Malamulele Onward^[9]**

From a small project consisting of twenty-six children, a very hands-on board, a team of dedicated and enthusiastic volunteers, a budget of R40 000 and no formal office, Malamulele Onward has grown to a staff of ten full-time and four part-time employees led by the Founder Director, a newly renovated Therapy and Training Centre situated next to the Malamulele Onward house for parents, an annual budget of R4 million and a network of CP services located at 21 rural sites in the Eastern Cape, Limpopo, Mpumalanga, KwaZulu Natal and Lesotho that collectively provide services to over 1200 children.

(2) **Western Cape Cerebral palsy Association^[10]**

The Western Cape Cerebral palsy Association runs a variety of facilities throughout the Western Cape to cater for the various needs of the CP community.

Our facilities include clinics and occupational centres, special care centres for children and adults severely affected by CP and work centres where skills training takes place and employment is provided for individuals who are unable to be employed in the open labour market.

(3) **Kwa-Zulu Natal Cerebral palsy Association^[11]**

The Association supports various projects that cater for people living with Cerebral palsy. There are many different types of Cerebral palsy, and each project serves a certain type. We have a school (Reunion) which accepts children living with Cerebral palsy, and who are educable. We have a farm (Pevensey Place) in the Underberg where CP adults contribute to the running of the operations. We lastly have a Day Care Centre at the Head Office premises which caters for severely and profoundly disabled children and adults, all of varying degrees of severity.

5.2.7 The total operating expenses of Malamulele Onward (R 2,624,673 for the year ending 31 March 2019); the Western Cape Cerebral palsy Association (R 12,926,448 for the year ending 31 March 2019); and the Children with a Challenge Day Care Centre for the Disabled (CWAC) operated by the Kwa-Zulu Natal Cerebral palsy Association (R 1,831,743 for the year ending 31 March 2019) were R 17,382,864 for the financial year ending 31 March 2019. During the financial year ending 31 March 2019 one case in the Eastern Cape resulted in an award of R 23,208,953^[12].

5.2.8 The largest cost driver of medical negligence claims in birth injuries is the cost of future caregiving.

5.2.9 With respect to the total claim for future medical and related expenses, the cost of future care giving and assistance (including the cost of training care givers, domestic assistance and the costs of an *au pair*) can sometimes be in excess of 50% of the total claim for future medical and related expenses (see for example *Lochner v MEC for Health and Social Development, Mpumalanga*^[13]).

5.2.10 There is invariably a substantial differential between the cost of care proposed by plaintiff experts and the costs of care giving proposed by defendant experts. The defendant has no control over how the plaintiff chooses to allocate their award once the matter is settled. Hence, situations can arise where for example an award includes the cost of three high level care givers, but the plaintiff opts to employ two low level care givers post-settlement of the claim.

- 5.2.11 Consideration can be given to capping the monthly payment for care giving by way of a published tariff so as to control the single biggest driver of costs in cerebral palsy matters. This is an area for further research.

5.3 NET DISCOUNT RATE

- 5.3.1 For the calculation of the present value of any claim for damages, the net discount rate – represented by the difference between the after tax rate of investment return net of investment manager fees and the rate of inflation of the item or items in question – is the most critical assumption that the actuary sets. In South Africa the net discount rate is not mandated by legislation or prescribed by the Actuarial Society of South Africa^[14].
- 5.3.2 Lump sums are calculated when future anticipated streams of monies are discounted back to the current date, and the present value thus calculated represents a fair monetary exchange for the stream of anticipated monetary flows. If an individual was offered the lump sum or the future payments, that individual should be equally satisfied. It should be acknowledged that there is no single correct answer as to what the net discount rate should be under a particular set of circumstances. The net discount rate is not determinable by scientific enquiry since it is a matter of beliefs as to the future^[15].
- 5.3.3 Mavimbela and Ndou^[16] argue that there are good reasons to look for uniformity in the net medical discount rates applied by actuaries in South Africa. They state that this will assist with the legal requirement of consistency, predictability and reliability. In addition, it will further reduce the amount of time and costs involved in the settlement of medical negligence costs. Whilst the authors provide statistical evidence as to why the medical net discount rate should be set at a lower rate than is commonly in use, debate should perhaps also be had around the sustainability of low rates.
- 5.3.4 The Australian experience

- (1) Prior to 1981, discount rates used in Australia were as decided in *Hawkins v Lindsley*^[17]:
... a majority of this Court held that the trial judge had a discretion to select the appropriate discount rate and that his selection would stand so long as the rate fixed was not 'palpably' wrong and so long as the sum awarded was within the limits of a sound discretionary judgment.
- (2) In *Todorovic v Waller*^[18], a discount rate of 3% was mandated. The judge reasoned that a small change in the discount rate applied had a significant impact on the amount awarded and that the quantum of the sum awarded largely relied on the trial judge's decision regarding the discount rate. The judge continued and suggested that the judgement was made with the goal of encouraging 'uniformity and consistency' in the calculation of damages:
... the figure which finds acceptance by a majority of the Court to be applied by tribunals of fact in the assessment of damages for personal injury, in the absence of any relevant legislative direction, on the footing that a departure from that rate will be regarded as an indication that the tribunal of fact has ventured beyond the limits of a sound discretionary judgment. The rate so set should be applied until such time as this Court decides that the rate is to be reviewed ...

- (3) Whilst the High Court of Australia determined that a reasonable discount rate would be 3%, most jurisdictions (with the exception of the Australian Capital Territories) legislate a net discount rate of 5% or higher. New South Wales and Victoria mandate a net discount rate of 5%. Discount rates are inconsistent across different jurisdictions and have not been amended in accordance with expectations about returns on reasonably safe investments.
- (4) When the net discount rates were written into law, various states were successfully lobbied that using 3% would produce results that are unaffordable (even though a rate as low as 3% might be required to fairly compensate a plaintiff for their loss).
- (5) In 2002 a panel was appointed to advise on possible reforms in legal litigation, that is, to review the 'Law of Negligence' and to submit their report to the Minister. They noted that^[19]:

..., using a discount rate higher than can reasonably be justified by reference to the appropriate criteria would be an unfair and entirely arbitrary way of reducing the total damages bill...the group that would be most disadvantaged by doing so would be those who are most in need – namely the most seriously injured.
- (6) The Australian Government Actuary believes that an appropriate discount rate is between 2% and 4%. They concluded that:

We therefore recommend a nationally uniform discount rate of 3 per cent.

In their report the panel also explained that:

Many people have emphasised to us the importance of stability and uniformity in the discount rate ... recent history suggests that there is unlikely to be a strong economic case for anything more than small changes in the discount rate over the longer term. On this basis, it might be suggested that the costs of change are likely to outweigh the advantages.

- 5.3.5 Over the last 25 years, South African actuaries have used net discount rates in the range of 2.5% to 3.0% per annum compound for loss of income calculations. Future medical expenses have been capitalized in the range of 0.0% to 3.0% per annum compound. In some cases, evidence of economists has been led to justify a low net discount rate for medical expenses^[20].

5.4 RECOMMENDATIONS

- 5.4.1 A significant amount of detailed claims data was not available for analysis. We were reliant on obtaining court orders and scanning judgments for a breakdown of awards into various heads of damages. Such data should be routinely collected and captured by the Department of Health and made available for analysis.
- 5.4.2 Historically the Actuarial Society of South Africa has been opposed to capping the net discount rate^[21]:
- The Actuarial Society of South Africa (ASSA) strongly objects to any proposal that actuaries use standardised assumptions in calculating the value of future benefits and payments. ASSA comments that "the standardisation of actuarial assumptions is inappropriate and unscientific and will merely introduce a degree of unnecessary and unjustifiable inequity in the system of compensation".
- 5.4.3 It is necessary to reopen that debate with a view to the sustainability of assumptions and the overall system of compensation.
- 5.4.4 Some NGOs have operated in the CP space for decades. Consideration must be given to incorporating their treatment and care models in the compensation system.

5.5 REFERENCES

1. Uniform Rules of Court published in Government Notice R48 of 12 January 1965, as amended.
2. Prince v Road Accident Fund (CA143/2017) [2018] ZAECHGHC 20 (20 March 2018)
3. Du Plessis, H.L.M. 2012. The divergent approaches of English and South African courts, when considering actuarial expert testimony in the matter of an award for damages for future loss of earnings after a damage-causing event. *Annals of Actuarial Science*. 6(1):55-22
4. *Clair v Port Elizabeth Harbour Board* (1885–1887) 5 EDC 311
5. *Southern Insurance Association Ltd v Bailey* 1984 1 SA 98 (A)
6. Road Accident Fund Amendment Act 19 of 2005
7. Sharkey, C. M. 2005. Unintended consequences of medical malpractice damages caps. *New York University Law Reviews*. 80(2):391-512
8. Parliament. National Assembly. 2020. Question No. 95. South Africa: Parliament.
9. Malamulele Onward. Who we are. Available: <https://www.malamuleleonward.org/who-we-are#:~:text=From%20a%20small%20project%20consisting,a%20newly%20renovated%20Therapy%20and>
10. The Western Cape Cerebral palsy Association. About Us. Available: <https://wccpa.org.za/about/>
11. KwaZulu-Natal Cerebral palsy Association. About Us. Available: <https://kzncerebralpalsy.org.za/>
12. MP obo SP v MEC for Health, Eastern Cape Province (121/2016)
13. *Lochner v MEC for Health and Social Development, Mpumalanga* (2012/25934) [2013] ZAGPPHC 388
14. Whittaker, G. 2018. The Life Esidimeni arbitration and the actuarial quantification of constitutional damages. *South African Actuarial Journal*. 18: 71-97. Available: <https://www.actuarialsociety.org.za/assa-news/sa-actuarial-journal-and-articles/#1502709987704-9989da2f-9e4c>
15. Koch, R. 2011. Damages for Personal Injury and Death: Legal Aspects Relevant to Actuarial Assessments. *South African Actuarial Journal*. 11: 111-33. Available: <https://www.actuarialsociety.org.za/assa-news/sa-actuarial-journal-and-articles/#1502709987704-9989da2f-9e4c>
16. Mavimbela, N. & Ndou, E. (2020). Understanding medical inflation and the net discount rate for medical items on damages claims. Paper presented at the Actuarial Society of South Africa's 2020 Virtual Convention, 6 – 8 October 2020.
17. *Hawkins v Lindsley* (1974) 4 ALR 697
18. *Todorovic v Waller* [1981] HCA (1981) 150 CLR 402
19. Andrew, D., Cane, P., Sheldon, D., & Macintosh, I. (2002). *Review of the Law of Negligence Final Report*.
20. *Singh and Another v Ebrahim* (413/09) [2010] ZASCA 145
21. Satchwell, K.M. 2002. Report of the Road Accident Fund Commission 2002. Pretoria: Ministry of Transport.

6. INTERNATIONAL COMPENSATION SYSTEMS

6.1 AUSTRIA

6.1.1 Health care and Compensation System(s)

99% of the population is covered by social health insurance which is funded primarily from insureds and their employer (80% in 2009) and via general tax monies (13% in 2009). Insureds are assigned to one or more providers by law according to their professional status and other characteristics.

Legislation in 2001 provided for the creation of regional no-fault compensation funds to mitigate on a discretionary basis the hardship endured by patients suffering injury for which there is no clear liability. The funds are financed by contributions from the patients themselves, who must pay an extra €0.73 (2017) per day spent in hospital. The funds do not replace liability regimes^[1].

6.1.2 Eligibility

Social health insurance benefits are granted irrespective of the cause that leads to the need for treatment. This includes cases of bodily harm tortuously inflicted by a third person such as a medical professional. In such cases, the victim's tort law claims are legally assigned to the competent social insurance provider, which thereby acquires a right of recourse^[1].

6.1.3 Liability System(s)

All patients are deemed to be treated on the basis of a contract with a doctor or a hospital. The tort law section of the Austrian Civil Code applies equally to contractual liability. A hospital may be vicariously liable for its staff. Criminal law deals with the more extreme deviations from acceptable behaviour including involuntary manslaughter and negligent bodily injury^[1].

6.1.4 Negligence

Medical professionals are expected to possess the training, expertise and abilities of their peers even if they in fact do not. As far as the hospital's vicarious liability is concerned, the conduct of the employee actually performing the task will be judged according to the standard of care to be expected from the expert required. This is the case even if the hospital entrusts a junior doctor with responsibilities that should be assigned to an experienced specialist, or if a specialist in a different field would be required^[1].

6.1.5 Proof and Evidence

The patient needs to prove a loss and provide prime facie proof of causation. The burden of proving causation shifts to the defendant if it is evident that something was objectively wrong within the sphere of the defendant that increased the likelihood of adverse effects upon the patient. Experts are typically appointed by the court, even though the parties may bring in further expert evidence^[1].

6.1.6 Damages

The following damages are recoverable:

- (1) Litigation costs (in proportion to the percentage of success and subject to statutory limits)
- (2) Pecuniary losses including medical expenses, costs incurred by relatives whilst visiting the victim and other comparable extras, house adaptations, loss of income (past and future), (fictitious) expenses of a professional nurse if relatives voluntarily care for the victim
- (3) Non-pecuniary losses for pain and suffering.

Payments under the no-fault funds are capped with the threshold amounts varying from province to province. In 2007 the maximum in Vienna was €100,000 (€150,000 in special cases of permanent harm) ^[1].

6.2 **BRAZIL**

6.2.1 Health care and Compensation System(s)

Brazil has one of the most comprehensive health care systems in the developing world. Inspired by the British National Health Services, the Unified Health System (known as SUS, for its initials in Portuguese) is a key feature of the 1988 Constitution. The system's architecture mirrors Brazil's federal structure: municipalities are responsible for primary health care, state governments for more complex health services, and the federal government for coordinating the whole system and partially funding local health programs. Public sector health care covers three-quarters of the population with less than half the total health care spending^[2].

6.2.2 Eligibility

The public services are offered free of charge to the population and everyone has the right to access them. The government, from taxes, funds this type of service. Private services, on the other hand, are paid for by the individuals who use each service^[2].

6.2.3 Liability System(s)

Code law based on a comprehensive system of written rules, or codes of law. Courts resolve conflicts between patients and physicians using the concepts of a consumer and a service provider as defined in the Consumer's Defense Code (CDC) of 1992. The Brazilian judge must apply the text of the law to the concrete case^[3].

The patient or his / her family has 5 (five) years from the moment the damage is known to file a civil lawsuit against the doctor, hospital, laboratory, health plan or the Brazilian Government^[4].

6.2.4 Negligence

Although the Brazilian Code of Medical ethics does not directly explain the concept of medical error, it does declare in Article 1 of Chapter III that doctors are forbidden to^[3]:

... cause damage to the patient, by act or omission, characterized by incompetence, recklessness, or negligence.

6.2.5 Proof and Evidence

The burden of proof is on the claimant, but Article 6 (item VIII) provides for the reversal of the burden of proof, in civil procedures, if the judge finds it reasonable, according to the ordinary rules of experience. Judges play a more active role in obtaining evidence such as obtaining additional documents and testimony, shaping the development of evidence, questioning witnesses, and determining the order in which issues will be investigated^[3].

6.2.6 Damages

The following damages are recoverable:

- (1) In the event of death (Article 948):
 - payment of expenses for the treatment of the victim, his funeral and the mourning of the family
 - the supply of food to the people to whom the victim owed them, taking into account the likely duration of the victim's life
- (2) In the event of injury (Article 949), in addition to other losses:
 - treatment expenses
 - lost profits until the end of the convalescence
- (3) In the event of inability or reduced ability to work (Article 950):
 - a pension^[3]

6.3 CANADA

6.3.1 Health care and Compensation System(s)

Canada's publicly funded health care system - known as Medicare - is a model of universal health coverage. It provides relatively equitable access to physician and hospital services through 13 provincial and territorial tax-funded public insurance plans.^[5] Most physicians have their own private practice, and the insurance plans get billed for these services. Being in private practice, physicians require medical liability insurance which is normally obtained through a professional organization. However, provincial governments also reimburse a large portion of their insurance premiums.^[6] Hospitals and health care institutions also carry liability insurance and the majority participate in the Health Insurance Reciprocal of Canada (HIROC). HIROC is a member-owned non-profit insurance organization. Approximately 30% of health care is privately financed^[5].

6.3.2 Eligibility

Health care coverage is universal. Medical malpractice claims are subject to Province-specific procedural rules and regulations^[5].

6.3.3 Liability System(s)

Adverse events may in principle be redressed through criminal, contract, and tort law remedies. Criminal law plays a minor role when it comes to addressing medical malpractice. This is because higher substantive and procedural standards are required to impose criminal liability compared to civil liability. The standard of medical care in contract and tort is understood to be the same, so there is little difference between bringing a claim under either option. Most malpractice cases advance as tort cases.

Hospitals can be held vicariously liable for the conduct of their staff.

Most provinces and territories have a two-year limitation period, running from when the plaintiff knew or ought to have known of the tort^[5].

6.3.4 Negligence

The statement outlining the standard of care owed by physicians to patients comes from the Supreme Court decision in *Crits v. Sylvester*:

Every medical practitioner is bound to exercise that degree of care and skill which could reasonably be expected of a normal prudent practitioner of the same experience and standing. If he holds himself as a specialist, a higher degree of skill is required of him.

6.3.5 Proof and Evidence

The plaintiff bears the burden of proof in a civil case. His or her claim must be established on the balance of probabilities^[5].

6.3.6 Damages

The following damages are recoverable:

- (1) Pecuniary damages (uncapped) for example loss of income and health care costs not covered under the public system
- (2) Non-pecuniary damages are capped at around CAD 390,000 (2020).
- (3) Punitive damages: only awarded in exceptional circumstances^[5].

6.4 CHINA

6.4.1 Health care and Compensation System(s)

Health care in China consists of both public and private medical institutions and insurance programs^[7].

6.4.2 Eligibility

About 95% of the population has at least basic health insurance coverage^[8].

6.4.3 Liability System(s)

- (1) Medical Accident Regulations (2002): if suing on the basis of a medical accident which includes any physical injury caused by negligent medical treatment and causation can be direct or indirect.
- (2) Tort Liability Law (2009): "if a patient suffers injury in the course of medical diagnosis or treatment, and the medical institution or medical personnel are at fault".
- (3) Article 335 of Criminal Law (amended in 1997) established a crime of medical malpractice resulting in death or serious harm with a maximum prison term of 3 years. Criminal prosecutions of doctors are rare^[7].

The newest civil law changes (October 2017) changed the statute of limitations from one to three years^[9].

6.4.4 Negligence

The standard of care is not specified and is a question for the courts to decide^[7].

6.4.5 Proof and Evidence

- (1) Administrative liability regime: burden of proof is on the patient.
- (2) Tort liability regime: The burden of proving fault is primarily on the patient however "judicial identification" is organised by the court itself.

Fault is, however, presumed in the following circumstances, unless the medical institution proves otherwise:

- (1) violation of provisions of laws, administrative regulations, ministerial rules, or other standards regarding diagnosis and medical treatment
- (2) concealing or refusing to provide medical record materials related to the dispute
- (3) falsifying, distorting, or destroying medical record materials^[7].

6.4.6 Damages

The Medical Accident Regulations list eleven items of loss:

- (1) medical expenses
- (2) loss of income (subject to a cap of three times annual earnings in the place the medical accident occurred)
- (3) a food allowance during hospitalization
- (4) expenses incurred looking after the patient
- (5) a living allowance in the event of disability
- (6) a disability allowance for the purchase of appliances
- (7) funeral expenses
- (8) the living expenses of a dependent
- (9) a traffic allowance
- (10) a lodging allowance
- (11) a solatium for emotional harm, capped by reference to annual living expenses in the place of the accident.

Absent from the list are compensation for:

- (1) death itself (which by contrast is expressly allowed in the ordinary rules of tortious liability)
- (2) living expenses of dependents
- (3) a solatium for emotional harm resulting from the bereavement

As a result, the legal community has taken comprehensive measures to sideline the Medical Accident Regulations 2002 when proceedings are brought in court.

There is no special provision under tort liability dealing with compensation for injury arising from medical treatment. Consequently, the general approach applicable to compensation for tortious personal injury, found in Articles 16 to 23 of the Law, is followed. Compensation should be for:

- (1) the reasonable expenses of medical care, nursing, and transportation, etc., for the purposes of therapy and restoring good health
- (2) reduced income due to loss of working time
- (3) the cost of prostheses
- (4) compensation for disability
- (5) funeral expenses and death benefits (in the event of causing death)^[7]

There is a statutory cap based on the degree of injury and average disposable income amount released by the National Bureau of Statistics^[9].

6.5 FRANCE

No-fault Compensation Scheme based on National Solidarity

6.5.1 Scheme

The Patients' Rights Law of March 4, 2002 provided for the creation of a compensation fund for victims of certain harms independent of any medical malpractice. It is based on national solidarity, funded from government taxes, and dispensed by the Compensation for Medical Accidents, Iatrogenic Disorders and Nosocomial Infections (ONIAM). Previous compensation funds (such as the fund for victims of HIV infection through blood transfusion, created in 1991) were merged into the new scheme. Claimants also have continued access to the courts to bring actions against healthcare providers^[10].

6.5.2 Eligibility

Injured patients, their representatives or beneficiaries may submit a claim for injuries caused by:

- (1) medical accidents, 'iatrogenic' disorders (resulting from medical examination or treatment), 'nosocomial' (hospital acquired) infections and persons who suffer damage in medical research;
- (2) mandatory vaccinations;
- (3) vaccination against Influenza A (H1N1) 09;
- (4) contamination with HIV from transfusion of blood or blood products;
- (5) contamination with the hepatitis C virus from transfusion of blood or blood products;
- (6) contamination with Creutzfeldt-Jacob Disease from extractive growth hormone;
- (7) the administration of Benfluorex (Mediator, Benfluorex Mylan and Benfluorex Qualimed)^[11].

Claims must be filed within 10 years of stabilization of health^[10].

6.5.3 Assessment

ONIAM, together with conciliation and compensation committees (CCIs), organizes amicable, rapid and free compensation for qualifying injuries. The committees are made up of a magistrate (who is the chairman), health professionals, and representatives of patients, ONIAM and insurers. Victims can apply to the Commissions directly without going through a lawyer. CCIs may conduct hearings, and the plaintiff is allowed to be assisted or represented by a person of his choice. CCIs decide whether there is fault or not. If there is no fault, then ONIAM will make the claimant an offer of compensation. If the victim accepts the offer then the matter is settled, if not then civil court judges have jurisdiction to assess the rights of the victim. Cases with fault are referred to the insurers who have four months to agree payment and make an offer which the claimant has one month to accept or reject. If the Claimant rejects it, he must either give up or proceed in law^[10].

6.5.4 Benefits

Full compensation to the victim (or beneficiary in the event of death) for the damage suffered, that is there are no caps on indemnification:

- (1) Pecuniary losses
 - Medical costs
 - Loss of earnings
 - Equipment, home modifications, vehicle
- (2) Non-pecuniary losses
 - physical or moral suffering endured
 - aesthetic damage
 - loss of pleasure
 - functional damage^[12]

6.6 **GERMANY**

6.6.1 Health care and Compensation System(s)

Germany has the oldest system of mass health care coverage in the world. Title V of the Social Code (SGB) 1988 enforces quality assurance duties on deliverers of health care to publicly insured patients. The state provides the underlying statutory framework, however, key non-state actors are in control of the detailed ordering and running of the system. Health insurance funds contract with doctors and hospitals to provide the necessary care.

There are two limited pockets of no-fault liability covering victims of Thalidomide and HIV-infected blood transfusions^[13].

6.6.2 Eligibility

The general system of social security provides injured and/or disabled persons with access to collective social protection irrespective of the cause of injury^[13].

6.6.3 Liability System(s)

The key differences between contract and tort routes relevant to medical malpractice claims were removed by reforms to the Civil Code in 2002, so that now the rules in effect duplicate each other. The patient can sue on the basis of the doctor's / hospital's alleged breach of his contractually presumed duties. Contractual liability is based on fault, so that even after a breach of contract is made, the defendant has the opportunity to acquit himself by showing lack of fault (intention or negligence). Criminal charges (for example manslaughter, negligent bodily injury, assault arising from inadequate consent) are possible, but convictions are rare.

Hospitals are vicariously liable for the defaults of their employees (and directly liable for the conduct of doctors with managerial positions)^[13].

The standard limitation period is three years from the close of the year in which the claim arose^[14].

6.6.4 Negligence

Failure to exercise reasonable care, that is that of "a respectable and conscientious medical professional of average expertise in the relevant field"^[13].

6.6.5 Proof and Evidence

In treatment malpractice claims the burden of proving fault and causal link initially falls on the patient. It must satisfy the strict German civil proof standard of "judicial conviction" although this is not as onerous as it appears since:

- (1) courts engage actively in seeking the truth as to what occurred through for example appointing neutral experts and trial judges, whilst remaining neutral, being ready to intervene and ask questions or suggest lines of questioning to the patient's legal representative.
- (2) specific doctrines in treatment malpractice cases relax the strict standard of proof or shift it to the defendant, for example, in the event of "fully masterable risks" or inadequate documentation, proving factual causation especially in cases of gross negligence
- (3) the patient can reformulate his claim as one of "disclosure malpractice", in which case the burden of proof rests on the doctor to show that he had the patient's consent^[13].

6.6.6 Damages

Social security benefits (covered by the medical insurance funds) are relatively generous and include:

- (1) The costs of further remedial treatment, and
- (2) the ongoing costs of nursing care in cases of long-term disability.

In civil cases the patient is entitled to full reparation including:

- (1) Pecuniary damages:
 - past and future nursing care,
 - necessary adaptations to the patient's home,
 - lost earnings, and
 - legal costs
- (2) Non-pecuniary damages for pain and suffering^[13]

6.7 ITALY

6.7.1 Health care and Compensation System(s)

The health care system in Italy is a regionally based national health service known as Servizio Sanitario Nazionale (SSN). ^[15] Under the new "Gelli Law" (no 24, 2017), hospitals are obliged to be insured or to adopt "alternative measures" (for example, self-insurance) of covering liability in contract and tort. All professionals are required to take out personal insurance policy covering serious misconduct^[16].

6.7.2 Eligibility

The SSN provides universal coverage to citizens and residents, with public health care largely free of charge. Some treatments are covered by the public system and a small co-payment. These include tests, medications, surgeries during hospitalisation, family doctor visits and medical assistance provided by paediatricians and other specialists^[15].

6.7.3 Liability System(s)

A patient's hospital admission involves the formation of a contract for professional services between the patient and the hospital. Although a hospital-employed physician does not personally enter into the contract, courts have concluded that their liability is contractual and professional. The treatment of medical malpractice cases as one of contract (as opposed to one of tort) seems to be in place to benefit the claimant. It provides them with a chance of recovering damages even where it is difficult (or impossible) to prove fault and causation by the defendant^[17].

The non-contractual liability of the doctor is subject to the five-year prescription period whereas the contractual liability of the public or private health facility, is subject to a ten-year prescription period^[16].

6.7.4 Negligence

Under the Gelli Law professionals are punishable only in the case of:

- (1) serious misconduct (*colpa grave*),
- (2) carelessness (*imprudenza*) and/or
- (3) negligence (*negligenza*)

A hospital is liable for breach of contract should the behaviour of the professional be affected by willful conduct (*dolo*), serious misconduct or slight negligence^[18].

6.7.5 Proof and Evidence

The patient must prove the existence of a contract (or a social contact) with the physician and allege the breach of duty (which may be able to cause damage) by the physician.

The burden then shifts to the physician, who is required to prove:

- (1) performance (that is, that he fulfilled the duty in a manner conforming to the requisite standard of diligence), and
- (2) lack of causation between a breach of duty and damage (that is, that an external event, unforeseeable and unavoidable, actually caused the damage)^[17].

6.7.6 Damages

Compensation is per national tables provided by Articles 138 and 139 of the private insurance code, respectively, for biological damage for non-minor and minor injuries^[18].

6.8 JAPAN

The Japan Obstetric Compensation System for Cerebral palsy

6.8.1 Scheme

The scheme was launched on 1 January 2009 by the health ministry at the instigation of the Japan Medical Association, the Japan Society of Obstetrics & Gynecology, and the then-governing Liberal Democratic Party. It provides relief to parents of a limited class of newborn infants with severe brain damage. The scheme is operated outside of government by the Japan Council for Quality Health Care and is financed through a fixed per-birth levy of ¥24,000 from the social insurance system. Essentially all (99.7%) childbirth facilities in Japan are registered^[19].

6.8.2 Eligibility

Eligibility criteria were revised in 2015 to infants with cerebral palsy related to brain injuries during delivery who were born after 32 gestational weeks with a birth weight more than 1,400 grams. In addition, severity should be certified as 1st or 2nd degree according to the Japanese Social Welfare System. Infants with cerebral palsy delivered between 28 and 32 gestational weeks may be compensated on a “case-by-case review” based on the evidence of hypoxic conditions. When cerebral palsy is determined not to be caused by obstetric adverse events such as congenital or neonatal causes, the case is excluded from compensation. Application must be made between the child's 1st and 5th birthdays. In extremely serious cases application can be made from 6 months after birth^[20].

6.8.3 Assessment

Eligibility for compensation is judged by the “Review Committee” consisting of pediatricians, rehabilitation doctors, obstetricians and academic experts. As of June 2019, 3,676 cases had been reviewed of which 2,755 (75%) were accepted. A further 44 cases (1.3%) were found not eligible at the time of the review, but eligible for reapplication in the future subject to specified requirements^[20].

6.8.4 Benefits

- (1) ¥6 million as a lump sum for house adaptations, assistive devices, etc.
- (2) ¥24 million (in 20 annual instalments of ¥1.2 million) to provide nursing care expenses^[20].

6.9 NEW ZEALAND

The New Zealand Accident Compensation Scheme

6.9.1 Scheme

The Accident Compensation Corporation (ACC) was founded on 1 April 1974 and is the government organization that manages the scheme under the Accident Compensation Act 2001. ACC is the sole and compulsory provider of accident insurance in New Zealand and governed by a board that is responsible to the Minister for ACC. It is primarily funded through a combination of levies (on employers, employees, petrol, and motor vehicle license fees) and government contributions from taxation. The Scheme is administered on a no-fault basis and injured persons do not have the right to sue an at-fault party, except for exemplary damages^[21].

6.9.2 Eligibility

All persons who suffer personal injury in New Zealand have the right to claim, however non-residents are eligible for limited benefits. The scheme also applies to New Zealand residents who suffer injury as a result of medical treatment while outside New Zealand. The scheme covers personal injuries caused by accidents with the concept of “treatment injury” applying to medical injuries. Coverage does not extend to illness and disease (except in very specific situations, for example, occupational disease). Claims must be made within one year of the date of the personal injury, although ACC does not decline a late claim unless its lateness prejudices its ability to assess it^[22].

6.9.3 Assessment

An Injury Claim Form must be completed by a treatment provider and sent to ACC. Each injury is given a probability of acceptance rating based on the analysis of 12 million previous, anonymized ACC claims. Straightforward claims are fast-tracked whereas more complex claims are assessed individually by case coordinators or managers and after obtaining specialists' opinions or assessments if necessary. On average ACC receives approximately 2 million claims a year and roughly 90% of these are fast-tracked without the need for further information or investigation^[23]. Claimants may request a review if they disagree with an assessment decision and if still not satisfied, they have the right to court appeal^[24].

6.9.4 Benefits

- (1) Medical bills
- (2) Rehabilitation – both vocational and social
- (3) Loss of income: weekly compensation of up to 80% of gross earnings
 - up to a maximum of NZ\$ 2,066.58 per week (1 July 2020)
 - employer can pay for productive hours worked in which case earnings could be 100%
- (4) Permanent disability: Tax-free lump-sum (of up to NZ\$136,705.79 (1 Jul 2017) for whole person impairments exceeding 80%) or ongoing compensation
- (5) Support for family members after a fatal injury (1 July 2020)
 - Funeral grant: NZ\$6,471.17
 - Survivor's grants: NZ\$6,937.92 for a partner, NZ\$3,468.98 per child under 18 or other dependent
 - Weekly childcare payments: NZ\$147.53 for 1 child, NZ\$88.51 each for 2 children and NZ\$206.55 in total for 3 or more children for a maximum of 5 years or until a child turns 14
 - Loss of income up to 80% of deceased's earnings payable for 5 years or until the end of the year the youngest child turns 18 (21 in the case of full-time study)^[25]

6.10 **POLAND**

6.10.1 Health care and Compensation System(s)

The Universal Health Insurance Act introduced national health insurance from 1 January 1999. The fundamental idea was to separate the purchasing of health care services from the delivery of these services. A state entity called the National Health Fund (NFZ) collects premiums from the insured and purchases medical services by signing performance-based contracts with public and private health care facilities as well as individual health care professionals^[26].

6.10.2 Eligibility

Health care provided through the national health insurance is free for all the citizens provided they fall into the "insured" category (usually meaning that they have their health insurance paid for by their employer or are the spouse or child of an insured person)^[26].

6.10.3 Liability System(s)

There is no contract between a patient and a hospital or a doctor under the national insurance scheme. This is because the basis of the provider's obligation toward a patient is statutory provisions. Outside of national insurance scheme, contractual liability is in concurrence with tortious liability. Patients prefer the tortious liability regime because of the wider scope of damages and more convenient statute of limitations. Hospitals are held vicariously liable for injuries caused by fault of its doctors or other medical staff^[26].

6.10.4 Negligence

Failure to work with due care and diligence while treating a patient. The required duty of care is associated with medical specialization. If any doctor (whether an expert in a certain field of medicine or not) undertakes treatment requiring specialized knowledge and skills, a specialist-standard must be applied. This holds unless there is a case of emergency. Fault can be due to medical aspects of a doctor's activity or fault of another kind, for example lack of supervision, failure to obtain consent, etc. The slightest fault is sufficient to attribute liability to a doctor or hospital under tort law^[26].

6.10.5 Proof and Evidence

The patient bears the burden of proof for damages, fault and causation, although these strict requirements have been lowered by case law. Under contract law the defendant's fault is statutorily presumed. Under tort law fault and/or causation may be established by means of indirect (prima facie) evidence. To prove causality, it may be sufficient to establish "probability of a high degree" that a doctor's or hospital's faulty conduct caused the damage in question. The burden of causality may be reversed in the area of health care-related infections^[26].

6.10.6 Damages

For the injured person and, in the case of his death, for secondary victims.

- (1) Pecuniary losses are compensated in full at the discretion of the court:
 - medical care costs (all necessary expenses not covered by the health insurance scheme) including consultations with the best specialists, medical treatment abroad, medical equipment, etc.
 - other medical care costs, for example, transport to health care facilities, expenses of relatives visiting a hospital, home-based care, etc.
 - loss of income
 - the defendant may be liable for further loss that may appear in the future as a result of the same event.
- (2) Non-pecuniary losses (under tort law only)

Damages are usually paid to the injured person by the hospital's insurance company^[26].

6.11 SCANDINAVIA

The Nordic Model of No-fault Patient Insurance Schemes

6.11.1 Schemes

Patient insurance schemes were introduced in Sweden (1975), Finland (1984), Norway (1988) and Denmark (1992) under the Patient Injuries Acts of the respective countries. Liability insurance is mandatory for suppliers of healthcare. The legal systems (apart from Denmark's) allow injured patients the option of claiming compensation under tort rules even if the patient has the right to obtain compensation under the insurance scheme. Most often cases are dealt with under the insurance schemes and the few malpractice cases that do go to court, therefore, normally concern injuries that the patient insurance does not cover^[27].

6.11.2 Eligibility

Compensation is typically provided for personal injury to a patient if the injury is caused by:

- (1) Treatment (where the care measures are the direct cause of the injury)
- (2) Faulty or incorrect use of equipment
- (3) Incorrect or delayed diagnosis
- (4) Infection by transmitted contaminants
- (5) Accidents
- (6) Wrongfully prescribed medication^[28]

Claims must be filed within 10 years of treatment or within 3 years of discovery^[29].

6.11.3 Assessment

Claims (in Sweden) are assessed by a Patient Claims Panel comprising a chairman, three members representing patients' interests, one medical expert, one specialist on health and medical care issues and one specialist on personal injury claims adjustment. The panel's decision is formulated in an opinion that is advisory. The insurance company is not obliged to follow the opinion of the panel, however, most of the time it does^[28]. Injuries are assessed using an "experienced specialist" standard to determine whether they could have been avoided under optimum conditions. In Denmark claims are adjudicated more strictly but include some unavoidable injuries. Patients whose claims are rejected, or who are unhappy with the amount of the compensation awarded, may appeal the decision, initially to an appeals board and, if still unsatisfied, to the court system^[30]. In Sweden over 17,000 patient injuries are registered each year with approximately 40% of them being approved for compensation^[31].

6.11.4 Benefits

Damages are assessed in accordance with general tort principles, except that punitive damages are not available. A patient is entitled to:

- (1) pecuniary damages (compensation for loss of income or future loss of pension is paid as annuity), and
- (2) non-pecuniary damages (for pain, suffering, disability)^[32]

Per patient caps:

- Sweden (2021): SEK 9.52 million per patient^[33]
- Denmark (2015): US\$1.7 million^[32]

6.12 UNITED KINGDOM

6.12.1 Health care and Compensation System(s)

The National Health Service (NHS) was established in 1948 as one of the major social reforms following the Second World War. The NHS is the world's largest publicly funded (from national taxation) health service. The NHS continues to remain free at the point of use for any resident in the UK. The only exceptions charges for some prescriptions and optical and dental services^[34].

6.12.2 Eligibility

The NHS provides health care for all UK citizens based on their need for medical care rather than their ability to pay for it^[34].

6.12.3 Liability System(s)

A contractual relationship does not exist between an NHS doctor and a patient within the NHS. However, if the patient/doctor relationship is a private one rather than one under the NHS, there will be a contractual relationship and it will be possible to bring an action for damages in contract. Most medical malpractice compensation claims are brought in tort (England) and delict (in Scotland). The majority of which are for the tort/delict of negligence.

A person seeking compensation for clinical negligence must establish three things:

- (1) that the defendant owed the patient a duty of care;
- (2) that the defendant was in breach of that duty; and
- (3) that the breach of duty of care caused harm to the patient^[34].

A claimant must issue their claim at court within three years of the alleged negligence taking place or within three years of becoming aware that something went wrong. Individuals that lack capacity (under 18 years of age or without the mental ability to make the necessary decisions) are not subject to a limitation period^[35].

6.12.4 Negligence

The standard of care demanded is that of a reasonably skilled and experienced doctor^[34].

6.12.5 Proof and Evidence

The burden of proof is on the claimant. Causation must be established on a balance of probabilities. The standard approach to causation of the "but for" test is used^[34].

6.12.6 Damages

On the bases of precedents, judges usually award compensation for the following heads of damages:

- (1) Special Damages, that is, the actual pecuniary loss suffered between the date of the accident and the date of settlement or judgement.
- (2) General Damages,
 - (a) all non-pecuniary damages already suffered or to be expected
 - (b) economic damages that will probably arise in the future
 - (c) pain and suffering and loss of amenities, mental distress, anguish and loss of recreational ability
 - (d) loss of future earnings or earning capacity or loss of support
 - (e) future expenses.^[35]

A key feature of the payment of compensation in the United Kingdom is the use of a periodical payment order (PPO) which is a Court order that grants the claimant a lump sum payment followed by regular payments over the life of the claimant. The structure of a PPO will normally set out the amount payable per year and whether any variations to the amount are applicable. PPO's were introduced in the United Kingdom in 2003.

6.13 UNITED STATES

Florida Birth-Related Neurological Injury Compensation Association (NICA)

6.13.1 Scheme

In 1988, the Florida Legislature enacted the Florida Birth-Related Neurological Injury Compensation Association Act (NICA) as Florida Statute Chapter 88-1, Laws of Florida. The Act addresses medical malpractice issues by setting up a no-fault plan for hospitals and doctors that covers specific birth-related neurological injuries.^[36]

6.13.2 Eligibility

The scheme covers injuries to the brain or spinal cord of a live infant caused by the deprivation of oxygen or physical injury imparted during the course of labor, delivery, or resuscitation in the immediate post-delivery period in a hospital. The injury in question must cause the infant permanent and substantial mental and physical damage, and the infant at birth must weigh at least 2,500 grams in the case of single gestation or at least 2,000 grams in the case of multiple gestations. The Plan does not apply to genetic or congenital abnormalities, and the physician involved must be a participant in the NICA program. Claims must be filed within 5 years from the date of the adverse event.^[37]

6.13.3 Assessment

Acceptance into the Plan is determined by an Administrative Law Judge after a petition is filed with the Florida Division of Administrative Hearings (DOAH). NICA collects relevant documentation relating to the claimant's petition, conducts a medical records review, and facilitates the medical examination of the child by a pediatric neurologist and a maternal foetal medical specialist. After these medical experts review the infant's medical records and other documentation, NICA determines whether a claim should be accepted or rejected and sends its determination to DOAH for approval. If there is any dispute over the NICA determination, then the parties may proceed to an administrative hearing. The Administrative Law Judge must issue an order of approval for an accepted claim before any payment can be made. Once accepted by an order from the Administrative Law Judge, the child is covered for his or her lifetime, and no other compensation from a malpractice lawsuit is available.^[37]

6.13.4 Benefits

The benefits offered as compensation include:

- (1) Reasonable and necessary medical care, training, residential and custodial care.
- (2) Needed equipment or facilities.
- (3) Pharmaceutical costs.
- (4) Related travel expenses.
- (5) A one-time family benefit up to \$100,000.
- (6) A death benefit of \$10,000.
- (7) Reasonable expenses incurred in the filing of the claim, including attorney's fees.^[37]

6.14 REFERENCES

1. Koch, B.A. 2011. Medical Malpractice in Austria. *Chicago-Kent Law Review*. 86(3):1027-1052. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol86/iss3/3/?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol86%2Fiss3%2F3&utm_medium=PDF&utm_campaign=PDFCoverPages
2. Lobato, L. 2000. Reorganizing the Health Care System in Brazil. In *Reshaping Health Care in Latin America*. E. Baris, S. Belmartino & S. Fleury, Eds. Available: https://web.archive.org/web/20080211214235/http://www.idrc.ca/en/ev-35519-201-1-DO_TOPIC.html
3. Dantas, E. 2011. A Bridge over Troubled Waters: The Development of Medical Malpractice Litigation in Brazil. *Chicago-Kent Law Review*. 87(3):3-20. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol87/iss1/2?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol87%2Fiss1%2F2&utm_medium=PDF&utm_campaign=PDFCoverPages
4. Marelo, n.d. Medical Malpractice Liability in Brazil. Available: <https://marelo.legal/news/medical-malpractice-error-liability-lawyer-attorney-brazil-lawsuit-damages#:~:text=The%20Brazilian%20Consumer%20Code%20states,in%20line%20with%20medical%20science>
5. Flood, C.M. & Thomas, B. 2011. Canadian Medical Malpractice Law in 2011: Missing the Mark on Patient Safety. *Chicago-Kent Law Review*. 86(3):1053-1092. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol86/iss3/4?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol86%2Fiss3%2F4&utm_medium=PDF&utm_campaign=PDFCoverPages
6. Law Library of Congress. 2009. Medical Liability: Canada, England and Wales, Germany, and India. Available: <https://www.loc.gov/law/help/medical-malpractice-liability/index.php>
7. Oliphant, K. & Wang, Z. 2011. Yangge Dance: The Rhythm of Liability for Medical Malpractice in the People's Republic of China. *Chicago-Kent Law Review*. 87(1):21-52. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol87/iss1/3?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol87%2Fiss1%2F3&utm_medium=PDF&utm_campaign=PDFCoverPages
8. Liu, Y. 2011. China's Health Care Reform: Far From Sufficient. *The New York Times*. Available: <https://www.nytimes.com/roomfordebate/2011/11/01/is-china-facing-a-health-care-crisis/chinas-health-care-reform-far-from-sufficient>
9. Jun, G. 2019. Introduction to Medical Malpractice Cases in China. Available: <https://www.amchamchina.org/introduction-to-medical-malpractice-cases-in-china/>
10. G'Sell-Macrez, F. 2011. Medical Malpractice and Compensation in France, Part I: The French Rules of Medical Liability since the Patients' Rights Law of March 4, 2002. *Chicago-Kent Law Review*. 86(3):1093-1123. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol86/iss3/5?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol86%2Fiss3%2F5&utm_medium=PDF&utm_campaign=PDFCoverPages
11. Bright, C. & Hodges, C. 2017. The Oniam Scheme. In *Redress Schemes for Personal Injuries*. C.Hodges & S.Macleod, Eds. Oxford:Harts.427. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3156212
12. ONIAM. 2018. *Compensation Guidance*. Available: <https://www.oniam.fr/procedure-indemnisation/bareme-indemnisation>
13. Stauch, M.S. 2011. Medical Malpractice and Compensation in Germany. *Chicago-Kent Law Review*. 86(3):1139-1168. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol86/iss3/7?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol86%2Fiss3%2F7&utm_medium=PDF&utm_campaign=PDFCoverPages
14. Alexander, M. & Hösker, C. 2020. *The Professional Negligence Law Review: Germany*. Available: <https://thelawreviews.co.uk/title/the-professional-negligence-law-review/germany>
15. Allianz Care. 2021. *Healthcare in Italy*. Available: <https://www.allianzcare.com/en/support/health-and-wellness/national-healthcare-systems/healthcare-in-italy.html#:~:text=The%20healthcare%20system%20in%20Italy,healthcare%20largely%20free%20of%20charge.&text=Most%20expats%20employed%20in%20Italy,the%20local%20government%20healthcare%20network>
16. Vismara, L. 2017. *The "Gelli Law" - A New Era for Medical Liability in Italy*. Available: <https://www.genre.com/knowledge/blog/the-gelli-law-a-new-era-for-medical-liability-in-italy-en.html>
17. DiMarzo, C. 2011. Medical Malpractice: The Italian Experience. *Chicago-Kent Law Review*. 87(1):53-77. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol87/iss1/4?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol87%2Fiss1%2F4&utm_medium=PDF&utm_campaign=PDFCoverPages
18. Pucci, E. 2018. *Italy – new rules applicable to medical professional liability insurance*. Available: <https://www.ibanet.org/Article/NewDetail.aspx?ArticleUid=aedc6aeb-190c-4f66-8495-08a510b3a883>
19. Leflar, R.B. 2011. The Law of Medical Misadventure in Japan. *Chicago-Kent Law Review*. 87(1): 79-110. Available:

- https://scholarship.kentlaw.iit.edu/cklawreview/vol87/iss1/5?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol87%2Fiss1%2F5&utm_medium=PDF&utm_campaign=PDFCoverPages
20. Ragusa, A., Tartaglia, R. & Ushiro, S. 2020. Lessons Learned from the Japan Obstetric Compensation System for Cerebral palsy: A Novel System of Data Aggregation, Investigation, Amelioration, and No-Fault Compensation. In *Textbook of Patient Safety and Clinical Risk Management*. L. Donaldson, W. Ricciardi, S. Sheridan, R. Tartaglia, Eds. Cham: Springer. 465-484. DOI: https://doi.org/10.1007/978-3-030-59403-9_33
 21. New Zealand History. 2020. ACC comes into operation. Available: <https://nzhistory.govt.nz/page/accident-compensation-corporation-comes-existence>
 22. Todd, S. 2011. Treatment Injury in New Zealand. *Chicago-Kent Law Review*. 86(3): 1169-1216. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol86/iss3/8?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol86%2Fiss3%2F8&utm_medium=PDF&utm_campaign=PDFCoverPages
 23. ACC. 2021. How we manage your claim. Available: <https://www.acc.co.nz/im-injured/how-we-manage-your-claim/>
 24. Community Law. 2021. Accident Compensation (ACC). Available: <https://communitylaw.org.nz/community-law-manual/chapter-19-accident-compensation-acc/accident-compensation-acc/>
 25. ACC. 2021. Types of financial support. Available: <https://www.acc.co.nz/im-injured/financial-support/>
 26. Bączyk-Rozwadowska, K. 2011. Medical Malpractice and Compensation in Poland. *Chicago-Kent Law Review*. 86(3):1217-1261. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol86/iss3/9?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol86%2Fiss3%2F9&utm_medium=PDF&utm_campaign=PDFCoverPages
 27. Hartlev, M., Schultz, M. & Ulfbeck, V. 2011. Malpractice in Scandinavia. *Chicago-Kent Law Review*. 87(1):111-129. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol87/iss1/6?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol87%2Fiss1%2F6&utm_medium=PDF&utm_campaign=PDFCoverPages
 28. Hellborg, S. 2019. Liability for medical injuries in Sweden. *Journal of Health and Insurance Law - Illness (JDSAM)*. 2(23):72-76. Available: <https://www.cairn.info/revue-journal-du-droit-de-la-sante-et-de-l-assurance-maladie-2019-2-page-72.htm?contenu=article>
 29. Kachalia, A., Mello, M.M. & Studdert, D.M. 2011. *Administrative Compensation for Medical Injuries: Lessons from Three Foreign Systems*.
 30. Brunton, G., Burchett, H., Dickson, K., Hinds, K., Stansfield, C. & Thomas, J. 2016. *No-Fault Compensation Schemes*. London: EPPI-Centre, Social Science, Research Unit, UCL Institute of Education, University College London. Available: <https://eppi.ioe.ac.uk/CMS/Portals/0/PDF%20reviews%20and%20summaries/No%20Fault%20Comp%20Schemes%202016%20Dickson.pdf>
 31. Löf, n.d. *If you are injured in healthcare*. Available: <https://lof.se/language/engelska-english>
 32. Gibson, E. 2016. Is It Time to Adopt a No-Fault Scheme to Compensate Injured Patients?. *Ottawa Law Review*. 47(2): 303-338. Available: <https://ssrn.com/abstract=2744432>
 33. PFF. n.d. *For you as a patient*. Available: <https://www.pff.se/patient/#den-ersattning-du-kan-fa>
 34. Goldberg, R. 2011. Medical Malpractice and Compensation in the UK. *Chicago-Kent Law Review*. 87(1): 131-161. Available: https://scholarship.kentlaw.iit.edu/cklawreview/vol87/iss1/7?utm_source=scholarship.kentlaw.iit.edu%2Fcklawreview%2Fvol87%2Fiss1%2F7&utm_medium=PDF&utm_campaign=PDFCoverPages
 35. NHS Resolution. 2019. *Advice for Claimants*. Available: <https://resolution.nhs.uk/services/claims-management/advice-for-claimants/#toc-item-5>
 36. NICA. 2006. *NICA - Florida's Innovative Alternative to Costly Litigation*. Available: <https://www.nica.com/what-is-nica.html>
 37. Neurological Injury Compensation Association. 2020. *Benefit Handbook*. Florida.

7. STANDARDIZATION OF TREATMENT PROTOCOLS

7.1 INTRODUCTION

7.1.1 Background

Cerebral palsy (CP) causes physical disability in children and affects the movement and posture of the patient which limits their activity^{[1],[2]}. In addition to causing motor impairments; CP is often also associated with disorders of sensation, perception, cognition, communication and behaviour as well as with epilepsy^[1]. The limitations in activity caused by CP require individual rehabilitation for the remainder of a patient's lifetime^[1]. Palisano et al. points out that interventions for young children with CP can be described using the International Classification of Functioning, Disability and Health as follows^[5]:

Interventions may be directed at primary and secondary impairments in body functions and structures such as spasticity, muscle performance, range of motion, balance, and physical endurance; activity limitations such as sitting, standing, transfers, mobility, manual ability, and self-care; and participation restrictions such as social interactions with children and adults, play, engagement in family routines, and community recreation.

7.1.2 Effectiveness of therapy for CP patients

Novak et al.^[10] performed a systematic review of 166 studies which dealt with the effectiveness of interventions for children with CP. The authors found that occupational therapy, physiotherapy and medicine were the disciplines that had the highest number of proven effective interventions for CP within their evidence base^[10]. In the fields of psychology, speech therapy, social work and education, the evidence of effectiveness is at a lower level; or inconclusive^[10]. The authors however note that^[10]:

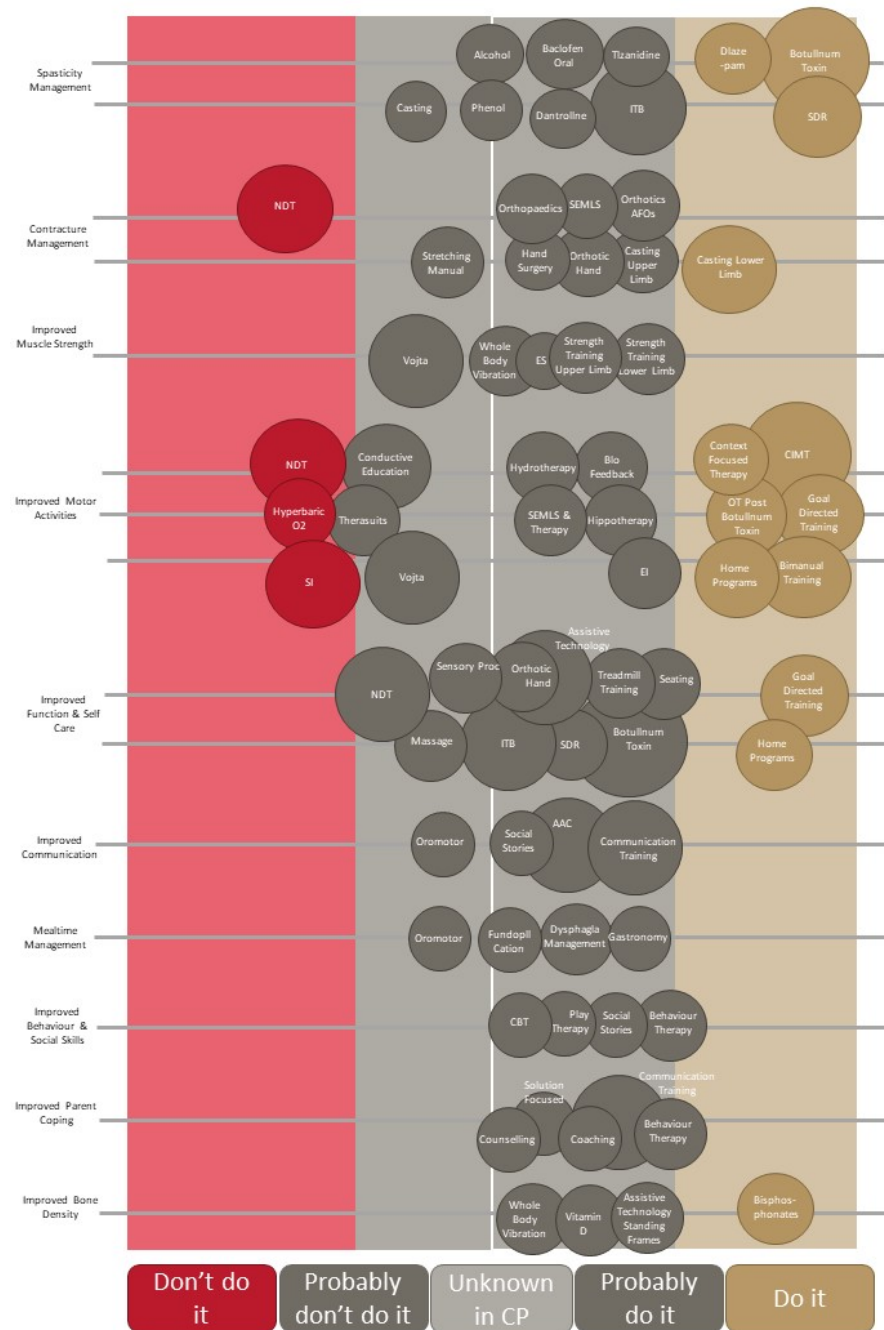
...fields of speech pathology, social work, and psychology that provide key services to children with CP, without strong evidence, as of yet, to support their practice. These professions have been overshadowed in the CP research arena until recently, when the field stopped solely redressing physical impairments and started to look further afield to engendering outcomes in well-being and participation...

7.1.3 We have found that in the field of speech therapy, augmentative and alternative communication (AAC) is often included in the recommended treatment regime for children with CP who are involved in medical negligence litigation. In this regard, Novak et al. notes the following^[10]:

In the field of speech pathology, it is worth noting that it is difficult to conduct studies of augmentative and alternative communication (AAC) using conventional rigorous methodologies because included participants often have different disability types and, accordingly, differing levels of expressive, receptive, and social communication abilities. AAC interventions require multifactorial measurement because effective device utilization relies on changes in all of these domains from best-practice speech, language, and teaching strategies and from changing the mode of communication. Thus, adequately measuring and attributing interventions effects to each component of these integrated treatment approaches remains challenging.

7.1.4 The authors of the above-mentioned paper classified the interventions for CP patients as effective, lower-level evidence supporting effectiveness or inconclusive and ineffective interventions. We have reformulated the various interventions in the visualization in Figure 16 below, noting that the size of the bubble represents the volume of the published evidence^[10]:

Figure 16: Effectiveness of CP interventions by mode of treatment



- 7.1.5 The majority of the effective interventions were all aimed at either the body structures and functional level or the activities levels on the World Health Organization's International Classification of Functioning (ICF)^[10].
- 7.1.6 There is however conflicting evidence regarding the success of therapy for children with CP and the effectiveness of these interventions is difficult to establish due to a lack of good quality research in this regard^[1]. Trahan et al.^[6] notes that:
...Methodological bias or limitations such as small samples, inappropriate outcome measures, improper study design, or lack of standardization of experimental procedures have been cited to explain the inconclusive results reported in these studies...
- 7.1.7 Weindling et al.^[8] notes that:
In conclusion, many of the available studies had methodological problems, particularly with sample size and power, use of controls, heterogeneity of samples, range of potentially confounding variables and looking at persisting effects of the intervention. Hence it was not possible to draw confident conclusions about the efficacy of physical therapy for children with cerebral palsy.

7.2 OPTIMAL FREQUENCY OF PHYSIOTHERAPY

7.2.1 Background

The optimal frequency and amount of therapy such as physiotherapy and occupational therapy for CP children as well as the focus of these interventions are challenging issues^{[4],[5]}. Gagliardi et al.^[3] notes that:

...The importance of rehabilitation and of early intervention in cerebral palsy is widely recognized, but the timing, the type of therapy, and the duration are still under debate, as is the effectiveness of different programs, and much of the data are inconclusive...

7.2.2 Goals of physiotherapy

Physiotherapy plays a vital role in the management of CP and focuses on function and movement as well as on finding ways to make the best use of the child's potential^{[1],[2]}. PT uses physical approaches with the aim of restoring and maintaining the well-being of the child – on a physical, psychological and social level^{[1],[2]}. Physiotherapists can also assist in parent education by teaching them how to perform activities at home such as feeding, bathing and dressing their child and also by giving advice regarding mobility devices^{[1],[2]}. In this regard Wendling et al.^[8] notes that:

The main focus of management for children with CP is their physical disability. A key contact point with the health services for the family is therefore the physiotherapist, a professional person who has been trained to concentrate on the child's physical needs and to enable that child to make the most of his or her physical resources.

7.2.3 Frequency of therapy

Set out below is a summary of a selection of literature that provides an indication of the frequency of PT that is considered normal frequency of therapy; alternatively, the frequency of PT that is considered more effective than the baseline therapy frequency in improving the gross motor function of children with CP:

Table 15: Frequency of PT that is considered normal/effective in treatment of CP

Study reference	Ages covered	Severity of CP (GMFCS)	Frequency of sessions from study
Anttila et al. ^[1]	7 months - 18 years	I - V	1 - 2 / week ^(a)
Elgawish et al. ^[2]	2 years - 6 years	I - V	2 - 5 / week ^(b)
Gagliardi et al. ^[3]	< 6 years	I - V	2 / week vs 10 / week for 1 month followed by 2 / week for 5 months ^(c)
Myrhaug et al. ^[4]	N/A	N/A	1 - 2 / week ^(d)
Myrhaug et al. ^[4]	< 7 years	N/A	2 - 7 / week ^(e)
Myrhaug et al. ^[4]	< 7 years	N/A	3 - 7 / week ^(f)
Myrhaug et al. ^[4]	< 7 years	N/A	2 - 7 / week ^(g)
Palisano et al. ^[5]	N/A	N/A	< 4 / week ^(h)
Palisano et al. ^[5]	2 years - 6 years	I	3 / month ⁽ⁱ⁾
Palisano et al. ^[5]	2 years - 6 years	II - III	5.6 / month ⁽ⁱ⁾
Palisano et al. ^[5]	2 years - 6 years	IV - V	5.3 / month ⁽ⁱ⁾
Palisano et al. ^[5]	N/A	N/A	1 - 2 / week or every other week ^(j)
Trahan et al. ^[6]	≤ 2 years	IV - V	2 / week vs 4 / week for 1 month followed by nil for 2 months ^(k)
Weindling et al. ^[8]	≤ 4 years	N/A	32 / 6 month period ^(l)

^(a) Study only included randomized controlled trials and included all types of CP. The authors found moderate evidence that neurodevelopmental therapy (NDT) twice a week improves a patient's developmental status when compared to NDT once per week.

^(b) The aim of the study was to compare the gross motor progress in children with spastic CP who were treated with intensive PT to the progress of a similar group of children who were treated using a standard PT schedule. The therapy consisted of NDT and the duration of a session was 60 minutes. Results showed that both treatment regimens resulted in improved gross motor function. The intensive NDT intervention however had a greater effect than the standard treatment regimen.

- (c) The aim of the study was to determine the feasibility and effectiveness of a year-long integrated rehabilitation program for young children with spastic, athetoid or mixed form CP. The therapy involved sensory stimulation and motor interventions including balance training, hand-eye co-ordination tasks as well as language stimulation. The study compared a continuous intervention regimen with an intermittent, intensive and integrated treatment program. Results supported the effectiveness of periods of higher frequency treatment in young children with CP.
- (d) Typical treatment frequency for PT in Norway, Canada and the United States. Authors therefore defined intensive therapy as more than 2 sessions per week.
- (e) Of the 23 studies that reported outcomes for hand function; 7 studies reported 2 – 7 sessions per week with additional home training; 5 reported daily training of more than one hour per day; and 5 reported more than one hour per day with additional home training. The study periods ranged from less than 4 weeks to more than 12 weeks.
- (f) Of the 16 studies that reported on gross motor function; 5 studies reported 2 – 7 sessions per week with additional home training and 11 studies reported 3 – 7 sessions per week.
- (g) Of the 20 studies that reported on functional skills; 9 reported 2 – 7 sessions per week with additional home training; 6 reported 3 – 7 sessions per week; 3 reported more than one hour per day; and 2 reported more than one hour per day with additional home training. In the majority of studies included in Myrhaug et al.'s study, equal improvements were observed in motor function and functional skills for intensive interventions and conventional therapy.
- (h) In several studies, intensive therapy has been defined as 50 – 60 minute sessions for 4 – 5 times per week.
- (i) Assuming a session is 60 min long. The finding that children in GMFCS level IV-V receive more therapy compared to children in level I may show that functional abilities and needs for environmental modifications and equipment are factors to take into account in decision making; the finding that children with GMFCS level I receive fewest minutes of therapy per month might reflect that these children's capabilities enable them to achieve goals with less service. The greater amount of therapy for children in levels II – III might point towards efforts towards independent mobility; whereas the greater amount of therapy for children with GMFCS levels IV – V might reflect more time spent on physically guiding movements, instructing family members on optimal positioning and ease of care giving, environmental modifications and needs for special equipment and assistive technology.
- (j) Suggested for children who demonstrate continuous progress towards goals.
- (k) One of the aims of the study was to determine the feasibility of a rehabilitation program combining intensive therapy periods with periods with no therapy. Individual sessions lasted 45 minutes and the study included children with severe impairments who had quadriplegia. The study found that increasing the frequency of treatments from twice a week to 4 times a week followed by a rest period improved the level of motor performance of the children. The authors concluded that the way physical rehabilitation programs are organized should be reconsidered, as more therapy does not seem to be better than less sessions arranged in a different manner.
- (l) This study investigated whether in the short and medium term the additional support by a physiotherapy assistant improved physical function in young children with spastic CP. The study was designed as a randomized control trial and included children with CP of perinatal origin that was mainly spastic in type. The frequency recorded represents the frequency of contacts that patients had with the specific type of service over a 6-month intervention period. The study found that there was no evidence that additional intervention for 1 hour per week for 6 months helped the motor or general development of young children with spastic CP.

- 7.2.4 The majority of study periods for the studies summarized above were relatively short and the sample sizes were relatively small. We were therefore unable to determine for how long and up to what age the therapies are effective.

7.3 OPTIMAL FREQUENCY OF OCCUPATIONAL THERAPY

7.3.1 Goals of Occupational Therapy

Occupational therapy (OT) for children with CP focuses on the development of skills that are necessary for the performance of activities of daily living including play, self-care activities and fine motor tasks such as writing and drawing^[9]. OT also aims to address cognitive and perceptual impairments and addresses the adaptation of equipment and seating to promote independence^[9]. Parent counselling also forms an important part of OT intervention for CP children and aims to optimize parental support to improve the functional abilities of the child^[9]. Functional ability and social participation should therefore be the main outcome measures in evaluating the efficacy of OT therapy in CP children^[9].

7.3.2 Frequency of therapy

Set out below is a summary of a selection of literature that provides an indication of the frequency of OT that is considered normal frequency of therapy; alternatively, the frequency of OT that is considered more effective than the baseline therapy frequency in improving the functioning of children with CP:

Table 16: Frequency of OT that is considered normal/effective in treatment of CP

Study reference	Ages covered	Severity of CP (GMFCS)	Frequency of sessions from study
Palisano et al. ^[5]	2 years - 6 years	I	2.6 / month ^(a)
Palisano et al. ^[5]	2 years - 6 years	II - III	3.1 / month ^(a)
Palisano et al. ^[5]	2 years - 6 years	IV - V	3.9 / month ^(a)
Palisano et al. ^[5]	N/A	N/A	1 - 2 / week or every other week ^(b)
Trahan et al. ^[6]	≤ 2 years	IV - V	2 / week vs 4 / week for 1 month followed by nil for 2 months ^(c)
Gee et al. ^[7]	0 - 21 years	N/A	3.4 / week ^(d)
Weindling et al. ^[8]	≤ 4 years	N/A	9.5 / 6 month period ^(e)

^(a) Assuming a session is 60 min long.

^(b) Suggested for children who demonstrate continuous progress towards goals.

^(c) One of the aims of the study was to determine the feasibility of a rehabilitation program combining intensive therapy periods with periods with no therapy. Individual sessions lasted 45 minutes and the study included children with severe impairments who had quadriplegia. The study found that increasing the frequency of treatments from twice a week to 4 times a week followed by a rest period improved the level of motor performance of the children. The authors concluded that the way physical rehabilitation programs are organised should be reconsidered, as more therapy does not seem to be better than less sessions arranged in a different manner.

^(d) The study included published articles that reported on outcomes for pediatric patients in general. The results found that on average, the dosage consisted of session lengths of 58.7 minutes, duration of plan care of 12.1 weeks and session frequency of 3.4 per week.

^(e) The frequency recorded represents the frequency of contacts that patients had with the specific type of service over a 6-month intervention period.

7.3.3 The majority of study periods for the studies summarized above were relatively short and the sample sizes were relatively small. We were therefore unable to determine for how long and up to what age the therapies are effective.

7.4 TIMING OF THERAPIES

- 7.4.1 The age at which intervention commences has been shown to be a key factor that affects the effectiveness of therapy for CP children. In this regard Gagliardi et al.^[3] notes that:
...Innocenti and White suggested concentrating on the analysis of the conditions under which different interventions are effective, instead of the intervention per se. It has been hypothesized that the two crucial conditions for the interventions are the age at which the intervention starts and the intensity of the treatment...
- 7.4.2 Myrhaug et al.^[4] notes that (our emphasis underlined):
...In children with CP, intensive intervention before the age of seven is recommended for optimizing motor function and learning functional skills, because from a maturational and neuroplasticity perspective the greatest gains will be made during this window...
- 7.4.3 Dimitrijevic et al.^[11] notes that (our emphasis underlined):
...Early diagnosis of CP is extremely difficult. Often, it is impossible to diagnose CP under the age of four months and even under six months of age in slightly affected children with 'soft neurological signs'. Initially the majority of cerebral-palsied babies do not show definite signs of abnormality, but mainly those of retardation. Treatment should start only when signs of abnormal tonus and movement patterns are seen. In most babies, this happens after a 'silent' period, during which no treatment is necessary, but if suspicious signs develop, treatment must start immediately. In most cases, a very early treatment will give quicker and better results because the baby does not yet show much abnormality and therefore has little experience of abnormal movements...
- ...Furthermore, because treatment and handling are easier for the mother and therapist, the mother can more easily be instructed and trained in the best way of how to handle her baby. Her involvement in management and treatment helps in establishing a good mother-child relationship and also gives her support and encouragement. It helps to prevent over-protection, as well as rejection...
- 7.4.4 Lungu et al. ^[13] notes that (our emphasis underlined):
...Another recognized clinical and research challenge in CP is the frequent lag in the diagnosis of CP, which affects the efficacy of any interventions best implemented early in infancy...
- 7.4.5 It is however clear from the literature studied that the evidence on the effectiveness of early intervention is also conflicting. As noted by Herskind et al.^[12]:
...In the literature, 'early intervention' encompasses approaches initiated before term age, when the infant is a few months old and at approximately 1 year of age. A clear consensus on a definition of 'early' is lacking. There is no unequivocal, scientific basis arguing in favour of a better effect of intervention initiated at, for instance, 3 months of age as compared with 12 months, and clinical studies documenting an age dependency of intervention are absent....

Based on our knowledge of neuroplasticity and sensitive periods it seems apparent that early intervention ought to benefit infants with brain damage during development. However, from the vast amount of literature on the subject it is difficult to determine whether early intervention is effective or not. Several reasons for this may be proposed. As already mentioned, one is the matter of defining 'early'. Another problem is that it is difficult to compare studies since a countless number of diverse 'early interventions' have been applied. This is a challenge for meta-analyses...Furthermore, the methods of measuring the effects are numerous, not all have been validated and some may not be adequate to measure the outcome in question.

7.5 CONCLUSION

- 7.5.1 There is conflicting evidence, not only of the effectiveness of therapy for CP children, but also of the optimal dosage of therapy. There is a need for rigorous, well-designed and objective research to establish the optimal dosage of therapy for children with CP. In this regard dosage entails the:
- (1) frequency of sessions;
 - (2) duration of each individual session;
 - (3) duration of the overall rehabilitation program;
 - (4) timing of sessions;
 - (5) intensity of sessions; and
 - (6) focus of these rehabilitation sessions.
- 7.5.2 The above finding was confirmed by the following authors:
- (1) Weindling et al.^[8] notes that:
Research is needed to examine what “sufficient” levels of provision or therapy might be for which children and which families.
 - (2) Anttila et al.^[1] notes that:
...Well-designed, randomized trials on current and focused PT interventions are needed, as are new methods for analyzing the effects of comprehensive PT interventions.
 - (3) Myrhaug et al.^[4] notes that:
...Rigorous research on intensive gross motor training is needed.
 - (4) Steultjens et al.^[9] notes that:
Despite the reasonable number of studies identified, the inconclusive findings regarding the efficacy of occupational therapy for children with cerebral palsy may be a reflection of the difficulties in efficacy research in OT for children with CP. Future research should critically reflect on methodological issues.
- 7.5.3 As summarized by Lungu et al.^[13] (our emphasis underlined):
...The workshop highlighted the substantial variation in interventions prescribed for CP, and the lack of evidence for many of those interventions. The state of the science for efficacy of interventions in CP based on available data from randomized clinical trials demonstrates few treatments with strong and consistent evidence in this population to improve functioning in childhood, or across the lifespan. There is no shortage of potential treatment options in the literature, but evidence concerning subgroup treatment responses, optimal timing, and sequencing of interventions, as well as the dosing and frequency, is often lacking...
- 7.5.4 New knowledge is needed regarding the effects of widely-applied therapy interventions for CP children^[1]. This will aid in evidence-based decision making and prevent over-servicing. However, a wide variety of motor abilities, health conditions and family needs of these children remain challenges in this process^{[1],[5]}.
- 7.5.5 Further research is also required concerning the disparity in costs between various experts and between various provinces. There appears to be a presumption that private healthcare is the reasonable standard for future medical care.

7.6 REFERENCES

1. Anttila, H., Autti-Rämo, I., Suoranta, J. et al. (2008). Effectiveness of physical therapy interventions for children with cerebral palsy: A systematic review. *BMC Pediatrics*, 8(14). DOI: 10.1186/1471-2431-8-14. Accessed online at: <http://www.biomedcentral.com/1471-2431/8/14>
2. Elgawish, M.H., Zakaria, M.A. (2015). The effectiveness of intensive versus standard physical therapy for motor progress in children with spastic cerebral palsy. *Egyptian Rheumatology & Rehabilitation*, 42: 1-6. DOI: 10.4103/1110-161X.155622.
3. Gagliardi, C., Maghini, C. Germiniasi, C. et al. (2008). The Effect of Frequency of Cerebral palsy Treatment: A Matched-Pair Pilot Study. *Pediatric Neurology*, 39(5): 335-340. DOI: 10.1016/j.pediatrneurol.2008.07.021.
4. Myrhaug, H.T., Østensjø, S., Larun, L. et al. (2014). Intensive training of motor function and functional skills among young children with cerebral palsy: a systematic review and meta-analysis. *BMC Pediatrics*, 14:292.
5. Palisano, R.J., Begnoche, D.M., Chiarello, L.A. et al. (2012). Amount and Focus of Physical Therapy and Occupational Therapy for Young Children with Cerebral palsy. *Physical & Occupational Therapy in Pediatrics*, 32(4): 368 – 382. DOI: 10.3109/01942638.2012.715620.
6. Trahan, J. & Malouin, F. (2002). Intermittent intensive physiotherapy in children with cerebral palsy: a pilot study. *Developmental Medicine & Child Neurology*, 44: 233 – 239.
7. Gee, B.M., Lloyd, K., Devine, N. et al. (2015). Dosage Parameters in Pediatric Outcome Studies Reported in 9 Peer-Reviewed Occupational Therapy Journals from 2008 to 2014: A Content Analysis. *Rehabilitation Research and Practice*: 2016. DOI: 10.1155/2016/3580789.
8. Weindling, A.M., Cunningham, S.M., Glen, S.M. et al. (2007). Additional therapy for young children with spastic cerebral palsy: a randomised controlled trial. *Health Technology Assessment NHS R&D HTA Programme*; 2007: 11(16).
9. Steultjens, E.M.J., Dekker, J., Bouter, L.M. et al. (2003). Occupational therapy for children with cerebral palsy: a systematic review. *Clinical Rehabilitation*, 18:1 – 14. Accessed online at: https://www.researchgate.net/profile/Cornelia-Van-Den-Ende/publication/8885160_Occupational_therapy_for_children_with_cerebral_palsy_A_systematic_review/links/0912f5124ff361d269000000/Occupational-therapy-for-children-with-cerebral-palsy-A-systematic-review.pdf
10. Novak, I., McIntyre, S., Morgan, C. et al. (2013). A systematic review of interventions for children with cerebral palsy: state of the evidence. *Developmental Medicine & Child Neurology*, 55: 885-910. DOI: 10.1111/dmcn.12246. Accessed online at: <https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/dmcn.12246>
11. Dimitrijevic, L., Jakubi, B.J. (2005). The importance of early diagnosis and early physical treatment of cerebral palsy. *Medicine and Biology*, 12(3): 119-122. Accessed online at: https://www.researchgate.net/profile/Bosa-Jocic-Jakubi/publication/228490462_The_importance_of_early_diagnosis_and_early_physical_treatment_of_cerebral_palsy/links/550ee9cb0cf2752610a003ed/The-importance-of-early-diagnosis-and-early-physical-treatment-of-cerebral-palsy.pdf
12. Hersking, A., Greisen, G. & Nielsen, J.B. (2014). Early identification and intervention in cerebral palsy. *Developmental Medicine & Child Neurology*, 57: 29-36. DOI: 10.1111/dmcn.12531. Accessed online at: <https://onlinelibrary.wiley.com/doi/pdf/10.1111/dmcn.12531>
13. Lungu, C., Hirtz, D., Damiano, D. et al. (2016). Report of a workshop on research gaps in the treatment of cerebral palsy. *Neurology*, 87:1293 – 1298. Accessed online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5035982/pdf/NEUROLOGY2015708438.pdf>

8. LUMP SUMS VERSUS STRUCTURED SETTLEMENTS

8.1 ALTERNATIVE METHODS OF PAYMENT

Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ Case (CCT 20/17) [2017] ZACC 37 (31 October 2017)^[1]

- 8.1.1 This case concerns medical negligence at Chris Hani Baragwanath Hospital, Johannesburg on 19 November 2009 resulting in the child having cerebral palsy due to asphyxia during delivery. The plaintiff was the child's mother acting on behalf of the child. The defendant, the MEC for Health and Social Development in Gauteng conceded liability for the birth injury. All that was left for the court to determine was the quantum of damages to be paid to the plaintiff.
- 8.1.2 The MEC for Gauteng sought that rather than paying damages for future medical expenses as a lump sum, she would make an undertaking to pay service providers directly, within 30 days of the presentation of a written quotation for expenses as and when they might arise. The case was appealed up to the constitutional court because the defendant's case raised issues of constitutional importance in that it asked the court to develop the common law in respect of the payment of damages. The MEC for the Department of Health in the Eastern Cape Province, and the MEC for the Department of Health in the Western Cape were joined to the case as *amici curiae* (friends of the court), on the basis that they also had an interest in the court's determination due to pending litigation against them. They each had their own proposals of potential alternatives to the payment of damages as a lump sum.
- 8.1.3 The Constitutional Court dismissed the appeal by the defendant, and ordered the payment of damages to the plaintiff as a lump sum. The two judges who presided over the case, Froneman J and Jafta J both agreed that the appeal should be dismissed, however their reasoning for reaching this conclusion differed. The judges made some helpful commentary, which paved the way for the development of the law in future cases. The four key issues that the court examined were as follows:
- 8.1.4 The once-and-for-all rule
- (1) The once-and-for-all rule is a common law convention which requires that all damages flowing from a cause of action must be claimed in one court action. This is to prevent a plaintiff from making multiple claims against the same defendant arising from the same event. This rule means that damages for past harm and for future loss must be claimed within the same court action. In this case, the courts interpreted the common law rule to mean that:
 - (a) Damages due in law are to be awarded in money
 - (b) Damages may not be paid in periodic payments (instalments) as an alternative to being paid in a lump sum
 - (c) A defendant may not compensate a plaintiff by providing future medical services in the place of damages.
 - (2) Therefore, in order to allow damages to be paid in any of these ways rather than as a lump sum, the court would have to develop the common law. There are two possible justifications for developing the common law set out in the Constitution; if it conflicts with the Bill of Rights [s39(2) Constitution] or if it is in the interests of justice for the common law to be developed (s173 Constitution).

- (3) The court chose not to develop the common law in this case, because it found that the MEC for Gauteng had not put forward a sufficiently strong factual foundation for why the law should be changed. However, it did not rule out developments of the common law as a future possibility.

8.1.5 The public health care defence

- (1) This is an argument that was made by the MEC for Gauteng and was also raised by the MEC of the Eastern Cape as an *amicus curiae*. The argument was that instead of paying for future medical services rendered to the plaintiff in the private healthcare sector, the defendant should be allowed to provide these services directly to the plaintiff at a public hospital.
- (2) The court rejected this proposition. The court did not feel it was appropriate for it to develop the common law in this new direction, although it did recognise some of the benefits of doing so. For example, it recognised that in principle, providing medical services in the place of paying out damages would serve the purpose of compensation in a delictual claim that is, of placing the plaintiff in the position they would have been in if the wrong had not occurred. The court left the door open for this to happen in future cases.
- (3) Whilst the court did not accept the public healthcare defence, it accepted that the plaintiff would need to show that the damages claimed for private healthcare were reasonable. This would include demonstrating why it was reasonable to claim the costs of private healthcare, rather than public healthcare if the defendant had produced evidence that equivalent services of equal quality were available at a lesser cost. This is known as the *mitigation of health costs defence*. The court found that this defence was possible within the current ambit of the common law because it falls within the current law that a plaintiff must prove that the damages they are claiming are reasonable.
- (4) On 5 September 2019, the Minister of Health designated certain health care establishments to provide, in collaboration with each other, acute care, rehabilitation and palliative care for cerebral palsy patients at no cost to the patients.

8.1.6 Periodic payments

- (1) The MEC for Gauteng argued that instead of damages being paid in a lump sum, they could be made by way of instalments. Froneman J found that whilst there are isolated examples of courts ordering damages in periodic payments, this is not a concept which is recognised within the common law. Froneman J referred to sources in English law which declined to amend the common law in order to allow periodic payments, stating it was a matter better left for the legislature to decide upon.

- (2) The court recognised some of the potential benefits of periodic payments, such as the difficulty of making an accurate calculation when awarding a lump sum. At the heart of this is the difficulty in predicting, with accuracy, the life expectancy of a child with cerebral palsy. The court acknowledged that periodic payments could be less speculative than a lump sum, especially where there are top-up provisions (which allow the plaintiff to apply for more money should further need occur) and claw back provisions (which allow the defendant to regain the remainder of the funds in the event of the early death of the child).
- (3) At the same time, it acknowledged that periodic payments posed potential difficulties with regards to inflation, taxation, etc. Froneman J opined that the common law would need to be developed in order to allow periodic payments and declined to develop the law to allow periodic payments in this case, however he suggested that in a future case where a fully pleaded argument for periodic payments had been made, the common law might be developed in this direction.
- (4) The other judge presiding, Jafta J disagreed that periodic payments depart from the common law of South Africa. He argued that the fact that other common law jurisdictions demand a lump sum payment does not necessarily mean that the same should apply here. Jafta J cited examples such as judgment debts being paid in instalments in relation to execution on a person's home. He argued that the High Court has the inherent power to order periodic payments. However, he agreed with Froneman J that the MEC for Gauteng had not provided a persuasive factual basis for why the court should order periodic payments rather than a lump sum in this case.
- (5) Consequently, the court did not allow the defendant to pay damages as periodic payments, however this case laid the groundwork for the common law to change when a case with the right set of facts comes along.

8.1.7 The undertaking to pay defence

- (1) This was another argument put forward by the MEC for Gauteng, which was also raised by the MEC for the Eastern Cape. She argued that a claim for future medical expenses could be satisfied by an undertaking by the MEC to pay for medical expenses as and when they arose in the future. The MEC would undertake to pay invoices raised within 30 days. The payment would be made directly to the service provider. Froneman J felt that like periodic payments, this fell outside of the current possibilities of the common law. Jafta J disagreed, finding that this was simply an administratively different mechanism for payment of damages, rather than a different type of damages.
- (2) However, both judges agreed that it would not be appropriate to allow damages to be paid in this way on the facts of this case, because the defendant had not provided sufficient evidence to support their case. Therefore, like the other alternatives to a lump sum, this proposition was rejected by the court.

8.2 THE PUBLIC HEALTHCARE DEFENCE SUCCEEDS

MSM obo KBM v The Member of the Executive Council for Health, Gauteng Provincial Department (4314/15) [2019] ZAGPJHC 504 (18 December 2019)^[2]

- 8.2.1 This case concerns negligent conduct by staff at Leratong Hospital on 25 June 2012, during a birth, resulting in a child who is now severely disabled with cerebral palsy. The plaintiff was the child's mother, acting upon the child's behalf. The defendant made an out of court settlement conceding liability for the claim in 2017. Judgment on quantum was handed down on 18 December 2019.
- 8.2.2 The defendant sought to rely upon the public healthcare defence, by asking the court to provide for medical services to meet the child's future health needs to be given in the public health sector at Charlotte Maxeke Johannesburg Hospital (CMJH), instead of the payment of damages to cover these costs in the private sector. The argument was that she would be regarded as a "special patient" who would receive an equivalent level of service to that she would receive in the private sector. The hospital would also obtain recommended equipment and other items, including medication, through its procurement system. The child was already receiving treatment from the CMJH.
- 8.2.3 The defendant also asked the court to award damages in periodic payments rather than as a lump sum. It was acknowledged that not all of the services that the child required were available at CMJH and so regardless of the Court's decision on the public healthcare defence, the plaintiff would need to receive some of her damages in money.
- 8.2.4 The plaintiff opposed these requests, and instead asked the court to keep with the current position of the law, and award her damages as a lump sum. The plaintiff agreed to a "claw back" provision, which means that if the child dies earlier than the depletion of the damages allocated for her care, the remainder of the funds will be returned to the state.
- 8.2.5 The court therefore had to consider whether to develop the common law to grant the defendant's request for a public healthcare defence, and periodic payments. The court asked itself:

- (1) **Whether the medical services which the child required would be available at CMJH at the same or higher level, and at no or less cost than those available in the private sector?**

The court concluded that all of the medical procedures and therapies that the child will need are available and can be provided at CMJH. It found that CMJH is a specialised referral hospital with a high level of expertise amongst its medical staff. The Court visited the hospital to see the facilities and interact with the staff. It concluded that the medical and therapeutic care that the child would receive at CMJH was at least as good as that which she could receive in the private sector. It also noted the advantages of a multi-disciplinary environment, where all the child's needs could be met under the same roof, medical experts could communicate easily with one another and where appointments could be arranged concurrently to reduce travelling time. The Court also found that most of the equipment and other items that the child required could be procured through CMJH. Accordingly, the court found that the MEC had established that it would be unreasonable for the court to order the MEC to pay to the plaintiff the costs of future medical expenses sourced from the private sector.

(2) **Whether the MEC had established a need to develop the common law to encompass the public healthcare defence?**

The court considered whether, on the basis of s173 of the Constitution, the public healthcare defence is in the interests of justice. It found that the state's obligation to provide health services under s27(2) of the Constitution was a relevant consideration. The court linked the state's liability to pay out increasingly large awards in medical negligence cases, with the reduction of resources available to meet the health needs of the populace. Public hospitals are unable to turn away pregnant women who seek assistance in the delivery of their babies; they are therefore more vulnerable to medical negligence claims than the private sector. The resources expended on cerebral palsy claims reduce the funds which are available to put in place procedures to ensure that future medical negligence claims are avoided. This, it argued, highlighted a constitutional imperative to consider alternative means of making reparations in cases such as this.

The court found that the public healthcare defence provided a potential alternative form of reparation which met the plaintiff's need for redress, whilst at the same time acting as a measure to guard against the reduction of the state's resources. This was a reasonable and compelling basis on which to consider developing the common law. Such a development requires the balancing of interests between the individual and the collective interests of the broader public.

The court found that it was within its powers to change the judge-made rule that compensation must be paid in money, rather than being obligated to wait for parliament to pass new law on the matter.

It therefore concluded that in this particular case, the public healthcare defence was viable and, for the medical services, equipment and other items that CMJH was available to provide, the MEC was ordered to pay damages via services in kind, rather than money.

This decision changes the law to enable courts, in appropriate cases, to order the provision of healthcare services, equipment and other items to cerebral palsy children arising from medical negligence, in the place of damages.

However, this does not bind the courts to apply the public healthcare defence in future cases. Each court will have to make a decision based on the facts of that particular case. In this particular case, the defendant provided detailed evidence on the services which would be available to the child at CMJH. The court heard evidence from staff at CMJH regarding plans to formalise a system for provision of healthcare services to successful cerebral palsy litigants. The court stated that whether this defence can be used in the future will depend on if this plan to roll out similar treatment for future litigants is underpinned by proper resourcing.

It is important to note that the court limited this change to the law to medical negligence cases concerning cerebral palsy occasioned by medical negligence at a public hospital during birth. Therefore, it does not apply more widely to medical negligence claims, or to other forms of delictual claims.

(3) **If the common law “once and for all” rule should be developed to permit periodic payments instead of a lump sum payment?**

Some of the services and equipment that the child required were not available through CMJH. For example, the cost of a home carer, an adapted vehicle, and alterations to the home. The court found that the MEC had not provided sufficient evidence to support its argument for why the damages which were to be paid in money to cover these costs should be provided in periodic payments, rather than a lump sum. For example, it had not provided evidence of how actuarial calculations would be implicated by the payment of damages in instalments. The court left the door open for a future case to address the question of periodic payments, when a defendant presented a properly argued case on the issue^[29].

- 8.2.6 Leave to appeal the above judgment to the Supreme Court of Appeal was granted on 1 February 2021. Despite the public healthcare defence having succeeded in the above matter, an amount of R 13,759,747 was paid in a lump sum.

8.3 THE PUBLIC HEALTHCARE DEFENCE FAILS

Phakama Ngalonkulu v The Member of the Executive Council for Health of the Gauteng Division Government (217/2019) [2019] ZASCA 66 (17 June 2020)^[3]

- 8.3.1 This case relates to medical negligence at a birth at Chris Hani Baragwanath Hospital, resulting in a child being born with cerebral palsy. At the trial on liability, which concluded on 24 April 2017, the defendant was found to be 100% liable for the plaintiff's proven damages. The judgment summarised here relates to an appeal by the plaintiff against a decision by the court of first instance.

- 8.3.2 The decision which is under appeal is that the order confirming liability did not preclude the court from ordering the payment of damages in services and related items (that is, the public healthcare defence) or as periodic payments. The plaintiff's appeal contested this on the basis that the order on liability did preclude the defendant from relying on the public healthcare defence or paying damages in periodic payments. The plaintiff's appeal was successful. This judgment therefore confirms that the defendant was precluded from paying damages as per the public healthcare defence or as periodic payments.

8.3.3 Order confirming liability

- (1) The relevant section of the order confirming liability dated 24 April 2017 in the Gauteng High Court is as follows:

The defendant *shall* pay to the Plaintiff 100% (one hundred per cent) of her proven damages in her representative capacity for and on behalf of her minor child, Endinayo Ngalonkulu (from now on referred to as “Endinayo”) flowing from the neurological injury sustained by Endinayo on or about the 12th of September 2006 and the resultant cerebral palsy which Endinayo suffers from and its *sequelae*.

The Defendant shall pay the Plaintiff's costs of suit, such costs to include the following ...

- (2) The order then set out detailed provisions regarding the payment of costs, such as in respect of the costs of experts, and the obligation to pay interest on costs.

8.3.4 Amendment of defendant's plea to include the public healthcare defence and periodic payments

- (1) On 17 January 2019, 3 weeks before the trial on quantum was due to take place, the defendant amended their plea, seeking to rely upon the public healthcare defence, or alternatively seeking to pay the damages as periodic payments. The defendant asked the High Court to develop the common law in this regard in the interests of justice (s173 of the Constitution).
- (2) The High Court separated this issue from the trial on quantum, finding in favour of the defendant, and making the following order:
 - (a) The terms of the order of Moshidi J, dated 24 April 2017 do not preclude this Court from ordering that the defendant renders services and related items instead of paying to the plaintiff an amount of money.
 - (b) S66 of the [Public Finance Management Act 1 of 1999] (PFMA)] does not preclude this court from making orders that the state renders services and medical and related items in the future, or pay the claim in instalments in the future, as pleaded by the defendant in paragraphs 4A.6 to 4A.18, and 4A.19 to 4A.36.
 - (c) [Regulation] 8.2.3 of the Treasury Regulations, promulgated under the PFMA does not preclude this court from making orders that the state renders services and medical and related items in the future, or pay the claim in instalments in the future, as pleaded by the defendant in paragraphs 4A.6 to 4A.18, and 4A.19 to 4A. 36.(...)
- (3) The High Court reasoned this decision by finding that the drafting of the order on liability did not prevent the issues of the public healthcare defence and periodic payments from being raised. The High Court found that there was:

An unjustified fixation on the words "to pay". This was simply loose language for an order that the respondent was to compensate the appellant for her damages, which were yet to be determined.

[Paraphrased by the Supreme Court of Appeal]
- (4) Consequently, the High Court found that it was open to the quantum judge to consider extending the common law in order that damages could be payable as per the public healthcare defence or periodic payments.

8.3.5 The plaintiff's appeal

- (1) The plaintiff appealed this decision on the basis that neither party when they agreed to the draft order, envisaged damages being in any other manner than a lump sum payment. The plaintiff argued that this was evidenced by the wording of the draft order, but also the context in which it was drafted. At the time that order was sealed, Moshidi J had not been notified of the intention of the defendant to ask that he develop the common law in favour of the public healthcare defence or periodic payments.

8.3.6 The appeal decision

- (1) The Supreme Court of Appeal (SCA) agreed with the plaintiff that “pay” meant pay in money. The SCA noted that the same word “pay” was also used for the wording of the cost order. Accordingly, it did not allow for any other interpretation than a payment in money. The court highlighted that the order confirming liability was not a standard order, it had been carefully and particularly drafted by parties, with deliberate consideration of its terms. This gave the appellate court the impression that the amendment to the defendant's plea to include the public healthcare defence and periodic payments was raised opportunistically.
- (2) The SCA concluded that consideration of the words in the order on liability, in their ordinary grammatical sense, meant payment of a lump sum of money. The SCA also commented that at the time that the High Court delivered its decision on the amendment to the plea, the final judgment in the *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ* case had not yet been delivered. This meant that the judge in the High Court had not had the benefit of considering the judgment of the constitutional court in *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ* when it made its order.
- (3) The SCA suggested that the bill that was currently before parliament would be the best way to deal with the issues of the public healthcare defence and periodic payments. Accordingly, the SCA granted the appeal in favour of the plaintiff.
- (4) The SCA noted that, as per *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ*, that there was nothing to prevent the respondent from proving, at the quantum trial, that the necessary medical services could be obtained in the public sector at a lesser cost than in the private sector.

8.4 THE PUBLIC HEALTHCARE DEFENCE FAILS AGAIN

PH (obo SH) v MEC for Health for the Province of Kwazulu-Natal Case No. 11198/2016 [2020] ZAKZDHC 38 (31 August 2020)^[4]

8.4.1 This is another case concerning negligent medical treatment during childbirth, resulting in the child having cerebral palsy. The child was born on 14 July 2013. The plaintiff was the child's mother, acting on their behalf. The MEC conceded liability on 23 April 2018. This judgment addresses the defendant's notice of intention to rely upon the public healthcare defence, the plaintiff's objection to this, and the plaintiff's application for an interim payment. It was handed down on 31 August 2020.

8.4.2 Interim payment

An interim payment is a payment sought by the plaintiff to cover the medical and other costs which are incurred whilst proceedings are ongoing. This application was lodged after the trial on quantum was delayed due to the Covid-19 Pandemic. The defendant opposed the application for interim payment on the basis that it intended to rely upon the public healthcare defence, which, if successful, would mean that damages were awarded in kind, rather than in money. The court disagreed with the defendant that this was a reason for opposing an interim payment. It found that the plaintiff had a right in law to seek interim payment. This right could not be suspended pending a decision on whether the public healthcare defence could apply to the case. The court awarded an interim payment for medical expenses, but not for other heads of loss, which were awaiting determination at trial.

8.4.3 Public healthcare defence

- (1) The MEC argued that the public healthcare defence should apply, and that the child could receive medical services at King Edward VIII Hospital in eThekweni with support from other surrounding hospitals as required.
- (2) The court rejected the public healthcare defence in this case. It gave several reasons for this. The first was because the order conceding liability made on 23 April 2018 stated:

The defendant is directed to pay to the Plaintiff...100% (one hundred percent) of the damages that she may prove that [the child] has suffered or will in future suffer.
- (3) In *Phakama Ngalonkulu v The Member of the Executive Council for Health of the Gauteng Division Government* the SCA held that such an order precluded a court from ordering that the defendant renders services and equipment instead of paying the damages in money. The judge found that if the defendant had intended to raise the public healthcare defence, she should have raised this point at the time that the order on liability was made in 2018, rather than wait until just before the trial on quantum was due to take place in 2020.

- (4) The court also commented that no evidence had been produced which linked the increase of cerebral palsy cases, with the burden on resources placed on health systems by increased numbers of cerebral palsy cases. Mngadi J described the public healthcare defence as a "drastic" change to the common law, opining that "it is virtually unheard of that the wrongdoer decides what he or she will do rather than paying the injured party monetary compensation". Mngadi J suggested that if health systems were under increased pressure as the defendant had argued, this was a matter upon which government should pass legislation.
- (5) The court also criticised the lack of specificity of the roll-out plan for centres of excellence to treat cerebral palsy cases: he found that there was no plan with timelines and confirmation of budget allocation that could be considered, and the defendant had not provided sufficient information in respect of the facilities that would be available.
- (6) The court found that the public healthcare defence put cerebral palsy plaintiffs in the same position as patients who were not victims of negligence, and moreover that it discriminated against other users of the public healthcare system. Mngadi J also suggested that the defence would not provide a sufficient deterrent to avoid future birth injury claims.
- (7) Finally, the court found that developing the common law to permit the public healthcare defence would interfere with the plaintiff's rights enshrined in the Bill of Rights which are currently protected by the current status of the common law, such as equality before the law, dignity, bodily and psychological integrity, and the right to property.

8.4.4 Periodic payments

- (1) The MEC sought to amend her case to ask that damages payable for loss of earnings or reduction in earning capacity would be payable by way of periodic payments at the time that the minor child would probably, had it not been for the injury, have earned the income in question. The MEC also argued that if the public healthcare defence is rejected, payment of damages for medical expenses should be paid as periodic payments with claw-back and top-up provisions in place. The court also refused this application, though it did not give detailed reasons for this.

8.5 IMPORTANCE OF WORDING

TN obo BN v The Member of the Executive Council for Health, Eastern Cape (36/2017) [2020] ZAECBHC 24 (17 November 2020)^[5]

- 8.5.1 This case concerns medical negligence at Cecilia Makiwane Hospital during a birth, leading to a child being born with cerebral palsy. Liability for damages was conceded on 14 November 2018. Like *PH (obo SH)* summarised above, this judgment concerns the interpretation of the order conceding liability. In this case, the order stated that:
- The defendant is liable for all such damages as the plaintiff in her representative capacity may prove arising from the negligent treatment, as more fully set out in the Particulars of Claim, of her during the labour and birth of her child B[...] who was born on 22 December 2011.
- 8.5.2 After the order was granted, the defendant applied to court to amend their case to ask that it rely upon the defences raised in the *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ* case. They sought to rely upon the public healthcare defence that is, that they would provide the medical services that the plaintiff requires in the public care sector free of charge at a reasonable or appropriately high standard, rather than pay damages as a lump sum. The defendant proposed that if they could not provide the medical services that the plaintiff requires, they would undertake to pay for those outstanding services in the private sector that is, they also sought to rely upon the undertaking to pay defence.
- 8.5.3 The plaintiff opposed this amendment to the defendant's plea, arguing that the wording of the order made it clear that the damages must be paid in money. The court found in favour of the defendant.
- 8.5.4 The plaintiff's argument was that the court order of 14 November 2018 had already made it clear that the defendant was to pay her damages as lump sum, as is assumed under common law. The plaintiff sought to rely upon the principle of *res judicata* which holds that a decision can only be made once by the court in respect of the same issue, on the same ground. The plaintiff argued that the order on liability was made after the *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ* judgment was given, yet the defendant did not make it clear that he intended to rely upon the public healthcare defences.
- 8.5.5 The court found that the principle of *res judicata* did not apply because the order dealt with merits (liability) only. The issue of quantum was postponed to a later date. The court found that the court order confirming liability did nothing more than to hold the defendant liable for the plaintiff's proven damages. It did not deal with the manner in which liability was to be discharged, nor did it mention payment as a manner of discharging the liability.
- 8.5.6 The court distinguished this case from the case of *Phakama Ngalonkulu v The Member of the Executive Council for Health of the Gauteng Division Government (217/2019) [2019] ZASCA 66 (17 June 2020)* on the basis that in that case, the order stated:
- shall **pay** the plaintiff 100% of her proven or agreed damages.

- 8.5.7 In this case, the order makes no reference to “payment” of damages. This also distinguishes this case from the case of *PH (obo SH) v MEC for Health for the Province of Kwazulu-Natal*. The court held that the order specifically addressed liability, and therefore the order did not have the power to make binding decisions in respect of quantum. Therefore, in quantum proceedings, in the course of the plaintiff trying to prove her damages, it remained open to the defendant to challenge such proof by way of the defences raised in the *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ* case.
- 8.5.8 The court rejected the proposition raised by the plaintiff that the words “quantum” and “damages” signify compensation of a lump sum of monetary damages. It found that the judgement in the *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ* case had recognised that other forms of material compensation could be considered quantum, in an appropriately pleaded case.
- 8.5.9 The court highlighted that the general principle is that either side is permitted to apply to amend their pleadings before judgment and this will be allowed unless the court finds the party to be acting in bad faith. This is to ensure that the court and the parties can fairly hear and resolve the dispute between parties. The court found that by seeking to preclude the defendant from raising the public healthcare defences, the plaintiff was seeking to rely on the common law, and not upon the principles of fairness enshrined in the Constitution. The court found this approach to be incorrect on the basis that the Bill of Rights applies to all law, and binds the judiciary. It was also procedurally unfair.
- 8.5.10 The court noted that both the plaintiff and the defendant raised rights in the Bill of Rights, as well as other sections of the Constitution. If a proper case is made out by the defendant that the common law needs to be developed in line with the Bill of Rights, the court was obliged to do so.
- 8.5.11 The outcome of this judgment was that the defendant was permitted to amend their plea to include the *Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ* defences. This case decision does not confirm whether these defences were pleaded successfully; that will be determined at the hearing on quantum.
- 8.5.12 Comparing this case decision with the decision in *PH (obo SH) v MEC for Health for the Province of Kwazulu-Natal* highlights two important things:
- (1) The importance of the wording of the order confirming liability.
 - (2) The varying attitudes adopted by judges in relation to the development of the once-and-for-all-rule in cerebral palsy cases.

8.6 STATE LIABILITY AMENDMENT BILL

- 8.6.1 The State Liability Amendment Bill (B16-2018)^[6] was introduced into the National Assembly on 30 May 2018. The Bill seeks to amend the State Liability Act, 1957, so as to provide for structured settlements for the satisfaction of claims against the State as a result of wrongful medical treatment of persons by servants of the State; and to provide for matters connected therewith.
- 8.6.2 The Memorandum on the Objects of the State Liability Amendment Bill, 2018, states that the Bill is promoted in the interim pending the outcome of the larger investigation into medico-legal claims by the South Africa Law Reform Commission.
- 8.6.3 The Bill seeks to introduce a Section 2A into the State Liability Act as follows:
- 2A. (1) A court must, in a successful claim against the State resulting from wrongful medical treatment that exceeds the amount of R1 million, order that compensation be paid to the creditor in terms of a structured settlement which may provide for—
- (a) past expenses and damages;
 - (b) necessary immediate expenses;
 - (c) the cost of assistive technology or other aids and appliances;
 - (d) general damages for pain and suffering and loss of amenities of life; and
 - (e) periodic payments for future costs referred to in subsection (2).
- (2) (a) Where the State is liable to pay for the cost of future care, future medical treatment and future loss of earnings of an injured party, the court must, subject to subsection (4), order that compensation for the said costs be paid—
- (i) by way of periodic payments at such intervals, which may not be less often than once a year;
 - (ii) only during the lifetime of the injured party concerned; and
 - (iii) on such terms as the court considers necessary.
- (b) The court may—
- (i) in lieu of the amount; or
 - (ii) at a reduced amount, of compensation that would have been paid for the future medical treatment of the injured party, order the State to provide such treatment to the injured party at a public health establishment.
- (c) Where the State is ordered to provide future medical treatment at a public health establishment, the public health establishment concerned must be compliant with the norms and standards as determined by the Office of Health Standards Compliance established in terms of section 77 of the National Health Act, 2003 (Act No. 61 of 2003).
- (d) In circumstances where future medical treatment has to be delivered in a private health establishment, the liability of the State shall be limited to the potential costs that would be incurred if such care was provided in a public health establishment.
- (3) The amount payable by way of periodic payments must increase annually in accordance with the average of the consumer price index, as published from time to time by Statistics South Africa established in terms of section 4 of the Statistics Act, 1999 (Act No. 6 of 1999), for the immediately preceding period of 12 months.
- (4) The State or creditor referred to in subsection (1) may apply to the court for a variation of the frequency, or amount, of periodic payments, or for a variation of both the frequency and amount of periodic payments, should a substantial change in the condition or the circumstances of the injured party necessitate such a variation.

8.6.4 Public hearings were held on 31 October 2018. According to National Assembly Rule 333 (2), the State Liability Amendment Bill automatically lapsed when Parliament was dissolved on 7 May 2019. The State Liability Amendment Bill was revived by the National Assembly on 29 October 2019.

8.6.5 The Portfolio Committee for Justice and Correctional Services convened a meeting on 26 January 2021 in which the State Liability Amendment Bill was discussed^[7]:

Committee resolution

The Chairperson said that he liked Adv Makhosi's comment that the SALRC has to deal holistically with the matter. As the Committee, it does not place much weight on summits, but rather emphasises the impact on the ground. The Committee did not understand why a Bill is being brought now when the matter is still being holistically investigated. As such, he suggested to the Committee that the Bill be referred back to the Executive so that proper consultations are conducted, not only with the Departments of Health and Justice but with National Treasury as well. He asked about the urgency of dealing with this matter in a piecemeal way when it could have a holistic and impactful solution that could meaningfully change the lives of people for the better. He asked that SALRC bring a detailed implementation plan before it suggests a Bill and not merely information from summits or conferences. This would ensure that the Committee has sufficient information and whether the change will actually benefit the people. When the Executive approaches Parliament, it should present something that Parliament can properly engage with, and not merely approach Parliament to pass Bills as a stop-gap measure, without assurances that it would benefit the people. The Committee cannot process a Bill which has not been fully processed without all the available information before the decision makers. This was his summary as Chairperson and he asked if the Members agreed.

The Committee agreed.

8.6.6 The structured settlement envisaged by the State Liability Amendment Bill essentially consists of:

- (1) A cash payment such as for general damages;
- (2) For future health care treatment that can be provided at a compliant public health care establishment; that portion of the claim will be payment in kind. This is the public health care defence raised successfully in *MSM obo KBM v The Member of the Executive Council for Health, Gauteng Provincial Department* but which will be the subject of a Supreme Court of Appeal hearing.
- (3) For future treatment that cannot be provided in a public health care establishment such as the cost of care giving; that portion of the claim will be made on the basis of periodic payments as opposed to a lump sum.

8.6.7 Since the bulk of the claim will be in respect of item (3); it is necessary to consider the advantages and disadvantages of lump sums; and in turn the advantages and disadvantages of periodic payments.

8.7 ADVANTAGES AND DISADVANTAGES OF LUMP SUMS

8.7.1 Advantages

- (1) A lump sum completely disposes of a matter and in so doing avoids continued administration costs such as making and updating payments; ongoing medical examinations and establishing proof of existence^[8].
- (2) Lump sums avoid the State being exposed to “long tail” risks such as the claimant living much longer than expected. Ongoing advances in medicine may result in longer life expectancies for conditions such as cerebral palsy and could expose the State to significant long-tail risk.
- (3) Lump sum awards allow the claimant a degree of flexibility to choose what to do with the capital sum^[9].
- (4) The lump sum approach readily accommodates reductions in settlements for contributory negligence. This is potentially impossible under a periodic payment regime unless for example care costs were to be made exempt and damages under other heads of damage could be used to fund the shortfall.
- (5) Lump sums fund litigation^[8]. The anticipation of a successful financial outcome creates the incentive for many legal practitioners to take the risk while attempting to extract compensation from the Department of Health.

8.7.2 Disadvantages

- (1) Given the number of uncertainties inherent in estimating a lump sum such as life expectancy, interest rates and inflation rates; a lump sum award will inevitably mean that the award will either be too high or too low^[10]. As noted by Lord Scarman in *Lim Poh Choo v Camden & Islington Area Health Authority*^[11]:
The award is final; it is not susceptible to review as the future unfolds, substituting fact for estimate. Knowledge of the future being denied to mankind, so much of the award as is to be attribute to future loss and suffering – in many cases the major part of the award – will almost surely be wrong. There is really only one certainty: - the future will prove the award to be either too high or too low.
- (2) Lump sums do not accurately account for future events such as the deterioration or improvement in a plaintiff’s condition or general economic conditions^[10].
- (3) The State bears the risk of early death and a windfall to the estate of the deceased. If there is no reversionary trust in place as discussed in Section 9, then the State risks expending large lump sum payments if the claimant dies earlier than expected.
- (4) The plaintiff bears the risk of low investment returns and high inflation rates^[10].
- (5) Litigation around issues such as predicting life expectancy is costly and predicting life expectancy for an individual will never be accurate.
- (6) There is the risk of the taxpayer paying “double compensation” where lump sum awards are exhausted and the injured party has to fall back on the public health care system for medical treatment.

- (7) The Court does not look beyond the lump sum awarded to the spending of the lump sum. How the lump sum is spent is largely irrelevant to the exercise of determining the appropriate lump sum.

8.8 ADVANTAGES AND DISADVANTAGES OF PERIODIC PAYMENTS

8.8.1 Advantages

- (1) Removes the need for the Court to adjudicate on imponderables such as the plaintiff's future life expectancy. The current adversarial legal system encourages a conflict of evidence with both parties seeking the best possible outcome. The Court is required to determine the level of future damages by seeking to resolve conflicting expert medical and other evidence such as economic evidence. The Court is faced with the almost impossible task of providing "fair and just compensation" where life expectancy is uncertain^[10].
- (2) Removes the risk faced by the plaintiff with respect to investment returns and inflation rates. Periodic payment orders remove investment advisor costs and the costs of a trustee or curator which can be substantial^[10].
- (3) In the event of early death, there is no financial windfall to the estate of the deceased^[10].
- (4) Periodic payments provide a life time guarantee and the plaintiff has peace of mind that their capital will not be exhausted.
- (5) Periodic payments can be made non-taxable in the hands of the plaintiff.

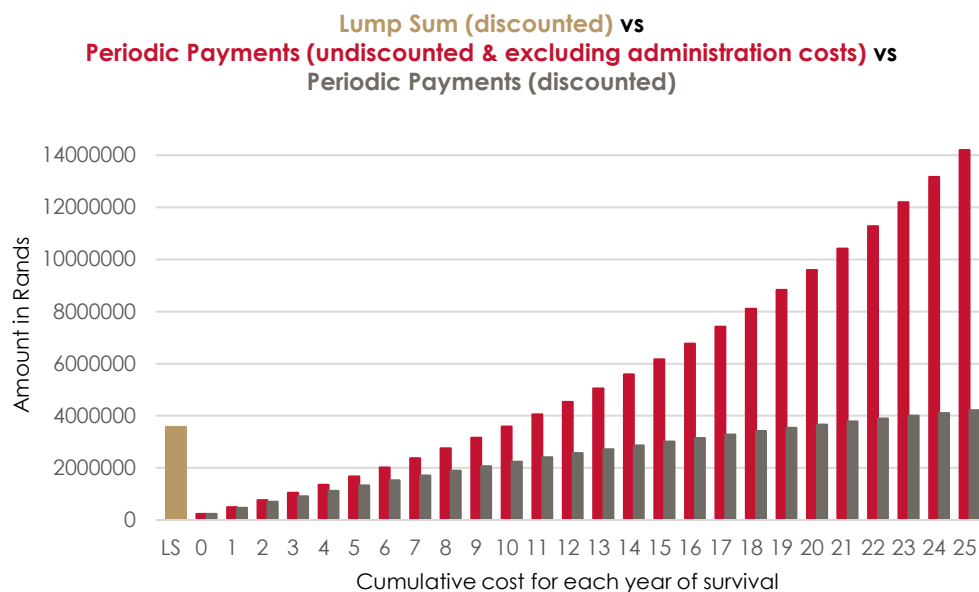
8.8.2 Disadvantages

- (1) Periodic payments cannot make provision for unforeseen capital expenditure needs.
- (2) Periodic payments result in the continued reliance of the plaintiff on the wrongdoer^[10].
- (3) The cost of care and medical inflation are difficult to predict^[10]. It is possible that significant additional costs will arise as the parents of children benefiting become unable to care for their children and nursing home care becomes necessary. Further, a certain number of children are in wheelchairs and other children may have health concerns that lead to health complications which would create unexpected additional nursing care and medical expenses. The State would not be exposed to that risk with a lump sum as the lump sum is generally calculated without taking into account the deterioration or improvement of a medical condition. Under a periodic payment system, the State would be exposed to unforeseen medical expenses provided the system allows for review and adjustment.
- (4) Cost neutrality. The use of periodic payments does not reduce the expected liability to the State.

- (5) Periodic payments will build over time and ultimately annual payments will increase to meaningful levels^[12]. The burden of administering these claims will add a significant cost element in addition to the original claim amounts. Before implementing a system such as the State Liability Amendment Bill, it is critical to obtain a proper estimate of administrative costs.
- (6) If periodic payments are based on a lump sum awarded by the Court or negotiated between the legal representatives then they retain all the difficulties of calculation and problems of proof associated with the present system.
- (7) Accounting for the liability arising out of claims is an extremely complex exercise and one that is the subject of ongoing debate among insurance and reinsurance actuaries^[13].

8.8.3 Set out in Figure 17 below is a comparison of a lump sum, periodic payments that have not been discounted and periodic payments that have been discounted.

Figure 17: Comparison of forms of payment of compensation



8.8.4 The **lump sum** is indicated in **gold**. It has been calculated on the basis that a caregiver would be required at a cost of R 240,000 per annum for life. The injured party is assumed to be a male child aged 10 years old with a life expectancy of an additional 20 years. Future caregiving costs have been inflated at an assumed 6% per annum compound and have been discounted at 8.65% per annum compound (a net discount rate of 2.5% per annum compound is therefore assumed).

- 8.8.5 The **red** bars illustrate the cumulative total **undiscounted periodic payment** for a caregiver should the claimant survive a further 0, 1, 2, 3,...,25 years. Although life expectancy is estimated at 20 years the claimant could die sooner or live longer. The graph illustrates this by indicating the amount payable should the claimant die 0 to 25 years after the date of trial (though it could be longer). The **red** bars illustrate the cumulative expenditure of the State should they not hold reserves and pay the cost of a caregiver on a pay-as-you-go basis. The cumulative amount paid under the periodic payment system exceeds the lump sum after around 11 years since periodic payments are undiscounted whilst the lump sum award already includes an allowance for discounting.
- 8.8.6 The **grey** bars show the **cumulative present value of the periodic payments** by duration at a net discount rate of 2.5% per annum compound. The difference between the **gold** bar and the **grey** bar illustrates the amount the State would lose if the child died at various durations prior to 20 years. The afore-mentioned risk falls away with a reversionary trust however.

8.9 REFERENCES

1. Member of the Executive Council (MEC) for Health and Social Development, Gauteng v Member of the Executive Council (MEC) for Health and Social Development, Gauteng v DZ obo WZ 2017 (1) SA 335 (CC)
2. MSM obo KBM v The Member of the Executive Council for Health, Gauteng Provincial Department 2019 (2) All SA 177 (GJ)
3. Phakama Ngalonkulu v The Member of the Executive Council for Health of the Gauteng Division Government 2020 SA (SCA)
4. PH (obo SH) v MEC for Health for the Province of Kwazulu-Natal 2020 (1) SA 530 (KZD)
5. N obo BN v The Member of the Executive Council for Health, Eastern Cape 2020 (1) All SA 561 (ECB)
6. South Africa. State Liability Amendment Bill, No. B16-2018, 2018.
7. South Africa. Parliament. Committee on Justice and Correctional Services. 2021. *SAHRC vacancies; State Liability Amendment Bill: briefing*.
8. Road Accident Fund Commission Report 2002.
9. The Society of Actuaries in Ireland. 2010. *Medical Negligence and Periodic Payments*. Working Group.
10. Law Reform Commission of Hong Kong. 2018. *Periodical Payments for Future Pecuniary Loss in Personal Injury Cases*. Periodical Payments for Future Pecuniary Loss in Personal Injury Cases Sub-committee.
11. Lim Poh Choo v Camden & Islington Area Health Authority [1979] UKHL 1 (21 June 1979)
12. Institute and Faculty of Actuaries. 2010. *Periodic Payment Orders*. GIRO Working Party.
13. Institute and Faculty of Actuaries. 2000. *Structured Settlements*. Working Party. Available: https://www.actuaries.org.uk/system/files/documents/pdf/stuct_sets_wp.pdf

9. LIFE EXPECTANCY AND REVERSIONARY TRUSTS

9.1 LIFE EXPECTANCY

- 9.1.1 The expected lifetime cost of care for persons with severe cerebral palsy (CP) is substantial and the likely duration of survival is an essential determinant of litigation awards^[1].
- 9.1.2 There is a large body of published research on survival of children with CP in high-income countries including Australia^[2], Canada^[3], Japan^[4], Sweden^[5], the United Kingdom^[6] and the United States of America (California)^[7], [8]. The survival of children with CP in these countries proves to be remarkably similar. There are no recent published data on survival of children with CP in South Africa. The normal general population life expectancy in South Africa is lower than that in high-income countries and it is usually assumed that life expectancy of children with CP in South Africa is lower than that documented in high-income countries.
- 9.1.3 In South African litigation it has become common to compute lifetime cost of care awards for children with CP on the assumption that proportionate reductions from normal life expectancy indicated by published studies in high-income countries can be applied to the normal South African general population figure. While this approach has intuitive appeal, its validity has not yet been confirmed with empirical data.
- 9.1.4 In a forthcoming edition of the South African Medical Journal (co-authored with Dr Jordan Brooks and Dr Robert Campbell), we present a study that appears to be the first to report on and examine empirical data on patterns of gross motor abilities and disabilities and survival among South African children with CP. The practical goals of that research are twofold. The first is to provide a framework for the development of a more comprehensive national CP registry, modeled after those in high-income countries, that systematically links functional assessments in childhood with long-term health outcomes. The second is to serve the immediate need for empirical data to guide the determination of fair cost of care awards in South African litigation settings.
- 9.1.5 There is no standardized system for monitoring the prevalence of CP in South Africa. For the present study, data was collected on individuals with CP where it is known that litigation proceedings have been instituted. To identify all children with CP and keep a CP register valid, second opinion about classification of CP/CP subtypes must be available.
- 9.1.6 We collected data on mortality and functional status for 339 CP children where claims for medical negligence have been instituted on their behalf. Motor disabilities were classified according to the five-level Gross Motor Function Classification System. Children who were unable to walk unaided were further classified according to more basic motor skills including the ability to lift their heads or chests in the prone position, rolling, and sitting. Mortality rates were calculated and survival curves were estimated using the Kaplan-Meier method.

- 9.1.7 No deaths were observed among 119 children in GMFCS levels I-IV. Among the 220 children in GMFCS V there were 20 observed deaths. The proportions surviving to ages 10 and 15 were 85% (s.e. 5%) and 55% (s.e. 11%), respectively. The former is comparable to what has been reported for children in California and Sweden, but the survival to age 15 is lower. Among 82 children who did not lift their heads in the prone position, there were 11 observed deaths for a mortality rate of 48.5 (95% CI 24.2-86.9) deaths per 1,000 person-years. Among 72 children who lifted their heads but not their chests there were 6 observed deaths for a mortality rate of 33.5 (95% CI 12.3-73.0) deaths per 1,000 person-years. These mortality rates are 22% and 15% higher than the corresponding figures documented for children with comparable abilities and disabilities in California.
- 9.1.8 By nature of the data collection in the present study our results are directly relevant to the estimation of life expectancy of South African children with CP who are involved in litigation. As noted, these indicate that mortality rates for children with very severe CP are about 20% higher than those documented for children with comparably severe disabilities in the United States. This is broadly consistent with a 10-15% reduction from the U.S.-based life expectancy estimates. It is notable that the proportionate difference between the normal general population life expectancies in the two countries is also roughly 10-15%, which adds empirical support for the proportionate approach to life expectancy estimation that has been used in South African litigation matters over the past decade.
- 9.1.9 Given the immediate needs associated with a growing number of CP litigation matters, there is a clear need for the Department of Health to create a centralized database for monitoring CP claimants against the public sector so as to accurately assess life expectancy. The methods in this paper can be easily extended to larger data sets and longer follow-up times. The growth of the database would require cooperation of the Department of Health with the attorneys handling the litigation volumes. Information on gross motor skills should necessarily be included in the database, and ideally more extensive information on factors that are known to be associated with survival should also be collected. Following this, it may then be reasonable to investigate survival rates by province or level of service provision.
- 9.1.10 Naturally two possibilities arise once a life expectancy has been decided on for a particular case:
- (1) A child will outlive the predicted life expectancy in which case compensation was inadequate.
 - (2) A child may die shortly after the finalization of an award leaving the child's estate with a significant surplus. This was highlighted in the recent matter of *Wilsnach N.O. v Motaung and Others* [9]. In that particular CP matter, the child died on 28 April 2018, following the settlement of the claim on 12 May 2017 for R 21,000,000. A dispute then arose concerning who was the rightful parent of the child.

9.2 THE REVERSIONARY TRUST

ADIB v The MEC for Health and Social Development Western Cape Provincial Government^[10]

9.2.1 This is a summary of the judgment dated 7 September 2016 in this matter focussing on the issue of payment of damages by way of a reversionary trust. The case relates to a child (IDT) who developed cerebral palsy shortly after his birth on 12 January 2009, due to negligent medical treatment which failed to diagnose jaundice timeously.

9.2.2 The defendant conceded liability for the claim in July 2012. The judgment dated 7 September 2016 addresses the quantum of the claim, and the manner in which damages are to be paid out. There are two supplementary judgments dated 1 December 2016 and 1 March 2017. These deal with actuarial calculations, and costs respectively, but do not contribute to the debate concerning reversionary trusts.

9.2.3 Establishment of a trust

(1) The plaintiff and defendant were able to agree that a trust should be established to receive IDT's damages, which would be managed by a corporate trustee. The extent of their agreement was as follows:

The parties agree that IDT's award should be paid to a trust to be administered for his benefit. The parties also agree that the amount in respect of future medical expenses should be ring-fenced ('the medical fund') and that in certain circumstances the defendant should be obliged to supplement the medical fund and that in certain circumstances the defendant should be entitled to a refund from the medical fund (I refer to these as the top-up and claw-back provisions). The terms of these provisions and certain other aspects of the trust deed are in dispute.

(2) A trust with top-up and clawback provisions is referred to as a "reversionary trust". The parties agreed to this notion in principle, but disagreed on certain details in respect of how these provisions should operate.

9.2.4 Plaintiff's proposal

(1) The plaintiff proposed that there should be a ring-fenced "medical fund" which would comprise damages for future medical expenses (the gross medical fund). From this, any legal costs remaining, once recoverable costs had been obtained from the defendant, would be deducted. These deductions would be pro-rata across all of the heads of claim. Once the deductions had taken place, this would be known as the net medical fund.

(2) The plaintiff proposed that top-up provisions to this fund would only apply if IDT survived beyond his expected death age, as determined by the court's findings on life expectancy, and if, by that stage, the net medical fund, had been depleted. If the fund had been depleted, the corporate trustee would issue a certificate of depletion. This could be issued up to 18 months prior to the expected death age, but no payment would be required until after the expected death age arrived.

- (3) The plaintiff advocated for provision for mediation or arbitration if the defendant disputes the need for a top-up. The plaintiff proposed that the clawback provision would become operative on termination of the trust, which would either be upon IDT's death and settlement of all of the trust's liabilities, or on such other date as the court may direct. Upon termination, any residue of the medical fund, together with any equipment acquired from the medical fund, will be transferred to the defendant.

9.2.5 Defendant's proposal

- (1) The defendant's proposal was clarified following oral submissions by their counsel which contradicted their written submissions. Their final position was that the ringfenced medical fund would be the net medical fund. Unlike the plaintiff's proposal, the defendant proposed that the top-up provisions would apply immediately and not only in respect of the period for which IDT may survive beyond his expected date of death.
- (2) Once the fund had been exhausted top-up provisions would become operative subject to the condition that the amount equal to the gross medical fund had actually been spent on medical costs. This would be applied using the principle of "Rand nominalism", which would consider the price in Rand at the date of expenditure, rather than the equivalent value of that amount as at the date of judgment.
- (3) The court commented that the defendant's proposals were actually more favourable to the plaintiff than the plaintiff's own submissions in that they allowed the top-up provisions to come into play before IDT's estimated date of death. Moreover, due to the use of rand nominalism, and the rising cost of medical expenses, it was almost certain that an amount equivalent to the gross medical fund would have been expended before IDT's expected date of death.
- (4) The defendant asked the court to develop the common law to allow for the clawback provisions in medical negligence cases against an organ of state, where there are substantial damages claims which are largely dependent upon the injured person's life expectancy, and where there is a substantial risk that the awarded damages will not be used for their intended purpose.
- (5) The defendant argued that the reason that the common law would need to be developed is that these provisions conflict with the once-and-for-all rule, which has been interpreted to mean that a person suing for damages must claim all the damages they seek in one set of legal proceedings, and that damages must be paid as a lump sum.
- (6) The defendant argued that development of the common law was justified by S8(2) and S39 of the Constitution, on the basis of the right, enshrined in the Bill of Rights, of every person, and of every child, to access healthcare. The defendant argued that the burden placed on the public healthcare system by lump sums paid out in medical negligence claims hampered these rights.

9.2.6 The Court's decision on reversionary trusts

- (1) The court gave the view that it was not necessary for it to express a final view on whether and to what extent the common law should be developed. It found that the proposal of extending the common law to provide for a lump sum with top-up and clawback provisions “was not justified by its constitutional premise”.
- (2) A trust with top-up and clawback provisions would not relieve the burden upon the public health system of having to make a lump sum payment, nor would it relieve the parties of the cost of a quantum trial.
- (3) The court acknowledged that the substitution of a lump-sum award with an obligation to meet future medical expenses as they arise would achieve the objective of easing the burden upon the public health system. However, it opined that such a radical change in policy would be better left to the legislature to decide upon.
- (4) It cited the risks of ongoing disputes; lack of finality; budgetary and fiscal challenges upon organs of state to make payments over an indeterminate time period; and a time consuming and expensive process of ongoing communication between parties.
- (5) The court then discussed the common law lump sum rule in other jurisdictions. It noted that in England, the lump sum rule was departed from only with legislative intervention. The lump sum rule also applies in Australia, and in Canada.
- (6) The court highlighted that undertakings in favour of periodic payments could potentially conflict with section 66 of the Public Finance Management Act 1 of 1999 which restricts the ability of organs of state to borrow money, issue guarantees, indemnities or securities, or enter into any other transaction that bind the institution to a future financial commitment.
- (7) The court also highlighted a potential conflict with the Treasury regulations. These statutory provisions could also potentially impact upon the validity of undertakings made by organs of state in favour of top-up payments. In summary, the court found that there was not a constitutional justification for departing from the common law in respect of the lump sum rule to enable top-up and clawback provisions. The question of periodic payments should be left to the legislature to decide upon.
- (8) However, the court found that, in this case, the proposed top-up and clawback provisions were favourable to IDT, and both parties were agreeable to them. Consequently, the court decided it could allow them to be included in the trust deed without making a legal determination that the top-up undertakings were valid. The court found that it also did not need to make a determination in respect of whether, in the absence of agreement, it would be fair and reasonable to impose top-up and clawbacks provisions upon parties. In future cases, it may therefore be possible for parties to reach agreement in respect of a reversionary trust to receive damages. However, this judgment does not provide authority for a court to impose a reversionary trust upon parties in the absence of an agreement.

9.3 RECOMMENDATIONS

- 9.3.1 It is impossible to predict the life expectancy for an individual, yet a considerable expense is incurred in doing so. Not only do we not know in advance what the best mortality assumption is, but it may prove impossible for anyone at any time to discern which of several different assumptions about mortality is best.
- 9.3.2 Given that any mortality table will do an adequate job of predicting the life-span of a single claimant, there could be an argument to fix life expectancy at 10 years in each matter and then make provision for a top-up clause as envisaged in 9.2.4(1) above. This would result in lower lump sums for the cost of care giving for example.
- 9.3.3 Given the growing number of CP litigation matters, there is a clear need for the Department of Health to create a centralized database for monitoring CP claimants against the public sector so as to accurately assess life expectancy. The growth of the database would require cooperation of the Department of Health with the attorneys handling the litigation volumes. Information on gross motor skills should necessarily be included in the database, and ideally more extensive information on factors that are known to be associated with survival should also be collected. Following this, it may then be reasonable to investigate survival rates by province or level of service provision.

9.4 REFERENCES

1. Blair, E., Langdon, K., Lawrence, D., McIntyre, S. & Watson, L. 2019. Survival and mortality in cerebral palsy: observations to the sixth decade from a data linkage study of a total population register and National Death Index. *BMC Neurology*. 19(111). DOI: <https://doi.org/10.1186/s12883-019-1343-1>
2. Carlin, J.B., Reddihough, D.S. & Reid, S.M. 2012. Survival of individuals with cerebral palsy born in Victoria, Australia, between 1970 and 2004. *Developmental Medicine and Child Neurology*. DOI: 10.1111/j.1469-8749.2012.04218.x
3. Crichton, J.U., Mackinnon, W. & White, C.P. 1995. The Life Expectancy of Persons with Cerebral palsy. *Developmental Medicine and Child Neurology*. 37: 567-576.
4. Kobayashi, Y., Ochiai, Y., Touyama, J., Touyama, M. & Toyokawa, S. 2013. Long-term survival of children with cerebral palsy in Okinawa, Japan. *Developmental Medicine and Child Neurology*. 55(5):459-63. DOI: 10.1111/j.1469-8749.2012.04429.x
5. Bergstrand, L., Nordmark, E., Wagner, P. & Westbom, L. 2011. Survival at 19 years of age in a total population of children and young people with cerebral palsy. *Developmental Medicine and Child Neurology*. DOI: 10.1111/j.1469-8749.2011.04027.x
6. Hutton, J.L. & Pharoah, P.O.D. 2006. Life expectancy in severe cerebral palsy. *Archives of Disease in Childhood*. 91:254-258. DOI: 10.1136/adc.2005.075002
7. Brooks, J.C., Rosenbloom, L., Shavelle, R.M., Strauss, D.J., Tran, L.M. & Wu, Y.W. 2014. Recent trends in cerebral palsy survival. Part II: individual survival prognosis. *Developmental Medicine and Child Neurology*. DOI: 10.1111/dmcn.12519
8. Brooks, J.C., Shavelle, R.M. & Strauss, D.J. 2012. Survival in children with severe cerebral palsy: a further international comparison. *Developmental Medicine and Child Neurology*. DOI:10.1111/j.1469-8749.2012.04236.x
9. Wilsnach N.O. v M[...] and Others 2020 (1) SA 600 (G)
10. AD and Another v The MEC for Health and Social Development Western Cape Provincial Government 2016 SA (WC)

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183. Lochner v MEC for Health and Social Development, Mpumalanga (2012/25934) [2013] ZAGPPHC 388 (27 November 2013)
184. De Necker v MEC for the Department of Health, Free State Province (2399/2012) [2013] ZAFSHC 178; 2014 (3) SA 49 (FB) (23 October 2013)
185. Mokhethi and Another v Member of the Executive Council for Health of the Gauteng Provincial Government (27522/2011) [2013] ZAGPJHC 227; 2014 (1) SA 93 (GSJ) (3 September 2013)
186. Topham v MEC for the Department of Health, Mpumalanga (351/2012) [2013] ZASCA 65 (27 May 2013)
187. Kgosiemang v MEC for the Department of Health, North-West Province (308/2011) [2013] ZANWHC 14 (14 February 2013)
188. Mbodla v MEC for Health, Eastern Cape (2701/11) [2012] ZAECMHC 17 (13 December 2012)
189. Potgieter v Member of the Executive Committee for Health and Social Development: Limpopo and Another (22956/2011) [2012] ZAGPPHC 342 (7 December 2012)
190. Ndaliso v MEC of the Department of Health of the Eastern Cape Government, Bisho (EL 478/12, ECD 1178/12) [2012] ZAECELLC 20 (30 November 2012)
191. Ntsele v Mec for Health, Gauteng Provincial Government (2009/52394) [2012] ZAGPJHC 208; [2013] 2 All SA 356 (GSJ) (24 October 2012)
192. Todi v MEC for the Provincial Government of North-West: Health and Another (751/2005) [2012] ZANWHC 42 (27 September 2012)
193. Molete v MEC for Health, Free State (2155/09) [2012] ZAFSHC 125 (21 June 2012)
194. van Rhyn v MEC for Health, Western Cape (19221/10) [2012] ZAWCHC 257 (29 February 2012)
195. Topham v Member of the Executive Committee for the Department of Health, Mpumalanga (25284/2009) [2011] ZAGPPHC 184 (4 October 2011)
196. Hoffmann v MEC for Department of Health, Eastern Cape and Another (1037/2007) [2011] ZAECPEHC 39 (9 September 2011)
197. Harmse NO obo Jacobus v Mec for Health: Gauteng Province (11194/08) [2010] ZAGPJHC 110 (16 November 2010)
198. Qamba v Minister of Health (CA13/2010) [2010] ZAECGHC 50 (23 June 2010)
199. Franks v MEC for the Department of Health for the Province of Kwazulu-Natal (2958/02) [2010] ZAKZPHC 1 (20 January 2010)
200. Baloyi v Minister of Health Gauteng Province (29632/04) [2009] ZAGPPHC 259 (22 July 2009)
201. Carrim v Premier of the Gauteng Province and Another (04/12338) [2008] ZAGPHC 454 (7 November 2008)
202. Dopp NO v MEC Health, Northern Cape (799/06) [2008] ZANCHC 43 (22 September 2008)
203. Nyathi v Member of the Executive Council for the Department of Health Gauteng and Another (CCT 19/07) [2008] ZACC 8; 2008 (5) SA 94 (CC); 2008 (9) BCLR 865 (CC) (2 June 2008)
204. Van Vuuren and Another v MEC, Department of Health, Eastern Cape and Another (3207/06) [2008] ZAECHC 21 (1 April 2008)
205. Kosana v MEC for Health, Western Cape (9230/2005) [2008] ZAWCHC 318 (23 January 2008)
206. Marr v MEC Department of Health Eastern Cape Provincial Government and Another (3908/05, ECJ29/06) [2006] ZAECHC 16 (10 April 2006)